INSTITUTIONAL ASSETS: SHAPING THE POTENTIAL FOR ELECTRONIC COMMERCE IN DEVELOPING COUNTRIES

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Faculty of Technology, Policy and Management
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Institutional Assets:

Shaping the Potential for Electronic Commerce in Developing Countries

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Prof. dr. ir. M.P.C. Weijnen
Stellingen

1. Managers zijn bereid om heel veel informatie uit te wisselen op het Internet. De enige informatie die zij niet kwijt willen via Internet zijn roddels.

2. Doelen zoals het hebben van een open netwerk en het creëren van een vertrouwensband, kunnen botsen met elkaar.

3. Bij het maken van een definitie moet men zich de gevolgen realiseren voor de elementen die uitgesloten worden door deze zelfde definitie.

4. In academisch onderzoek wordt de gevorderde weg bepaald door de creativiteit die wordt toegepast op de theorie, methode en analytische techniek, maar de energie die daarover nodig is komt voort uit passie.

5. Alhoewel de wetenschap vooral geïnteresseerd is in het uitleggen en voorspellen van normale gebeurtenissen, kunnen uitzonderingen een waardevolle bron van informatie zijn.

6. Wanneer perfectie een doel op korte termijn wordt, kan dit een belemmering vormen voor datgene wat op lange termijn bereikt kan worden.

7. "In de hooglanden van de gedachtenwereld, moet men zich aanpassen aan de ijle lucht van onzekerheid"....... Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance*

8. Het proces van het aanpassen aan een nieuwe cultuur is te vergelijken met het betreden van een donkere ruimte gevuld met mensen. Het kost tijd om je aan te passen aan de duisternis en te kunnen zien wat al duidelijk was voor de anderen.

9. Het weer in Nederland is een uitstekende motivatie voor het schrijven van een proefschrift. Na de regen ontspruiten er bloemen, bomen en een enkele keer een proefschrift.
Stellingen

1. Managers are willing to share a great deal of information via the Internet. However, one significant form of information they are unwilling to share online is gossip.

2. Goals of having an open network and creating trust may conflict.

3. In creating definitions one must recognize the implications for related elements excluded by the definition.

4. In academic research creativity applied to theory, method, and analytic technique shapes the path one takes but the energy to propel one down it comes from passion.

5. Although science is predominantly interested in explaining and predicting normal occurrences, outliers can be a valuable source of information.

6. When perfection becomes a short term goal it can limit what can be achieved in the long run.

7. "In the high country of the mind one must become adjusted to the thinner air of uncertainty..." Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance*

8. The process of adapting to a new culture is similar to entering a dark room filled with people. It takes time to adjust and to begin to see what was already obvious to the others.

9. Dutch weather provides an excellent source of motivation for thesis writing. After the rain sprouts flowers, trees, and now and then a thesis.
Acknowledgements

This thesis is the result of support and encouragement from a wide variety of people across three continents. The seeds of the project were first sown in the Dept. of Telecommunication at Michigan State University (MSU), where faculty, staff, and friends started me on the path. I am indebted to Lynn Rampoldi-Hnilo, Jennifer Gregg, Cheryl Natzmer, and Sabine and Alwin Mahler for their continuing friendship, humor and encouragement. I am also indebted to my MSU advisors, Johannes Bauer, Bella Mody and Charles Steinfield. All three, whether they will admit it or not, are responsible in one way or another for my eventual departure from the program. Bella Mody arranged a fellowship in Delft, then Charles decided Delft was an excellent place to spend a sabbatical, followed by Johannes. Thus, up until the very end of this process I have been privileged with the support and influence of MSU.

Once settled in Delft I was fortunate to find a supportive group in the Economics of Infrastructure (EI) section. My dissertation benefited from presentations during section meetings in which weeks of hard work were challenged by the question ‘so what?’ I heartily thank my colleagues for pushing me to think, and think, and think some more. Rolf Künneke, Bart Kuipers, and Bert Sadowski provided supervision, whilst my peers, Koen Dittrich, Amy Mahan, Bruce Girard, Hens Runhaar, Robbin te Velde, Hendrik Rood, Karin Boersma, Cor Graveland, Patricia Twalfhoven, and Daniëlle Wille encouraged, cajoled, and occasionally made fun of me. I would also like to thank our support staff Rineke van de Woerd, Karin van Duyn-Derwort, and in particular Frederika Welle Donker who helped with typing when my arms gave out.

Never being one to sit still, my research required travel to far places. These trips were sponsored by CICAT, the TU Delft office for inter-university collaboration, as well as the EI section. The study of the UNCTAD Trade Point program was carried out with funding from EI and with the help of UNCTAD staff, particularly Susan Teltscher and Vlasta Macku. Research in Dar es Salaam, Tanzania was supported by CICAT and the University of Dar es Salaam Computing Center. I would also like to thank Ludwig van de Oord and Adam Messer for their help during this phase. Research in San Diego, California was supported by the EI section and made possible by the warm hospitality of Tricia McGuire and Joelle Tonkovich. Naturally, I am also indebted to the many individuals in firms who gave very generously of their time for interviews.

When I speak of support for travel from the EI section this is a reflection of the generosity of its professor, W.H. Melody. I am deeply indebted to Bill for first of all letting me be. Bill allowed me the freedom to pursue my dissertation in a way that very few Ph.D. students experience. For this I am grateful. I must also thank him for pulling my head out of the sand at the appropriate times. His guidance has been invaluable.

Last but not least, I must thank my family for their constant love and support during these years. My sisters Mary Beth, Michelle and Kelly have provided encouragement and a home away from home. My parents also provided support and played an important role by never giving (letting) up on me. I truly appreciate the safety net they have all provided.

Carleen Maitland
Delft, 2001
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# Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACET</td>
<td>Association of Consulting Engineers Tanzania</td>
</tr>
<tr>
<td>ACH</td>
<td>Automated Payment System</td>
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<tr>
<td>APEC</td>
<td>Asia-Pacific Economic Cooperation</td>
</tr>
<tr>
<td>ASCE</td>
<td>American Society for Civil Engineers</td>
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<tr>
<td>ASYCUDA</td>
<td>United Nations-designed Automated System for Customs Data</td>
</tr>
<tr>
<td>ATM</td>
<td>Asynchronous Transfer Mode</td>
</tr>
<tr>
<td>ATM</td>
<td>Automatic Teller Machine</td>
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<tr>
<td>B2B</td>
<td>Business-to-Business</td>
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<tr>
<td>B2C</td>
<td>Business-to-Consumer</td>
</tr>
<tr>
<td>CAD</td>
<td>Computer Aided Design</td>
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<tr>
<td>CELSOC</td>
<td>Consulting Engineers and Land Surveyors of California</td>
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<tr>
<td>COD</td>
<td>Cash-On-Delivery</td>
</tr>
<tr>
<td>COPPA</td>
<td>Children's Online Privacy Protection Act</td>
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<tr>
<td>CTI</td>
<td>Confederation of Tanzanian Industries</td>
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<tr>
<td>DSL</td>
<td>Digital Subscriber Line</td>
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<td>EDI</td>
<td>Electronic Data Interchange</td>
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<td>EFT</td>
<td>Electronic Funds Transfer</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>ERB</td>
<td>Engineering Review Board</td>
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<td>ERP</td>
<td>Enterprise Resource Planning</td>
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<td>ETO</td>
<td>Electronic Trading Opportunities</td>
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<td>EU</td>
<td>European Union</td>
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<td>FDA</td>
<td>U.S. Food and Drug Administration</td>
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<td>FDI</td>
<td>Foreign Direct Investment</td>
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<td>FDIC</td>
<td>Federal Deposit Insurance Corporation</td>
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<td>FTP</td>
<td>File Transfer Protocol</td>
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<td>GATS</td>
<td>General Agreement on Trade in Services</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GIS</td>
<td>Geographical Information Systems</td>
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<td>GSP</td>
<td>General System of Preferences</td>
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<td>GSS</td>
<td>Group Support Systems</td>
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<td>GT-net</td>
<td>Global Trade Point Network</td>
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<td>ICT</td>
<td>Information and Communication Technology</td>
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<td>IEEE</td>
<td>Institute for Electronic and Electrical Engineers</td>
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<td>IET</td>
<td>Institute of Engineers Tanzania</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>INS</td>
<td>U.S. Immigration and Naturalization Service</td>
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<td>IP</td>
<td>Internet Protocol</td>
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<td>IPR</td>
<td>Intellectual Property Rights</td>
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<td>ISDN</td>
<td>Integrated Services Digital Network</td>
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<td>ISP</td>
<td>Internet Service Provider</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>ITU</td>
<td>International Telecommunications Union</td>
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<tr>
<td>KI</td>
<td>Knowledge-Intensive</td>
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<td>KIS</td>
<td>Knowledge-Intensive Service(s)</td>
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<td>L/C</td>
<td>Letter of Credit</td>
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<td>LDC</td>
<td>Less Developed Country</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<td>MFN</td>
<td>Most Favored Nations</td>
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<tr>
<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
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<td>NBC</td>
<td>National Bank of Commerce</td>
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<td>NCBFAA</td>
<td>National Customs Brokers and Forwarding Agents Association</td>
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<td>NGO</td>
<td>Non-Government Organization</td>
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<td>NIE</td>
<td>New Institutional Economics</td>
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<td>NYSE</td>
<td>New York Stock Exchange</td>
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<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<td>OHADA</td>
<td>Organization for the Harmonization of Business Law in Africa</td>
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<td>POA</td>
<td>Power of Attorney [Agreement]</td>
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<td>QBS</td>
<td>Quality Bases Selection</td>
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<td>SBA</td>
<td>Small Business Administration (in the US)</td>
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<td>SEAL</td>
<td>Secure Electronic Authenticated Link</td>
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<td>SEC</td>
<td>Securities and Exchange Commission</td>
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<td>SME</td>
<td>Small And Medium Sized Enterprises</td>
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<td>SPAM</td>
<td>Unsolicited Commercial E-Mail</td>
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<td>TACO</td>
<td>Tanzania Association of Consultants</td>
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<td>TAFFA</td>
<td>Tanzanian Freight Forwarders Association</td>
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<td>TCC</td>
<td>Tanzanian Communication Commission</td>
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<td>TCCIA</td>
<td>Tanzanian Chamber of Commerce</td>
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<td>TCE</td>
<td>Transaction Cost Economics</td>
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<td>TEU</td>
<td>Twenty feet Equivalent Unit</td>
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<td>Top Level Domain</td>
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<td>TRA</td>
<td>Tanzanian Revenue Authority</td>
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<td>TTCL</td>
<td>Tanzania Communication Company Limited</td>
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<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>United Nations Development Programme</td>
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<td>UNICTRAL</td>
<td>United Nations International Trade Law Commission</td>
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<td>United Nations International Symposium on Trade Efficiency</td>
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<td>UNTPDC</td>
<td>United Nations Trade Point Development Center</td>
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<td>VAT</td>
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<td>WIPO</td>
<td>World Intellectual Property Organization</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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<td>YK2</td>
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Abstract

The global advancement of information and communication technologies (ICTs) has spurred a rapid and incontrovertible transition to an information and knowledge-based economy. As our acceptance of this new reality grows, so does our realization of the widening 'digital divide' between developed and developing countries. Exploring the causes and width of this divide, the lens of New Institutional Economics is applied to examine the role of institutions in shaping the potential for e-commerce in developing countries.

Institutions serve as the rules of the game of commerce, can be formal or informal, and exist at various levels. Theoretically, institutional elements such as property rights, competition, contracting, and intermediation serve as the basis for well-functioning markets. These theoretical institutional elements are often observed through what are referred to here as 'intermediate institutions'. Intermediate institutions take the form of government regulations, industry regulations and practices, or simply the terms of a bilateral agreement. The theoretical roots of the intermediate institutions are explored, while analyzing their impact on e-commerce.

Evidence for the investigation is gathered from three cases, each embodying a different institutional environment, in which the focus is business-to-business e-commerce in small-to-medium sized enterprises (SMEs). The first two cases, situated in the U.S. and Tanzania, concentrate on the engineering consulting and customs brokerage industries. The third case examines the UNCTAD Trade Point project, which provides trade information to developing country SMEs using both an Internet-based match making program and a network of local trade facilitators.

Implications of institutions for e-commerce potential are found in both developed and developing countries. Inter-organizational networks is the institutional element demonstrating the greatest impact on the adoption of e-commerce among service sector SMEs in all three institutional environments. Alternatively, enforcement of property rights and rules in general most completely explains developed/developing country differences in the potential for e-commerce.

Concerning theory, the research builds bridges between branches of New Institutional Economics. It demonstrates predictions about e-commerce based on Transaction Cost Economics analyses are improved through consideration of the mediating effects of institutions. For policy makers the findings suggest enforcement mechanisms be included in policies from the outset, and that they be implemented with greater information sharing between government agencies. On a practical level, this research makes clear that developing country firms are adopting e-commerce but need to further integrate Internet use into business processes. Greater coordination through industry organizations and development of best practices would facilitate this process.
Chapter 1:

Introduction

In the last decade the growth of the Internet has, for some, changed many aspects of life. It has developed into a platform for a variety of activities, one of which is electronic commerce. From its meager beginnings in 1991 when the U.S. National Science Foundation lifted its restriction on commercial use of the Internet, e-commerce has grown into a multi-billion dollar means of exchange. Initial skepticism about banner ads and other early forms have been washed away in the wake of technological and process innovations that have created viable business models for the Web.

The euphoria surrounding e-commerce and the emergence of the new digital economy did not go unnoticed by those concerned with economic development. Two of the fundamental characteristics of the Internet that make it such a powerful commercial medium, its time and distance spanning capabilities, would enable developing country firms to enter global markets. In addition to serving as a medium for advertising goods, the Internet also provides access to information about international markets and demand for particular products, eliminating a traditional barrier to developing country exports. The Internet might also present developing country firms with a means to bypass existing commercial structures that hamper traditional exchange. Given these characteristics, e-commerce represents a new path to greater economic development.

But the path may not be as smooth as it once appeared. Since these initial expectations were fashioned the excitement over e-commerce has waned. Investments in e-commerce have declined, with increasing numbers of e-business ventures failing. As we enter the 21st century the bases for the e-commerce boom in the late 1990s appear less clear. Can it be attributed solely to new processes and technologies, combined with changing consumer practices? Or was it simply a result of a strong U.S. economy that allowed venture capital and bravado to flow in unprecedented proportions? It will be some time before the answers to these questions are known. In the meantime, however, the search for answers will certainly increase the breadth and depth of the critical discourse on the potential for electronic commerce.

In terms of developing countries, this critical discourse is already underway. In the time that has elapsed since the initial, sometimes fervent, expectations for e-commerce were formed, studies and experience have shown that the advantages firms in developing countries derive from the Internet depend on a variety of contextual factors. In the following paragraphs we outline the theoretical and practical benefits and challenges e-commerce presents to developing countries. The discussion reflects the progress of this discourse, beginning with optimistic expectations and evolving into a more nuanced and complex understanding of the issues.
1.1 Electronic Commerce and Developing Countries

1.1.1 Benefits

The benefits of electronic commerce for developing countries have their roots in the positive relationship experienced between information and communication technologies (ICTs) and economic development. ICTs have been shown to accelerate the achievement of a variety of economic development goals. First, in the battle to attract inward investment or foreign direct investment (FDI), ICT infrastructure and skills can make an area more appealing. ICT investments in rural areas can also help overcome the geographical distances that make them unattractive to inward investment regardless of potentially lower real estate and labor costs (Gibbs & Tanner, 1997).

Telecom and ICT investments have multiplier effects, in which telecom investments facilitate economic growth in a range of sectors (Kanyani & Dymond, 1997; Mansell & Wehn, 1998). One way in which these multiplier effects occur is that ICTs provide a platform for networking. Stronger connections between firms in a geographic area help spread benefits of economic development, facilitating spillover effects to other sectors of the economy (Clark, Ilbery, & Berkeley, 1995). Furthermore, information shared through ICT networks has the potential for increasing transparency and empowering local citizens to make increased demands on governments. Required accountability helps drive out mismanagement and corruption (Adam, 1996).

With the introduction of the World Wide Web the potential contribution of ICTs to economic development expanded. Electronic commerce creates a direct connection between ICTs and economic development, giving rise to new markets and serving as a new medium of exchange. The emergence of e-commerce could inspire entirely new modes of economic expansion.

One of the potential benefits of e-commerce for developing country firms is high levels of Internet use. Technologically the Internet embodies the evolution of computing networks from large expensive mainframes with specialized software to low-cost desktop computers that can run on off-the-shelf or sometimes even free software. In addition to low cost, the Internet’s open architecture significantly lowers the barriers to access and cost. Previously, inter-firm networks such as electronic data interchange (EDI) were based on technical standards that differed by industrial sector and connected closed user groups. Involvement in these networks required costly and complicated technologies, thereby limiting the range of participants (see Mansell, 1994). Thus, factors such as low cost, widely available equipment, and an open architecture, are expected to facilitate widespread adoption of electronic commerce.

A second source of optimism about the potential of e-commerce for developing countries is the formation of new markets in which the dominant players are yet to be established.

"...markets in the online world are immature enough that outsiders in Eastern Europe and elsewhere have rare opportunities to become serious competitors. If such opportunities are exploited, she said, 'the impact of electronic commerce will be seen much more outside of the United States'.” (Bollier, 1998, p.22)

In this quote taken from a report on the Aspen Institute’s 1997 Roundtable on Information Technology, Ester Dyson, a Roundtable participant, expresses her views on the potential
effects of e-commerce. Dyson's quote reflects an optimism common in earlier times on potential first-mover advantages that could accrue to developing country firms.

In addition to providing first-mover advantages, electronic commerce is also expected to reduce transaction costs. The reduction in transaction costs, a result of reduced search costs, delivery time and charges, and travel costs, will stimulate competition, both domestically and internationally, resulting in greater diversity, better quality, and lower prices (WTO, 1998). For developing country firms faced with comparatively high costs for communication and travel these benefits could be substantial.

"Markets for information goods and services are young, growing, and exceptionally mobile. In this dynamic situation, there are many opportunities and some successful models for creating new industries in developing countries. These industries can provide information products, such as components and equipment, custom software, or exported provision of services. They can also help to improve the information components of traditional products, a fast growing aspect of many industries." (Talero & Gaudette, 1996)

As the above quote from a World Bank report reflects, another potential benefit of electronic commerce for developing countries is the creation of new economic sectors. This may be of particular relevance to emerging economies that are in the process of shifting their economic development priorities from the agricultural to the services sector (WIPO, 2000). The Internet makes possible the automatic packaging and distribution of information to targeted user groups on a repeated basis, creating the potential for new types of services (Goldstein & O'Connor, 2000). Furthermore, the spin-offs caused by the rapid diffusion of the Internet, such as the estimated 17,000 ISPs around the world (ITU, 1999) are helping diversify developing country economies.

"Electronic commerce and the Internet offer developing countries considerable opportunities to enhance economic growth and welfare. A number of countries already benefit from new export opportunities including data entry, software development, claims and forms processing and accounting." (WTO, 1998) p.43

New economic sectors may also lead to greater export opportunities. Export-oriented call centers have been shown to help in capital formation, providing employment, and stabilization of the balance of payments of local areas (Richardson & Marshall, 1999). Exports can also be increased by using the Internet to make it easier for producers in poor countries to become part of an international bidding and supply process in which they rarely participated in the past (WTO, 1998). E-commerce may also help expand exports from traditional industries by allowing low cost access to market information such as import restrictions, customs regulations, and potential demand. Exports will also improve through e-commerce as efficiencies in logistics and transport increase, resulting in improved logistics for developing countries (Ancel & Borgeon, 1997).

"In particular, there are opportunities for accessing new international markets at low cost and minimal capital investment, for improving competitiveness and customer services, and for reducing transaction cost and overheads. Small and medium sized enterprises (SMEs), in particular, may take advantage of these benefits and improvements in communication systems to access new markets and reduce administration costs, while avoiding the traditional limitations of restricted access to information, high market-entry costs, and isolations from their potential markets." (WIPO, 2000)

Further benefits of e-commerce are likely to accrue to developing country SMEs. First they are likely to benefit from improved productivity brought about by reductions in transaction and production costs. For SMEs e-commerce will also facilitate market entry, improve
customer service, extend geographical coverage and enable new sources of revenue (ITU, 1999).

One of the Internet's greatest advantages is the potential it offers for market expansion. Developing country firms may benefit from low cost access to clients from a global community, either through online intermediaries or directly through the use of corporate Web sites (Choi, Stahl, & Whinston, 1997). Although market expansion works both ways, increasing local competition, the result may be further improvements. By exposing firms to more intense competition, the Internet may force governments and businesses to rethink their old, inefficient habits and seek new ways to get around or eliminate market rigidities. Furthermore, the lure of unfettered access to global markets and reduced barriers to market entry is expected to spark a wave of entrepreneurial activity in developing countries. For entrepreneurs, e-commerce is expected to:

1. make it easier for artisans and SMEs to access business-to-consumer (B2C) markets;
2. facilitate activity on the global market for agricultural and tropical products;
3. allow firms in poorer countries to tap into the business-to-business (B2B) supply chains; and
4. allow service-providing enterprises in developing countries to operate more efficiently and to provide certain services directly to customers anywhere in the world. (Goldstein & O'Connor, 2000), p.5

These are just some of the positive effects e-commerce is expected to produce. The expectations are only one side of the story however. The challenges to fulfilling these opportunities have as many bases as the expectations.

1.1.2 Challenges

The optimism toward the benefits of electronic commerce for developing countries must be tempered by a realistic examination of the context in which these firms operate. The initial challenges identified were inadequacies in areas such as infrastructure and training that are related to Internet use. Over the years experience has shown that factors related to the intricacies of business, such as relationships and confidence, will also play a role in shaping the potential benefits of e-commerce. We begin the following discussion of these challenges by considering the implications of global trends on the potential for e-commerce.

The advance of electronic commerce will occur in the context of other trends, such as globalization. Globalization, which has resulted from both policy changes and technological advancement (Garnaut, 1998), may mediate the positive effects of e-commerce. Research on the effects of globalization on developing countries conclude that as globalization continues developing country markets will be more exposed to competition and may find themselves inundated with competition from international firms (Ho, 1998; Lie, 1997; Yoffie & Gomes-Casseres, 1994). Domestic industries may not be able to compete due to cost or quality issues, and may be adversely affected. Electronic commerce could exacerbate this exposure by making it easier for foreign firms to compete in domestic markets. Such circumstances could result in opposition to e-commerce, or worse a loss of jobs and further economic decline.

In addition to issues of globalization, further challenges to e-commerce lie in the inadequacies of infrastructure in many developing countries. The most obvious challenge to e-commerce in
these markets is the high cost and poor quality of telecommunication services. These conditions are often reinforced by government policies that continue monopolies and high tariffs (WTO, 1998). The cost and quality of telecommunication services are, however, irrelevant when the power is out. An irregular supply of power makes computer use at best frustrating and at worst inefficient. This may lead firms to continue manual modes of doing business, creating another barrier to e-commerce.

E-commerce can also be hampered by poor transport infrastructure. A logistics system capable of timely, secure, and affordable small batch shipping to multiple destinations has been one of the pillars of successful e-commerce in the U.S. In developing countries where often roads are not properly maintained and spare parts for vehicles are difficult to obtain, disadvantages are created for local firms attempting to compete in global e-commerce (Goldstein & O'Connor, 2000).

For those developing country firms with telecommunications and Internet access, there are other factors that may inhibit their ability to take advantage of the medium. The first is that simply a lack of experience, particularly with corporate data networks, could pose a challenge. As one study noted:

"There is a danger that countries and enterprises that do not have access to the international data communication networks or are unable to use them because they lack the know-how and experience will lose even more ground in world trade, despite all trade liberalisation." (OECD, 1997).

One must also consider whether or not firms with access and knowledge will choose to adopt e-commerce. As with any innovation, there are a range of hurdles to adoption. One factor that is an issue to all firms, but is particularly important for developing country firms, is whether or not this new innovation meets their needs. Research on developing country service enterprises found their greatest need was for information concerning management training opportunities and sources of new, skilled employees (Duncombe & Heeks, 1999). It is yet to be seen whether or not these needs can be met via the Internet.

Although greater diversity in the sources of Web content now exists, the lack of local content for developing country firms may prevent the formation of adequate incentives to adopt e-commerce. The lack of local content may already be affecting patterns of Internet use. For example, in Bangladesh about 82 per cent of Internet traffic consists of email, while in the United States the Web accounts for 70 percent and email only 5 per cent (ITU, 1999). Furthermore, the cost of access in developing countries is typically higher than in developed countries, creating more stringent cost/benefit analyses to justify the expense.

Expense may also be a consideration when it comes to joining inter-firm networks. At the beginning of the rise of e-commerce Internet use was low and this made open networks viable. As the number of Internet users increases, it is unclear whether or not open networks will persist. Pressure to create closed networks with limited numbers of users stem from a range of factors including the need for compatibility in back-office technologies and practices, and the desire to reduce uncertainty through limiting network membership. Closure may also result merely from the need to charge for services. For all of these reasons, closed networks may develop in several areas of electronic commerce.
All firms entering electronic commerce will continue to operate to some extent within the existing institutional environment for traditional commerce. One element of the commercial institutional environment, the banking system, is a barrier to e-commerce in many developing countries. The lack of electronic payment systems and the inability to use credit cards for transactions involving foreign currency are two ways banking systems can inhibit e-commerce growth (WIPO, 2000). Furthermore, access to foreign or Web-based banks may be limited as credit analyses performed on developing country firms typically do not produce credit ratings higher than those of the national government (Cantor & Packer, 1996). The institutional environment also includes the laws governing Internet transactions. Thus, developing countries wanting to reap advantages from e-commerce have to pursue improving the communication infrastructure as well as adjusting the legal, financial, and logistic conditions to the new requirements of online trade (ITU, 1999).

There are a variety of reasons the advantages gained using the Internet in developed countries may not be easily replicated in other circumstances. It is possible that in more tightly regulated economies with rigid labor and product markets and inefficient capital markets, the Internet may yield smaller benefits (Goldstein & O'Connor, 2000). Also one cannot ignore the capital required to start an e-commerce venture.

"...developing countries face a number of particular challenges in realizing these opportunities. These include the necessity for up-front investment in order to compete globally; a relative lack of participation in policy-making and standard setting for electronic commerce; the competitive disadvantage resulting from a lack of capital convertibility of currency; and the possible impact, or fear of impact, on government revenues." (WIPO, 2000)

In addition to these structural and financial challenges, e-commerce in developing countries will also face issues related to international business. Although the Internet provides a platform to span time and distance, it does little to overcome cultural barriers. In fact, the mode of communication it facilitates, in its present form, may create further challenges to cross cultural communication. The high levels of 'psychic distance' between developed and developing country trading partners could create further hurdles for developing country firms in e-commerce. The role these more subtle issues of international business will play in the growth of e-commerce is observed in a recent report by the United Nations Conference on Trade and Development (UNCTAD):

"Confidence (in the system, in partners and in the self) is a vital element, which will allow e-commerce to grow rapidly and healthily, and be a true engine for global development." (UNCTAD, 2000, p. 6)

Many of the challenges outlined here may be overcome by firms on an individual basis, allowing some benefit to be derived from e-commerce. However, for e-commerce to have a greater impact wide-spread adoption is necessary. For such a level of adoption to occur government intervention will be required. In some cases, policy changes will be sufficient. In other cases enforcement, not merely a policy change, is the key issue. Examples include consumer protection and contract enforcement. Finally, in yet other cases, such as taxation and regulation of Internet activities, the challenge will be to remain inactive. An OECD report on the prospect of e-commerce for development summarizes these policy challenges as follows:

"Even assuming the physical infrastructure bottlenecks are overcome and access prices become more affordable in developing countries, a number of other significant policy challenges must be met if governments are to create an environment conducive to e-commerce. E-commerce requires legal norms and
standards (covering e.g., contract enforcement, consumer protection, liability assignment, privacy protection, intellectual property rights) and process and technical standards (e.g., regarding the way payments are accepted on the Internet and products are delivered to the final user; security, authentication, encryption, digital signatures, connectivity protocols).” (Goldstein & O'Connor, 2000, p.11)

This discussion demonstrates both the wide ranging potential benefits of e-commerce as well as the significant number of potential barriers to achieving them. It is difficult to assess the attainable benefits without a more clear understanding of which problems pose the most significant challenge.

Far reaching economic benefits may result from the cumulative benefits experienced by individual firms. The extent to which firms achieve these benefits will partially depend on their commercial environment that typically posed many problems for traditional commerce. Thus, by examining the causes of under-development in traditional commerce, we can gain insight into the challenges for e-commerce. In turn, this will provide insight into the true economic development potential of e-commerce. In the following section we examine the views of the development community on the causes of economic under-development.

1.2 Economic Under-development

Policies and programs concerned with economic under-development are typically cyclical (Kondonassis, Malliaris et al., 2000), and in the past two decades this trend has continued. Previously, theories of market failure focused on the need for macroeconomic restructuring and resulted in policies labeled ‘structural adjustment programs.’ To create efficient markets these programs recommended policies such as privatization of parastatals, currency devaluations, and reductions in state expenditures. The results of these policies demonstrated, however, that in many instances structural adjustment programs alone are detrimental to the poor (Stein & Nissanke, 1999). Conclusions were drawn that macroeconomic restructuring needed to be coupled with social programs and efforts towards creating an atmosphere of good governance, in addition to developing a civil society to support the political process and social reform, as well as private industry (World Bank, 2000)1.

Hence, the new partner for macroeconomic reform became institutional reform2. Current theories on market failures now focus on weak performance of public institutions as one of the primary challenges for economic development (Stein, 1995). Institutions are considered the ‘rules of the game’, as well as the mechanisms through which these rules are monitored and enforced. Institutions can include organizational rules and routines, formal laws, and informal norms. Together they shape the incentives of public policy makers, overseers, and providers of public services. The results of weak institutions include misguided resource allocation, excessive government intervention, weak regulation, arbitrariness, and corruption. These are seen as having deterred private investment and slowed growth and poverty reduction (World Bank, 2000, p.103). Improvements in the institutional environment, particularly in the areas of transparency, objectivity, predictability and legitimacy, are expected to lower transaction costs, increase contracting efficiencies and lengthen time horizons. They may also encourage

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1 In FY99 more than half of the Bank’s lending was earmarked for economic and financial reform that included measures to mitigate the social costs of crises felt through job loss, falling wages, sharp price increases, and reduced public spending. This reflects the Bank’s new emphasis on multisector reform (World Bank, 2000).

2 The significance of this change is indicated by Stein (1995) who refers to structural adjustment as ‘a-institutional’ and concludes that it is incapable of promoting the development of market institutions in Africa.
open and formal business transactions and enhance the credibility of the state and its policies (OECD, 1994, p.14). To attain these goals, it has been suggested that institutional specialists, in addition to economists, be included in the early stages of the project planning process (Bryant, 1996).

From the expanded range of causes of market failures discussed above, the following factors have been suggested as key elements of a successful commercial environment:

- macroeconomic policies fostering growth and stability;
- legislation and policy reform to facilitate the ability of local people to establish and protect property rights;
- the creation of efficient markets in a competitive setting;
- the provision of appropriate and efficient infrastructure;
- rational legal and regulatory policies that balance legitimate controls and protection with concerns regarding efficiency, simplicity, impartiality, and legal redress;
- appropriate fiscal policies and effective collection procedures;
- a policy and institutional setting that facilitates empowerment, private initiative and risk-taking;
- institutions and distribution systems for disseminating information about markets, enterprises, and government policies;
- and support services for businesses (OECD, 1994, p.13).

This list represents an aggressive agenda for reform and adds issues of property rights, risk-taking abilities, information flows, and support services to the previously mentioned issues of institutional reform. Recently there has also been an increased emphasis on the notion of political will and its role in the implementation of market reforms. The research conducted by the Organization for Economic Cooperation and Development (OECD) demonstrated that economic policy changes were sometimes implemented only to later be reversed when political will or the power of its proponents waned (Desai, 1999).

An alternative, yet complementary, perspective on economic development and market failure focuses on national and firm capacities for international trade. This perspective gains support from over a century of research and empirical studies that have shown close links between economic growth and export growth (Sharer, 1999). This perspective emphasizes that trade resulting from domestic surpluses provides a country with money to invest in innovations, which in turn create competitive advantages and lead to continuing economic growth and development. Thus, by strengthening a country’s export capacity the economic situation should improve.

This perspective identifies one of the most pressing development concerns as changing supply-side constraints so as to enable less developed countries (LDCs) to produce more competitively for domestic as well as international markets (UNCTAD, 1999b, p.16). Solutions to current under-development focus on low levels of productivity, which are partially due to failures in improving rural technologies. Rural technologies stagnate due to a lack of investment in technical support services, including the marketing of inputs and outputs, and the provision of credit, research, environmental management and extension service to farmers. These failures are attributed to structural weaknesses in LDCs, such as weak management capacity, weak institutional development, low levels of technology and lack of technological capacity, as well as inefficient transportation, communication and customs procedures. These weaknesses combine to undermine trade efficiency and are seen
as playing a large part in the non-competitiveness of much of LDCs' domestic and export trade.

Development of a more robust private sector is seen as one avenue to resolving issues of under-development and market failures and resolving trade issues. The recommendations for improving private sectors include: "a reliable physical infrastructure; an efficient and solvent financial system; a transparent legal and regulatory system with effective mechanisms for the enforcement of contracts; an effective competition policy that is conducive to the utilization of investment and trade opportunities; and simplified tax regimes to reduce levels and multiplicity of taxes in order to encourage compliance." (UNCTAD, 1999b, p.6). At the firm level, requirements include the need to reform management practices. It is suggested that firms enhance competitiveness and productivity through changes in management styles, organizational norms, and marketing reforms. Reforms should focus on non-price aspects such as continuous quality improvement, packaging, timely delivery and after-sales service (UNCTAD, 1999b).

From the development community's assessment of the causes of market failure it is evident a wide variety of factors are involved. They range in scope from economy-wide issues such as corruption to firm-level issues such as management styles. In considering the challenges faced by e-commerce, one must consider its ubiquitous nature. The greatest challenge to e-commerce is likely to be an aspect of under-development that is equally ubiquitous. In examining the range of causes presented here, we believe the greatest challenge faced by e-commerce is institutional under-development. Furthermore, it is anticipated that institutional under-development is at the core of other specific industry and firm-level challenges.

1.3 Scope and Objectives of Research

Through an examination of the potential benefits and challenges of e-commerce in developing countries, as well as a consideration of the causes of economic under-development, we have arrived at the topic of this investigation: the relationship between institutions and the potential for e-commerce. Institutions are the humanly derived constraints that shape human interaction, and they have informally been compared to the rules of a game (North, 1990). More detailed knowledge about the specific ways in which institutions shape the potential for e-commerce is required in order to take full advantage of this new mode of exchange. In this research we compare institutions in various settings and examine their impact on the use of electronic commerce. Through identification of both the enabling and restrictive characteristics of institutions, recommendations concerning appropriate institutional reforms can be made to help create a positive environment for the use of e-commerce by developing country firms.

Our examination of the relationship between institutions and e-commerce will have two dimensions. First, the impact of institutions on e-commerce use in general will be examined. The second dimension is the effect of institutions on the use of e-commerce by firms. It is expected the relationship between institutions and firms' use of e-commerce will vary based on characteristics such as firm size and industry, thus controls for these factors must be devised. To control for size we will limit the investigation to e-commerce use by small-to-medium sized enterprises (SMEs). As is discussed further in Chapter 2, SMEs are expected to reap many benefits from electronic commerce. They also differ from their larger counterparts in their ability to influence their institutional environment, making them more susceptible to
existing structures. To control for industry effects we will focus in one part of the research on firms in two industries in the knowledge-intensive services sector. Also discussed further in Chapter 2, service sector firms are expected to find great advantages in e-commerce and are of increasing importance to developing country economies.

In the following paragraphs we outline the specific aspects of the investigation. We begin by discussing the assumptions and presenting the research questions. This is followed by a discussion of the expect results and the structure of the thesis.

1.3.1 Goals of the Investigation

The discussion of the benefits and challenges for electronic commerce make clear that institutions will shape the possibilities. A variety of institutional factors, such as banking, licensing, and the use of written contracts will influence the scope of e-commerce. But which institutions are likely to have the greatest affect on opportunities and how can they be mitigated?

This research addresses this question based on the following assumptions. The first assumption is that institutions, the rules of the game in commercial exchange, play a crucial role in determining the traditional commercial structures upon which e-commerce is built. In this research we explore whether or not this relationship is also true for electronic commerce. The second assumption is that weak institutions are partially responsible for economic under-development. By examining the potential for electronic commerce from an institutional perspective we take into account the factors responsible for existing inequality. Thus, the particular questions concerning the relationship between institutions and e-commerce that are the focus of this investigation are:

1. How do institutions impact on on electronic commerce adoption by small firms?
2. Which fundamental institutional elements and at what level have the greatest impact on electronic commerce adoption by small firms?
3. To what extent do institutions influence the scope of opportunities electronic commerce represents to developing countries?
4. How do developing/developed country institutional differences affect the prospects for electronic commerce being an equalizing force in global commerce?

To address these questions this research examines the implications of institutions for business-to-business e-commerce by small firms. The research first identifies eight fundamental elements for well-functioning markets based on a review of relevant literature. The relationship of these fundamental elements and electronic commerce is investigated using evidence from three case studies, which were chosen to represent different institutional environments. The relationships between the fundamental institutional elements, traditional commerce and electronic commerce are shown in Figure 1.3.1.1.
The first two cases, taking place in San Diego, U.S.A. and Dar es Salaam, Tanzania, examine national level institutions as well as industry-level institutions in two service sectors: engineering consulting and customs brokerage. These cases examine the extent to which national level institutions, such as norms in the banking sector that determine access to credit, vary and their effect on the opportunities the Internet presents. The cases also examine the significance of industry-level institutions, such as local licensing requirements, for shaping the opportunities e-commerce represents to small firms within an industry globally.

To further explore the implications of institutions for e-commerce and small firms, the third case examines a program designed to facilitate the entry of SMEs into the global economy. The program is the UNCTAD Trade Point project, whose goal is to provide information through both an Internet-based matching program and a network of local offices that act as trade facilitators. The institutions of both the matching program and the network of offices are examined and conclusions are drawn about their implications for e-commerce use by SMEs.

The evidence from the three cases is subsequently used to make a comparative assessment of the eight fundamental elements. From this assessment the most important of these fundamental elements for electronic commerce are determined. Having identified these significant fundamental elements, policy and program recommendations are made.

As with all research, there are a variety of factors that will influence the potential of electronic commerce that are beyond the scope of this investigation. Although recognized as an important factor in the formation, performance and change of institutions this research does not explicitly consider political factors. Furthermore, in examining how institutions shape the potential for e-commerce in developing countries this research does not accomplish the important task of identifying the benefits or harms e-commerce brings to these regions. Finally, although one of the case studies examines a program of a multinational development organization, the research does not seek to identify the overall role of multinational
organizations in the diffusion of e-commerce. Despite the limited scope of the research presented here and its inability to cover these issues, the findings of this research should help inform further research in these areas.

1.3.2 Expected Results

This research has a variety of theoretical and practical implications. First it relies on a diverse body of literature. The fundamental elements, whose relationships with e-commerce are examined, include concepts from industrial organization, transaction cost economics, institutional economics, neo-institutional economics, and economic sociology. These theoretical perspectives cover a range of levels of analysis, as does this investigation. The aim of this cross-disciplinary and multi-level research is to build bridges between these different schools of thought. Due to the limited level of depth that accompanies such a broad investigation, the research is considered primarily exploratory, although as a case study for the application of theory it contributes to an understanding of the scope and limitations of theory.

This research also represents an advance in institutional analysis as this theoretical framework is rarely used in studies of electronic commerce. This research requires an adjustment from traditional institutional analyses performed in other subject areas, which typically view the state as the authority on issues such as defining and enforcing property rights. On the Internet, although international legal frameworks formally apply, features of a website that shape the commercial interaction are often the terms and conditions of use, or institutions, that are created by the content provider. For e-commerce research this investigation adds a new dimension, that being an institutional perspective, to a genre of studies that currently assesses the potential benefits of e-commerce from technical, economic or legal perspectives. Furthermore, the inclusion of institutional issues is expected to produce more realistic assessments of the potential for e-commerce.

The research also examines industry level institutional effects and compares them with those at the state and firm levels. Often institutional analyses examine several countries but are limited to one industry. This prevents the comparison of state versus industry level institutional effects. In this research the first two cases are used to carry out such an analysis, and the results highlight the need for further research into industry culture and its impact on a variety of firm behaviors related to e-commerce. Identifying institutional effects that span industries may draw attention to areas that would enjoy a wider base of support for change. Thus policy recommendations that may have been focused on one industry can potentially be generalized.

The broader aspects of the research, those dealing with the differences between developed and developing countries and how these differences will shape the potential for e-commerce will be of interest to policy makers at the national level as well as those in the development community. This research provides targeted recommendations for policy makers that are expected to facilitate the adoption of e-commerce.

Finally, the research is expected to have repercussions for managers in small firms trying to assess the potential benefits for e-commerce for their enterprise. The research will make clear the implications of institutions at the firm, industry and national level for the use of e-commerce by firms. Also, entrepreneurs seeking to establish electronic markets in specific
industries will be informed of the consequences of institutions for the operation of such markets.

1.3.3 Structure

This thesis is organized as follows. The first section, titled *Institutions, E-commerce and Developing Countries*, contains chapters 2 and 3. Chapter 2 introduces concepts relevant to the investigation. Issues such as the theoretical role of institutions in economic development and the state of the art of institutional analyses are presented. This is supplemented by a review of e-commerce literature, which includes expected effects of e-commerce on SMEs and in the services industries. In Chapter 3 the theoretical framework, in the form of the eight key institutional elements, is presented. Also included is an overview of the methods and plan of analysis used in the remainder of the investigation.

Section II, *Service Sector SMEs and E-commerce*, includes chapters 4 through 6. Chapter 4 presents the Dar es Salaam, Tanzania case, while Chapter 5 portrays its U.S. counterpart. Chapter 6 is a synthesis of the analyses of the individual cases, as well as an inter-country analysis. Section III, *E-commerce and Developing Country SMEs*, includes chapters 7 through 9. Chapter 7 presents the Trade Point case. Chapter 8 contains the general analysis, which synthesizes the results from the three cases and relates them to the fundamental elements, which in turn allows for conclusions concerning theory to be made. Finally, in Chapter 9 the conclusions of the research are presented. Both practical and theoretical results are explained as well as a discussion of the limitations of the research and recommendations for future research.
Section I

Institutions, E-commerce and Developing Countries
Chapter 2:

Institutions & E-commerce

The relationship between institutions and e-commerce is a multifaceted one. While the concept of institutions is quite old, having entered economic theory in the late 1800's, electronic commerce is a relatively new phenomenon. Due to this newness, the knowledge being developed in this field is fairly inward-looking. A plethora of issues concerning fundamentals such as the development of electronic markets and the implementation of e-commerce in new and existing firms, are yet to be resolved. Institutions become a significant part of e-commerce research when the legal and regulatory environments are considered. This research, however, is mainly concerned with ways to establish a supportive environment, and has yet to consider the actual impact of these factors on e-commerce adoption by small firms. Another under-researched area of e-commerce concerns the issues faced by developing country firms in their efforts to adopt e-commerce. The research presented here will help fill these gaps.

To incorporate the established knowledge of institutions and e-commerce into this work the literature in these two areas was reviewed. A synthesis of this literature is presented here. We begin with institutional economics, which is a broad field of research. It has developed over the years into an area that includes New Institutional Economics (NIE). The greatest overlap in the institutional and e-commerce bodies of literature exists between e-commerce and NIE, specifically a sub-field of NIE known as Transaction Cost Economics (TCE). In this research we aim to take a broader view of NIE and e-commerce by focusing on institutions that are not central to TCE analyses, and by exploring the ways in which they shape the potential for e-commerce.

The chapter begins with a discussion of institutions, followed by a discussion of the origins of NIE. We also discuss the role of TCE within NIE. Subsequently, we consider the role of institutions in development, as well as their implications for firm strategies and, hence, their adoption of e-commerce. The section finishes with an examination of the issues concerned with institutional change.

The second section in the chapter reviews the literature on electronic commerce, focusing first on the expected economic and firm level impacts of e-commerce. The section concludes with a specific focus on the implications of e-commerce for small service sector firms and considers the special characteristics of business-to-business electronic commerce.

2.1 Institutions & Institutional Analysis

2.1.1 Institutions

Definitions of institutions vary in terms of the scope of the research in which they are situated. Williamson (1996), whose concern is with inter and intra-organizational structures, examines institutions as the agreed upon rules or government mechanisms that shape the terms of
exchange. Scott (1994, p.68), an organizational theorist, sees them as "symbolic and behavioral systems containing representational, constitutive, and normative rules together with regulatory mechanisms that define a common meaning system and give rise to distinctive actors and action routines." North (1990) in considering both societal and organizational implications uses a simplified approach where institutions are considered simply the humanly derived constraints that shape human interaction. They have been compared to the rules of the game in sports, particularly in that there are written codes of conduct as well as unwritten norms for behavior. This latter, and somewhat more diffuse conceptualization, is the one adopted here. By making human interaction more stable and predictable, institutions reduce uncertainty. Institutional economics proposes that a market and its participants are all operating in a particular context, including culture, geographical location, and institutions. In this research, relevant institutions are confined to those involving economic exchange, as opposed to political or social exchange. Entities such as markets and intermediaries, and procedures of economic organizations, can all be analyzed in terms of their institutional elements.

One of the most ubiquitous institutions is a market (McCarty, 2001). Markets are institutions with their own rules of exchange, yet they also exist within a particular institutional environment. The essential function of a market is as a mechanism for allocating goods in an economy. Buyers and sellers come together for exchange. The proper functioning of the market goes beyond the abilities of these individual traders to strike a bargain. There are institutions that create the conditions of the market, such as the variety of products in the market, who may enter and exit, and how prices will be established. These institutions are both formal and informal and the informal institutions are often the strongest at shaping behavior (McCarty, 2001; Neale, 1994).

Institutions create expectations so that day to day economic exchanges can be made easily. Expectations reduce uncertainty about how an economic exchange will proceed. An example of an institution of traditional commerce in western countries is that of posted prices in grocery stores. The institution reduces uncertainty about how the exchange will occur. Consumers know that haggling over prices is outside the norm. Typically, consumers choose items, with prices posted on the shelf or directly on the item, proceed to the checkout counter and pay the posted price. Both grocers and shoppers are aware of the institution and the economic exchange proceeds smoothly.

In this example, the institution of posted prices is a 'rule' that transcends the boundary of each grocery or organization. This is not to imply that institutions cannot be confined to a particular organization. Before discussing the differences between organizations and institutions it is first necessary to define an organization. For this research, an organization will be defined as groups of individuals who share a common purpose. The output of organizations ranges from commodities (firms) and statutes (legislatures) to religious services (churches), and thus important distinctions can be made between the players and the rules (institutions) by which they play (Egbertsson, 1996). The relationship between institutions and organizations is that organizations are formed as a function of the general institutional environment within society and then organizations can act to change the institutions (North,

3 In this research, the use of the word 'constraint' in the definition of institutions does not mean to imply a solely negative interpretation. In this sense a constraint could be either enabling or limiting. This dual role of institutions is discussed in greater detail by (Aoki 2000).
Thus, the institutional environment will affect the types of economic organizations, both in traditional and electronic commerce, that can be formed.

The distinction between organizations and institutions is muddied when an organization 'embodies' its internal institutions, particularly if these internal institutions are formalized. The New York Stock Exchange (NYSE) is an example of an organization that is often regarded as an institution. The institutional environment of the United States, particularly that provided by the Securities and Exchange Commission (SEC), allows for the successful existence of the NYSE organization. The NYSE, as an organization, has its own internal institutions such as the ringing of the bell to signal the end of the trading day and practices to guard against insider trading. Therefore, put simply, the institutions are the rules and the organization is the people who may, in turn, influence the rules.

Common to most considerations of institutions is the idea that they exist at various levels according to their relevance to different groups of people. In economic terms, the levels have been conceptualized as macro and micro, with macro level institutions affecting the performance of national level economies and micro level institutions affecting the behavior of individuals or the performance of specific industries (Bates, 1995). Here we separate institutions into three categories with the addition of a middle or meso level category. Thus, institutions that affect the performance of industrial sectors can be separated from those that influence individual behavior. Reimers (1996) actually sees what are referred to hear as "micro level institutions" as routines. From his perspective routines become the institutions only if accepted at the industry level. Institutional research often seeks to find the causes of higher level aggregate phenomena by studying lower level of units of analysis. Hence, organizational change is explained by focusing on transactions, and industry level change is explained by focusing on firms (Vromen, 1995). This conceptualization of institutions at various levels and their relationship to organizations is summarized by Scott (1994, p.70) who states "Institutions operate at a variety of levels, and their elements can be embodied in and carried by cultures, regimes and organizations."

In classifying institutions it is also useful to consider both their formal and informal forms (North, 1990). Formal institutions are typically codified, while knowledge about informal institutions is culturally transmitted as part of the socialization process. The different levels and types of institutions interact with one another. For example, the micro level institution of a specific contract relies on the existence of the macro level institution of contract law. This interaction, and the dynamic nature of the changes in institutions and how that interaction is affected by these changes is highlighted by Engerman, Haber et al. (2000, p.109). Another perspective is offered by Keefer and Shirley (2000) who classifies formal and informal institutions as public and private. Formal or public institutions are safeguarded by the state whereas informal institutions are safe guarded by private entities. In this research we rely on the former conceptualization, as the public/private dichotomy muddies the conceptualization when codified institutions created and protected by private parties, particularly private organizations, are considered.

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4 http://www.nyse.com/public/invpot/5a/5aix.htm
5 This conceptualization of macro, meso, and micro institutions was adapted from Humphrey & Schmitz (1998) who use this framework to discuss sanctions. A similar structure for institutional research is also proposed by Scott (1994) (Scott 1994). He also emphasizes, as does this research, that although levels as separate entities are convenient tools for organizing institutional research, in reality their boundaries are vague and are highly interdependent. He suggests a metaphor of porous nested boxes (p. 97).
Although the positive role of institutions is to reduce uncertainty and provide incentives for fair and efficient exchange, this is not always the case. Even in the most productive economies, the signals produced by the institutional framework are mixed. In the U.S., for example, there are institutions that reward restrictions on output, make-work, and crime, side by side with institutions that reward productive economic activity (North, 1990, p.78).

2.1.2 Economic Theories of Institutions

2.1.2.1 New Institutional Economics

The incorporation of institutions into economic thought began around the turn of the last century with works by Thorstein Veblen and John R. Commons, among others. These economists raised questions concerning differences between institutional and technological ways of thinking, as well as law, property rights, organizations, and the institutions that arise from resolving conflict among these factors (Rutherford, 1996). This perspective became one of the dominant schools of economic thought in the interwar period in the U.S., but at the end of World War II, its dominance waned and was replaced by a synthesis of Keynesian and neo-classical theories (Rutherford, 2000).

In the last two decades institutionalism has experienced a reinvigoration. The awarding of the Nobel Prize for Economics to two prominent institutional theorists, Ronald Coase in 1991 and Douglass North in 1993, provides legitimacy for this tradition in its modern form both within and beyond the economics profession. This new stream of institutionalist thought shares both similarities and differences with the original institutionalism and to account for the differences has been labeled New Institutional Economics (NIE) (Harriss, Hunter, & Lewis, 1995).

NIE is an attempt to integrate a theory of institutions into economics while maintaining some of the assumptions of neo-classical economics. It maintains the assumptions of scarcity and competition, while relaxing the assumption of rationality. In neo-classical economics, 'economic man' is considered a rational maximizer who adjusts his or her behavior to changes in circumstances and opportunities in such a way as to maximize his net benefits. In this line of thought the social norms and institutions shaping these conditions and opportunities are typically pushed so far into the background as to render them meaningless for analyses of economic behavior. Institutional economics brings norms and institutions to the forefront of economic analysis.

One of the key differences between the old and new institutional economics is the extent to which each accepts the neo-classical tenants and, in particular, the principle of the rational maximizer. Old institutional economics was more inclined to reject the rational maximizer notion, whereas in NIE there is some diversity of acceptance. This diversity of acceptance creates controversy in the use of the term NIE, and in the range of theories or propositions that can be labeled as such (Vromer, 1995). Within NIE game theorists are seen as having a fairly high level of acceptance of the rational maximizer principle (Rutherford, 1996). Transaction Cost Economics also maintains a fairly high level of acceptance, particularly as seen in its

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6 NIE is a fractured body of research and hence varies in its acceptance of the neo-classical foundations. For an in-depth discussion of these issues, and particularly those differentiating new and old institutional economics, see Rutherford (1996).
behavioral assumption of agents acting with ‘self-interest seeking with guile,’ as known as opportunism (Williamson, 1985). North’s (1990) branch of NIE adheres less stringently to this concept.

By relaxing the assumption of rationality, while not completely disregarding it, new institutional economics integrates contextual factors that affect the ways in which people process information. This allows the theory to include inefficiencies in markets and institutions that present a more realistic picture of the context in which exchange occurs. The consideration of information and contextual factors also raises the issue of the costs incurred in the process of exchange. Thus, a major aspect of NIE research is the consideration of the implications of transaction costs. Institutions are seen as having both direct and indirect effects on the transaction costs for various investments (Eggeertsson, 1996). Although transactions costs are considered throughout the field of NIE, there is one stream that places greater emphasis on the topic and is appropriately referred to as Transaction Cost Economics (TCE).

TCE represents a stream of NIE that is more concerned with maintaining ties to neo-classical economics and its rational maximizer principle. Similar to the neo-classical emphasis on the individual, TCE’s unit of analysis is the transaction. Although context is a concept integral to TCE, it is less important than in other areas of NIE such as those dealing with property rights and institutional change. The research presented here considers both aspects of NIE, as is discussed further in Chapter 3, but relies more heavily on those aspects of NIE concerned with the context of exchange, with institutions being the dominant force in that context. Having said this, an understanding of transaction cost theory is important to this investigation, particularly because it is presently this area that has built the most bridges to the topic of electronic commerce (see Mariotti et al, 2000; Daniel & Klimis, 1999). For this reason we turn now to review some of the fundamental elements of TCE.

2.1.2.2 Transaction Costs and TCE

It is difficult to discuss the benefits of the Internet without mentioning transaction costs. The Internet is expected to reduce a wide variety of costs (search, negotiation, communication, etc.) that are all part of the costs of a transaction, which have been defined as follows:

"The ex ante costs of drafting, negotiating, and safeguarding an agreement and, more especially, the ex post costs of maladaptation and adjustment that arise when contract execution is misaligned as a result of gaps, errors, omissions, and unanticipated disturbances; the costs of running the economic system.” (Williamson, 1996, p. 379)

According to TCE, firms or the organization of an economy are described by their governance structures. Governance structures are seen on a continuum with markets at one end, hybrid forms of organization such as joint ventures in the middle, and hierarchical organizations at the opposite end⁷. The theory posits that firms choose the appropriate governance structure based on economizing of transaction and production costs (Williamson, 1985).

Predictions of the type of governance structure a firm will choose are made by considering the dimensions of a transaction. The key dimensions are: frequency, asset specificity, and

⁷ This conceptualization of transactions occurring in markets, or through the price mechanism, or within firms is based on the work of Coase (1937) (Coase 1937).
uncertainty (Williamson, 1981). Frequency reflects whether the transaction involves a one-
time transfer of goods or whether multiple transfers will occur. Its implications can be seen in
the need to write separate contracts for each transaction. Asset specificity reflects the level of
mutual dependence of the two parties required for a transaction. Asset specificity exists in
several forms three of which are: physical asset specificity, site specificity, and human asset
specificity (Williamson, 1981). Physical and site specificity refer to the investment in physical
assets and in the requirement to be collocated that are specific to a particular transaction.
Human asset specificity has typically been conceptualized as the 'learning by doing' that
occurs when two firms work together and employees from each firm learn the processes and
procedures of the other firm (Shelanski & Klein, 1995). Uncertainty refers to exposure to
unforeseen events such as exchange rate fluctuations and other occurrences beyond the control
of either party to the exchange.

These transaction characteristics provide a framework for conceptualizing the costs of a
transaction. The overall transaction cost is determined through a simultaneous consideration
of these characteristics and the total cost is used to compare the cost of one form of
governance to another. Calculations of actual transaction costs are not made and
considerations of such are purely comparative in nature. For example, in a transaction
characterized by low frequency, low asset specificity, and low uncertainty, all things being
equal, it would be more economical to transfer the good through a market form of governance
than through a hierarchical firm mode.

Transaction Cost Economics has been applied to wide range of issues, one of which is the use
of the Internet in commercial transactions. Analyses of the Internet's impact on firm and
market structure are largely from a TCE perspective. One of the fundamental advantages of
the Internet is an expected reduction in transaction costs. But if the institutional environment
also plays a role in determining transaction costs it can be expected that reductions brought
about by the Internet will be mediated by the institutional environment.

2.1.2.3 Limitations of NIE

As NIE develops, part of this growth process is a delineation of the realm of its subject matter.
No one economic theory can provide answers to all economic problems and identifying where
NIE can make a significant contribution and where its application is less appropriate is an
important part of its development.

As it relates to economic development, NIE has given rise to the following criticisms. First, it
is accused of placing too much emphasis on the role of institutions in economic development,
and correspondingly does not adequately explain why institutions are spawned and evolve
along certain paths. The result is a lack of attention paid to other important development
factors such as resource endowments, market size (Demsetz, 2000), population density, and
types of agriculture (Engerman, Haber et al., 2000). It is argued by these authors that these
initial conditions shape the form of institutions that develop, which in turn become the initial
conditions in the process of institutional development, which in turn influence economic

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8 The lack of quantification in TCE has been identified as one of the problems facing NIE in general (see Toye,
1995, p. 65). Empirical studies in TCE tend to use organizational form as the dependent variable and use survey
data to measure the independent variables of asset specificity, frequency, and uncertainty as an estimation of
transaction costs. Measurements of asset specificity and uncertainty tend to be industry specific, posing problems
for a unified approach toward empirical testing of the theory (Shelanski and Klein 1995).
development. Furthermore, critics cite institutional economists’ emphasis on the importance of informal institutional structures in development as a force driving more micro level development projects which cannot overcome the broader, macro-level issues that need to be addressed to stimulate long term widespread development (Keefer & Shirley, 2000).

As a theory the breadth of NIE makes it difficult to succinctly define its boundaries and hence its limitations. The TCE branch within NIE has made significant contributions to our understanding of organizational structures and their effects (Shelanski & Klein, 1995). However, the assumptions upon which these analyses are based, particularly the level of importance attributed to opportunism, defined as "self-interest seeking with guile," are criticized as having created a distorted view of human intentions (Granovetter, 1985) and subsequently a distorted view of optimal organizational structures (Ghoshal & Insead, 1996; Moschandreas, 1997). Organizations become merely a mechanism for economizing on transaction and production costs, which is a narrow conceptualization of the wide range of advantages organizations present in facilitating economic activity. Furthermore, it is argued, the implications of using the simplifying assumptions used in positive theories of neo-classical economics and applying them to a normative theory such as TCE creates a tension between the goals of the theory in terms of explaining aggregate behavior and creating realistic recommendations for managers, given that the simplifying assumptions do not accurately reflect the wide variety of behavior with which managers are confronted (Ghoshal & Insead, 1996).

NIE has also been criticized for attributing too much power to institutions and down playing the political and social aspects of institutions and institutional development. This idea is reflected in Beck’s (2000) work which describes modern lives as being completely organized by institutions, which have replaced traditions. To more clearly identify the role of politics in institutional development and vice versa, as well as explicating political versus economic institutions (Boyer & Hollingsworth, 1997; Demsetz, 2000), calls for greater cooperation between NIE scholars and political economy have been made (Frey, 1985). Furthermore, the need for greater attention to the role of social institutions such as interpersonal networks and individual and collective action in shaping institutions has been raised (Granovetter, 1985).

Within the accepted bounds of the theory the relationships between various elements are criticized for remaining as yet unclear. Keefer and Shirley (2000) observes that NIE has shed little light on the circumstances where formal and informal institutions can substitute for one another and how they can be developed. North (2000) himself calls for further institutional research to be taken up in three areas: theory, empirical studies, and economic change. Certainly it can be deduced from the criticisms that greater attention to operationalization of institutions and their effects will help first develop the theory, requiring greater specificity in theoretical discussions. Attention paid to operationalization will also help reduce some of the hurdles to empirical studies.

2.1.3 Institutions and Economic Under-development

The focus of this investigation is the consequences of institutions for the benefits developing countries derive from e-commerce and, as such, one may wonder why the relevant economic theory is not development economics or growth economics. Given the findings of
development practitioners discussed in the first chapter, this investigation requires an economic theory that considers institutions as playing a significant role in development. Both growth economics, which is generally concerned with mechanisms of growth in industrialized economies, and development economics, which is concerned with the initiation and acceleration of growth in less developed economies, are based on neo-classical economic theory (see Ruttan, 1998), which as discussed above do not traditionally assign adequate attention to the role of institutions. There are, however, new threads in development economics emerging in which institutions take on a greater role.

Furthermore, as observed by Ruttan (1998, p.10) the effects of technological and institutional change are most easily observed at the micro level. "The real sources of growth that result from efficiency gains, technical change, institutional reform and design can only be observed and understood by investigations conducted at the household, firm, and sector level." Further support for the need for micro level research and the role of institutions in economic development is given by (Veloso & Soto, 2001). Development and growth economics are more centrally concerned with observations at the aggregate level.

The relations between neo-classical and development economics are summarized in the following:

"Development economists have typically treated the state as either exogenous or as a benign actor in the development process. Neo-classical economists have implicitly assumed that institutions (economic as well as political) do not matter, and that the static analysis embodied in allocative-efficiency models should be the guide for policy...in fact the state can never be treated as an exogenous actor in development policy, and getting the prices right only has the desired consequences when agents already have in place a set of property rights and enforcement that will then produce the competitive market conditions." (North, 1995, p. 22).

New Institutional Economics provides a theoretical basis for the middle ground in development: it bridges the gap between development that is pro-market and that which is pro-state-intervention. Instead it emphasizes community action and civic engagement (Bates, 1995). In moderating the market and state-oriented approaches, NIE recognizes market functions that are carried out by non-market institutions, such as families and communal organizations. Recognizing these structures as legitimate and sometimes the most efficient means of solving market problems broadens the scope of potential solutions. It also sometimes helps to explain why formal institutions do not work, particularly in cases where they are competing with stronger informal institutions. NIE also encompasses both a micro and macro level approach, incorporating the incentives institutions create for individuals, as well as economies as a whole, although there is a tension between development programs that focus on micro versus macro-oriented institutional solutions as noted by Keefer and Shirley (2000).

This debate in institutional over the role of the state was being simultaneously played out the area of development studies. In development studies the debate centered on concerns of globalization and the relevance of the state for all forms of development, political and social, as well as economic (Schuurman, 2000). In addition to concerns of globalization, increased attention on civil society also called into question the role of the state in economic development. Furthermore, in the field of comparative politics, which is also concerned with political and economic development in developing countries, the role of the state has been changing. In the 70s and 80s the rise of modernization theories put greater emphasis on societal changes rather than the state. This has given rise to a neo-statist perspective, in which
the centrality of the state to development is once again considered. Perhaps lying somewhere between the modernization and neo-statist perspectives is that of the communitarians, who see community as the appropriate unit of analysis (Chowdhury, 1999).

Given these differences between classic development economics, development studies, and NIE we now describe an institutional perspective on the process of economic development. Examining this process will make clear the relationship between institutions and development, as well as provide a foundation for an examination of the role of the Internet and e-commerce in that process.

2.1.3.1 Institutional Explanations of Economic Under-development

From the perspective of institutional economics development occurs as economies progress through various stages (North, 1990). The first phase is personalized exchange, which involves small-scale production and local trade. As the scope and size of trade increases the exchange becomes less personal. In this second type of exchange parties are constrained by kinship ties, exchanging hostages, or merchant codes of conduct, which substitute for the loss of certainty that comes from interpersonal relations. The final form of exchange is impersonal exchange with third party enforcement. In this mode the uncertainty of exchange is mitigated by a third party, the state, and is supported by a structure of informal norms and codes of conduct. Institutional research on economic under-development addresses questions concerned with the reasons and mechanisms by which economies do or do not advance through these three stages.

Market failure, and more widely under-development, can be partly explained by a lack of formation of institutions. Political instability makes the establishment of formal institutions required for third party enforcement difficult. Although all economies have informal institutions, they may not be strong enough to allow for impersonalized exchange. In addition to the affliction of political instability, the existing institutional framework may hamper the creation of effective institutions. Institutional transplantation from developed to developing countries faces great challenges for one simple reason: institutional history matters. Similar to path dependence of technologies, institutions are difficult to change once they are started down a particular path. This is not to say that they will not change, only that it is difficult and usually is an evolutionary development. Of course the existence of institutions is just the first step. Differences in enforcement can also be used to explain differences in economic development. In general, the emphasis North places on the role of institutions in market development cannot be overstated. "I wish to assert a much more fundamental role for institutions in societies; they are the underlying determinant of the long-run performance of economies." (North, 1990, p.107)

Others echo North's emphasis on the relationship between institutional development and economic development. Market failure, or failure of the institutional design of markets, is one of the leading institutional explanations for under-development. As Stiglitz (1989) observed

"What is at stake is more than just differences in endowments of factors, but basic aspects of the organization of the economy, including the functioning of markets...the ways by which developed countries ameliorate these market failures through nonmarket institutions (such as large firms) may be less effective in LDCs." (p.201)
Further emphasis on the role of market development is made by Murshid. Murshid (1997) sees under-development as partially caused by a lack of expansion of simultaneous markets. He argues that the interaction of a properly functioning financial market coincidentally with that of a commodity market is an important step in transforming traditional markets. The formation of a viable financial market relies on access to reliable, verifiable and readily available information about potential clients that allows an efficient assessment of credit risk. The availability of information relies to some extent on the formalization of the economy. Formalization of an economy occurs through processes such as employment guarantees, bank accounts, fixed addresses, and other written records. In traditional societies this information exists, but it is not formalized and is difficult to obtain for those outside of the community. The formalization Murshid refers to is really an outcome of a functioning institutions. Rights and rules, such as employment guarantees and the requirement of a fixed address, are typically 'rules of the game' determined by institutions.

Employment guarantees can also be seen as a reflection of the property rights structure in an economy. The lack of clearly delineated and protected property rights has also been put forth as an explanation of under development (Eggertsson, 1990; Norton, 1998). Certainly, impersonalized exchange becomes more difficult where property rights, typically embodied in contracts, are not enforced. With clearly defined property rights, complex contracting is possible and transaction costs and uncertainty are reduced. Thus, wealth-maximizing behavior is encouraged and a country can be comparatively prosperous.

Institutional explanations of market failures raise questions. Why do some societies develop these institutions while others do not? North would say it is a matter of history and institutional path dependency. But the question can be addressed to this answer as well: Why do some countries start down a path of institutional development that creates the proper incentives for well functioning markets while others do not? Answers to these questions tend to be concerned with societal characteristics, which are sometimes seen as a reflection of culture.

To address these questions we next turn to explanations of economic under-development that rely on institutional explanations but also incorporate societal characteristics.

2.1.3.2 Economic Under-Development and Societal Characteristics

"Arrow (1990, p. 139) has made the sensible observation that an economic system based on specialization and extensive contracting will not function properly unless the trading parties are imbued with commercial morality. Individuals who cheat whenever they expect to receive net material gains will always find circumstances where it pays to cheat: the presence of formal processes of enforcement (the police and the courts) and informal strategic considerations (such as reputation and repeated dealings) cannot by themselves account for order." (Eggertsson, 1996, p.13)

Although economists do not typically make societal characteristics a central part of their investigations, as the above quote demonstrates that do recognize their importance to the functioning of markets. In the following paragraphs we examine theories that integrate societal characteristics and institutions to provide an explanation for differences in national levels of economic development.9

9 This is by no means meant to serve as a review of the extensive contribution of sociologists to institutional economics (for such a review see Brinton & Nee, 1998). Here we wish merely
One theory that suggests an important role for a societal characteristic in economic development is posited by Francis Fukuyama. The societal characteristic is 'spontaneous sociability', which as a type of social capital where people are able to form spontaneous communities for achieving common goals. Spontaneous sociability is required for trust. He specifies three paths to attaining this sociability. The first path involves relationships based on family and kinship. The second path is through relationships established outside of the family such as those found in schools, clubs, and professional organizations. The last path to sociability is through the state. Each path has an associated economic organization such as family businesses, professionally managed corporations, and state-owned or sponsored enterprises.

Based on comparative endowments of spontaneous sociability, Fukuyama characterizes societies as high or low trust. The U.S., Japan, and Germany are seen as high trust cultures where large numbers of intermediate organizations exist and the economic structure includes many family-owned firms, as well as large privately managed corporations. The U.S., although comparatively a high trust country, is seen as losing its sociability as Americans become increasingly distrustful of one another. China, on the other hand, is used as an example of a low trust culture where the bonds of kinship discourage trust among members of the broader community. Small family-owned firms who are limited in size and typically survive only two to three generations characterize the economy. The short life span of the family owned businesses results from a cultural tradition where inheritance is distributed equally among all sons, rather than choosing the most capable manager. Thus, cultural norms combined with low levels of spontaneous sociability can be considered two factors in explaining China’s economic structure.

A similar explanation of under-development based on societal characteristics is that of Platteau (1994). In examining the transition from personalized to impersonalized exchange Platteau concludes this transition requires the development of institutions such as property rights and contract laws, as well as the development of a superior moral ethic. It is this last requirement, of a superior moral ethic, that differentiates Platteau’s view from others. In Platteau’s view, impersonal markets have advanced institutions and higher morality. Traditional markets can respond to increased demand only to a point, and once that point is reached the institutional and moral dilemma must be solved. This concept of generalized morality is seen as the solution to long distance trade in which participants are no longer constrained to the norms and sanctions of their community. Platteau believes that some societies are predisposed to generalized morality, which allows for different levels of trust. The source of this morality (and hence trust) is rooted in history, religion, and culture (Platteau, 1994).

A third conceptualization of economic development that includes societal characteristics is offered by Humphrey and Schmitz (1998). These authors explain underdevelopment through a combination of societal characteristics and institutional factors, focusing on the relationship between sanctions and trust, where sanctions explain the existence of trust. They extrapolate, examining different types of trust, and use these as an explanation for economic development.

to introduce plausible explanations that can help explain those observations that appear beyond institutional theory.
In summary, they see trust and sanctions as additive, that sanctions allow the development of trust and then limit the risks involved with trust. Furthermore, they suggest there are two types of trust: minimal and extended. They differentiate themselves from Platteau’s perspective by pointing out that Platteau is concerned only with the minimal level of trust required for efficient markets. Extended trust, which is not addressed by Platteau, is the basis for greater inter-firm and sectoral cooperation.

This last explanation of under-development, one that includes institutional foundations as a basis for observed societal characteristics, is essentially the perspective adopted in this research. This research will explore the institutions, formal and informal, for both electronic and traditional commerce. It will also examine social characteristics, particularly the influence of networks and trusting behaviors. In the next section we place this investigation in broader scope of institutional theory by reviewing different types of institutional analyses.

2.1.4 Institutional Analysis

To understand the role institutions play in shaping the potential for e-commerce there are two key relationships. First is the role institutions play in shaping firm behavior. We are specifically interested in firm behavior related to the adoption of new processes and technologies, such as e-commerce. The second key relationship is that between existing institutions and new institutions, a relationship that is critical for institutional change. A clear understanding of the issues surrounding institutional change will be needed when considering the conclusions of this research. We begin by examining the role institutions play in firm behavior, and consider the process of institutional change in the following section.

Institutions shape firm behavior in a myriad of ways. To demonstrate some of the effects that have been documented, we frame the discussion through a categorization of case studies that use institutional analysis to explain economic behavior. To classify institutional case studies a wide variety of potential categories could be used, including the dominant theoretical influence or the centrality of law or politics. At the risk of over-simplification, here we have classified the genres based on timeframe of the research and level of analysis.

This classification creates three genres of analysis: historical analysis at the national and/or industry level, contemporary analysis at the national and/or industry level, and contemporary analysis at the firm and/or industry level. Examples of historical analysis, which usually rely on historical accounts, historical data, and legal analysis, include Davis and North’s (1971) book *Institutional Change and American Economic Growth*, and Libecap’s (1996) analysis of the development of western mineral rights in the U.S. The second genre, contemporary

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10 Case studies considered here are those that have institutions at the forefront of the research, representing only a limited part of the body of NIE literature.

11 Scott (1994) (Scott 1994) proposes a typology of institutional research that includes theoretical perspective, objective of inquiry, and level of unit of analysis. The theoretical perspective is either based on variance theories, in which relations between independent (precursor) and dependent variables are examined, or on process theories, in which the time ordering of events is considered critical for explaining the occurrence of the dependent variable. The objective of the inquiry can vary among questions concerning why institutions develop or their role in explaining differences in organizational form. The unit of analysis is at the intraorganizational (micro), organizational (meso) or societal (macro) levels. He then creates two tables, each with a Y axis indicating whether institutionalization is the independent or dependent variable, and the X access indicating one of the three levels. One table is for variance theory examples, and the second is for process theory examples. See pages 84 and 91 respectively. His typology is more inclusive, yet too broad to be adopted in this context.
analysis, which typically relies on secondary data supplemented with interviews, is reflected in Higgs' (1996) analysis of the Washington state salmon industry and Solomon's (1999) analysis of the potential contribution of NIE to emissions trading.

The third genre of institutional analysis includes studies concerned with present day economic behavior at the micro and meso level. These studies by and large rely heavily on first hand accounts. Studies in this genre include Agrawal's (1992) study of the role of informal institutions in shaping the use of natural resources in Indian villages, Ellickson's (1998) account of the role informal institutions play in present day dispute resolution among cattle ranchers in Shasta County, California, and Gow, Streeter, and Swinnen's (2000) study of contract enforcement in a Slovakian sugar processor, and Stein and Edwards' (1997) analysis of a UK coastal fishery.

Each genre of institutional analysis contributes uniquely to our understanding of the relationship between institutions and firm behavior. The historical analyses provide a broad perspective demonstrating the effects of institutions over long time periods. They describe the interdependent relationship between firm behavior and institutional change. Firms shape the institutional environment and in turn the institutional environment creates economic incentives for firms. In addition to describing firm behavior concerning legal and political activities, these studies also demonstrate how the institutional environment can affect production through programs that establish economic incentives and disincentives such as subsidies, quotas, and tariffs. Although not typically part of the analysis at this level, it can be presumed that these circumstances in turn create incentives for technology and process choices in firms.

More direct evidence of the impact of institutions on firm behavior is provided by studies of the second and third genre, which are typically less broad. Examples of the studies from the second genre that demonstrate the relationship between institutions and technology adoption include a study by Higgs (1996) that demonstrates how institutions can impose a technology on an entire industry (see Higgs, 1996, Legally Induced Technical Regress in the Washington Salmon Fishery). Dokeniya (1999) and Veloso and Soto (2001) demonstrate institutions provide incentives and disincentives for firm investment that subsequently shape the choice of technologies available to firms and consumers (see Dokeniya, 1999, Reforming the State: Telecom Liberalization in India and Veloso and Soto, 2001, Incentives, Infrastructure and Institutions: Perspectives on Industrialization and Technical Change in Late-Developing Nations). Thus, the technology choices available to individual firms may be a function of specific institutions in their industry or in industries that offer complementary products and services.

The most explicit evidence of the influence of institutions on firm behavior, as opposed to the behavior of an industry, is provided by studies of the third genre. Micro level analyses sacrifice breadth for depth, but provide direct evidence of changes in incentives and the immediate impact they have on technology and process choices made by firms. In Gow, Streeter, and Swinnen's (2000) study of contracting in a Slovakian sugar processor, they demonstrated how self-imposed stringency in contract enforcement with their growers resulted in increased production and technical efficiencies. In Brautigam (1997) study of industrial

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development in Eastern Nigeria, she demonstrates how professional and kinship networks solved the problem of qualified personnel, as well as providing a basis for importing new technologies for auto parts manufacturing. This genre, in addition to providing direct evidence of the impact on firm behavior, also tends to incorporate the effects of both formal and informal institutions.

The genre of institutional analysis in which the research presented here falls is a compromise between the second and third genres. This research provides information concerning the institutions that affect e-commerce at national and industry levels, but also incorporates firms’ views of those institutions and their implications for firm behavior. The research is likely to conclude that changes in institutions would facilitate the adoption of e-commerce in firms. For this reason it is important to have a clear understanding of the requirements and challenges for institutional change.

2.1.5 Institutional Change

"Institutions do change as people’s experiences lead them to believe that there must be a better way to organize some aspect of their lives. Perhaps most frequently it is in response to experience with new technologies, but it also occurs in response to the experience of contacts with other cultures." (Neale, 1994, p. 405).

As the above quote implies, there are a wide variety of circumstances that can lead to institutional change, however in attempting to bring about this change there are several issues to consider. First, history matters in institutional change (Alston, 1996). Institutional change occurs in a context shaped by a variety of forces including culture, religion, norms, etc. Furthermore, history matters because institutional change often has unforeseen consequences. Being cognizant of historical circumstances allows for a more complete and accurate assessment of the potential consequences of institutional change.

Also along these lines, institutional change must be seen as political and that in nearly all cases it creates winners and losers (North, 1990). Institutional change from within is rare and is likely to be incremental and happen slowly. Externally imposed change is likely to be much faster and is typically imposed by the state. Regulation or re-regulation are examples of institutional change that demonstrate the complexity and range of outcomes such action brings.

A third issue for institutional change is the complexity of institutions themselves (Toye, 1995). Problems of complexity typically stem from the organization that embodies the institution. Issues such as personnel who understand the grand scheme of things as well as the propensity of institutions and the organizations that embody them to shift their goals over time. Thus complexity creates challenges to a universal understanding of the role and purpose of the institution, which makes it difficult to change. Furthermore, one must also recognize that change in formal institutions does not guarantee change in associated informal rules (McCarty, 2001).

Recommendations from this study will attempt to take into account these factors when suggesting institutional change. Merely an identification of the winners and losers in institutional change will be a starting point for creating more realistic expectations for the
outcomes. Certainly already many different groups are experiencing changes due to the advent of electronic commerce, and in fact may be already experiencing the costs and benefits of resulting institutional change. In the following section we examine the literature on electronic commerce and create a picture of what these costs and benefits are likely to include.

2.2 Electronic Commerce

As notions of the Internet as we know it today were still brewing, academics were beginning to theorize about the effects of a ubiquitous information and communication network. Hypotheses on electronic markets appeared as early as 1987, four years before commercial activity was permitted on the Internet. From this beginning the academic literature on e-commerce has grown into a vast and dispersed body of knowledge. The critical issues in e-commerce research can be brought the categorized as technical, including theories and algorithms defining processes that will be transformed to code, and non-technical issues, including those of within firms as well as industry and society-wide issues.

In an attempt to identify the most crucial research issues in international e-commerce for firms and government, a study was conducted in cooperation with the 11th Bled Electronic Commerce Conference, held in June 1998. The study found that organizational change, process improvement/modeling, management, costs and benefits of e-commerce investments, and the human dynamics of the medium were their top five concerns. This list reflects the inward-looking nature of many identified electronic commerce issues.

Much of the research addresses the technical requirements for integration or formation of distributed IT systems. Still others focus on the exciting possibilities of the intersection of computing and retailing, including automatic pricing schemes, intelligent agents, and methods for more direct marketing techniques. Similar work is directed at the sectoral level, creating designs for electronic markets in everything from timber to delivery services. On the less technical side, e-commerce raises a myriad of legal issues such as jurisdiction, privacy, and copyright, as well as economic issues such as market structures, and the effect on prices and consumer surplus. There is also a wide range of managerial and organizational issues to consider. E-commerce research in this area includes issues such as the rapid acceleration of market cycles, assessing competition, building an online reputation, and creating and protecting online competitive advantages.

The research undertaken here proposes a more outward-looking or contextual approach by examining the implications of institutions for the potential e-commerce presents. The research will help fill a gap between scholarship on economy and society-wide effects of e-commerce and research concerned with actual implementation by existing firms. Furthermore, the implications e-commerce has for service sector SMEs will be discussed. This discussion will demonstrate how e-commerce is not only a domain for high-tech firms with new business models.

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13 A few outlets dedicated to academic scholarship have emerged. Examples include Electronic Markets and the International Journal of Electronic Commerce. Besides these specialist journals, research on e-commerce is reported in a wide variety of existing journals that have been dealing with the related issues of computer science, information systems, law and management for decades.

14 [http://ecom.fov.uni-mb.si/comframes.nsf/pages/bled99](http://ecom.fov.uni-mb.si/comframes.nsf/pages/bled99); Research Issues in International Electronic Commerce
In the following sections we first examine the literature concerned with defining e-commerce and subsequently define and discuss the meaning of e-commerce in this research. Following that, in the section titled consequences for economies and firms, we present ways in which e-commerce is similar and different to traditional commerce and what its likely impacts on firms and markets will be. Subsequently we present theoretical and practical findings on its economic and organizational impact. In the second part of this section on electronic commerce, the expected effects of e-commerce for a subset of firms — service sector SMEs — are presented. This is followed by a discussion of the unique attributes of business-to-business e-commerce.

2.2.1 Defining E-commerce

Despite the volumes of material written on electronic commerce, a uniform definition is yet to be accepted. This partly due to the fact that taken literally, electronic commerce has already existed for decades. Any commercial activity mediated by an electronic information or communication technology can be labeled as electronic commerce. One organization to adopt such a broad definition is the World Trade Organization (WTO) who define e-commerce as "the production, advertising, sale and distribution of products via telecommunication networks" (WTO, 1998, p.1). From this perspective activities such as telemarketing and television advertising are considered forms of electronic commerce. This notion is not without merit. In many cases issues that will be faced in Internet-based electronic commerce have already been dealt with in these realms.

One reason to search for a formal definition of e-commerce stems from the desire to measure it. To this end the OECD organized a workshop in early 1997 that combined both business and policy-maker perspectives on defining and measuring e-commerce. The workshop, which documented the changes in definitions of electronic commerce that have occurred over just a few years, resulted in the following definition: "business occurring over networks which use non-proprietary protocols that are established through an open standard setting process such as the Internet" (OECD, 1998, p.28). This definition eliminates such established electronic exchange mechanisms as EDI and electronic funds transfer (EFT). They also note that the word 'business' is used broadly and refers to all activity that generates value both internally (e.g. via intranets) and externally for the firm.

We adopt a similar definition of e-commerce here, but for reasons other than measurability. In this research e-commerce is considered the use of the Internet for any stage of commercial activity. The use of email to decide the terms of a contract is thus considered e-commerce. By adopting this definition this research will contribute to an established body of knowledge, particularly those accepting the OECD definition. Furthermore, the definition is appropriate for the study of e-commerce in developing countries and small firms. This definition covers all four types of e-commerce described by Riggins & Rhee (1998) who characterize e-commerce by location of the user (inside or outside the firewall) and whether existing or new relationships are involved. Their conceptualization, like the one proposed here, is Internet technology neutral. It does not specify a certain application, although its specification of inside \ outside firewall does reflect a bias toward more sophisticated users.

Despite attempts to standardize e-commerce definitions differences do exist. In some cases the differences arise due to differing perspectives such as those of researchers versus managers (Riggins & Rhee, 1998). Other notions of e-commerce definitions focus more on stages of
transactions such as information search, agreement and settlement (Lindemann & Runge, 1997). Other definitions delineate a firm's participation in e-commerce based on the percentage of revenues derived from Internet-based activities (Zott, Amit et al., 2000). Delineating firms as participants is more typically a concern of studies involved in B2C e-commerce and studies searching to examine the unique characteristics of "e-commerce firms". These studies are juxtaposed with studies such as the one undertaken here as well as a study by Dutta & Segev (1999) in which they describe "Internet exploitation" by firms. Dutta and Segev's study evaluated Internet use by 120 Fortune 500 firms and found that most firms are stuck in the first stage of exploitation of the Internet: Publishing corporate information. They rarely use the term e-commerce, although the study can be described as such, particularly given the definition here. And although some would find the definition of e-commerce offered here as too broad, others see defining e-commerce in terms of transactions actually carried out on the Internet as too narrow (Anderson, 1998).

By excluding non-Internet based transactions such as EDI and EFT the definition offered here runs the risk of failing to take into account the history, and particularly the institutions, that have been developed around these applications and their implications for electronic commerce. But this is not the intention. By excluding private network-based commercial activity from a definition of e-commerce this is not to say that the lessons learned from these experiences cannot be applied to Internet-based commerce. Indeed Internet based electronic commerce can be seen as existing on a trajectory of increasingly electronically-based transactions (Mansell et al., 2000). Despite its partial foundations in activities such as EDI and EFT we continue to argue for a distinction between private network commercial applications and one that uses the Internet.

Expected differences between Internet-based electronic commerce and EDI can be seen in the context of observed weaknesses of EDI that are described as 1) it usually requires an expensive private network, 2) the parties must have a pre-existing relationship, 3) lack of interactivity (Anderson, 1998) and 4) transactions can take a lot of time (Palmer & Johnston, 1996). The key word here is however expected differences. It is expected that Internet-based electronic commerce will remedy these shortcomings of EDI and hence Internet-based electronic commerce will be a distinct concept. Excluding private network applications from e-commerce studies provides a mechanism for comparing the expected benefits of open network activities with those of closed networks. If in the end much of the Internet-based commerce, labeled here as e-commerce, is transferred to private networks or semi-closed networks, we have a basis for comparison as the labels of these two activities will remain distinct. Some differences between open and closed networks are beginning to be observed. In a study of a General Electric Internet-based bidding system Anderson (1998) found that reductions in bidding time provide procurement staff with the opportunity to approach more vendors. In a closed system bringing these new vendors into the electronic network might be too problematic to make it worthwhile for either the buyer or the supplier.

The strength of the definition offered here is supported by a perspective that views electronic commerce as one end of a continuum that ranges from traditional to electronic commercial realms. Along this continuum, firms go through two parallel processes of adoption. One is concerned with the technology and its usability and the other is concerned with integrating Internet use into business processes. Typically as firms make greater use of the Internet (the process adoption path) their needs in terms of access increase and they move along the technical adoption path. Thus a firm may start by having an Internet connection for email and
as their integration of email into their business processes grows they may move to providing Internet access at the desktop for all employees. Along the process adoption route firms may begin by using email, gradually using the Web for buying products, and finally selling goods and services (Sadowski, Maitland, & van Dongen, 1999).

A pictorial representation of the continuum from traditional to electronic commerce is given in Figure 2.2.2.1.

![Diagram showing continuum from Traditional Commerce to Electronic Commerce](image)

**Figure 2.2.2.1: The Electronic Commerce / Traditional Commerce Continuum**

2.2.2 Consequences for Economies and Firms

Research on the consequences of e-commerce for economies and firms is predominantly theoretical. Hypotheses of effects, business models, and market structure exist but as metrics for the medium are still being developed, and transaction costs, one of the key components of e-commerce 'theories,' are difficult to quantify, empirical studies are difficult to perform. Despite this difficulty empirical studies do exist and their findings are summarized in appropriate areas below. E-commerce research is diversifying in other areas, particularly in the trend of expanding beyond reliance on technical and transaction costs factors to studies that account for a broader range of issues, as is reflected in a recent article in Futures:

"The paper rejects the existence of a deterministic relation between e-commerce technological features and the structure of future electronic markets...The analysis of possible growth paths reveals that public intervention plays a non-negligible role in shaping the business model(s) that eventually emerge, hence the impact of e-commerce on social welfare." (Mariotti & Sgobbi, 2001).

2.2.2.1 Electronic Markets and Firms

Electronic markets are 'places' in which business transactions are carried out or supported, at least partially, by information technology and telecommunication networks (Wigand, Picot, & Reichwald, 1997). The development of these markets is expected to following an evolutionary path. As electronic commerce applications are developed, transactions in electronic markets will become increasingly electronic, migrating from interpersonal to electronic forms. For example, an electronic market that started out with only an electronic
matching function may add electronic negotiation and payment applications as they become available (Malone, Yates, & Benjamin, 1987).13

Electronic markets are expected to change the organizational structures of firms in the following ways. Speculations have been made as to whether or not firms will use the Internet to reinforce their own vertical integration (electronic hierarchies) or to become more market oriented (Wigand et al., 1997). Initial predictions were that the global information infrastructure would result in electronic markets becoming more prevalent than electronic hierarchies (Malone et al., 1987). However, empirical research on this issue has shown mixed results (for refutations see Kraut, Steinfield, Chan, Butler, & Hoag, 1998; Steinfield, Kraut, & Plummer, 1995; Streeter, Kraut, Lucas, & Caby, 1996; for partial support of the hypothesis see Daniel & Klimis, 1999). Naturally, the formation of electronic markets in particular industries will rely on a variety of factors from simply the prevalence of firm-level adoption of e-commerce and contextual factors, such as the use of IT in an industry or the availability of venture capital (Johnston & Mak, 2000; Maatta & Pesonen, 2000). Furthermore, it has been posited that in order to reap the theoretical benefits of e-commerce a greater resort to market-based strategies is necessary (Mariotti & Sgobbi, 2001).

Electronic markets are also expected to change the market power of firms and create opportunities for new types of firms to develop. In e-commerce, any firm that will eventually participate in an electronic market, including manufacturers, distributors, network providers, financial services, and consumers, will find advantages to creating the market themselves (Malone et al., 1987). Competitive advantages available to first mover market makers include switching costs imposed on their participants and the ability to build a larger network of participants, adding value to the network (Bakos, 1991). Suppliers, when acting as market makers, will especially benefit from first mover advantages if they can control the type of system that is introduced (Bakos, 1991; Benjamin & Wigand, 1995).

Further implications of electronic markets are based on the ability to match buyers and suppliers quickly and easily, labeled 'the electronic brokerage effect.'16 This effect is expected to increase the number of alternative buyers/suppliers considered, increase the quality of the alternative eventually selected, and decrease the cost of the entire product selection process (Malone et al., 1987). In this research the role of UNCTAD as a market maker and facilitator of the electronic brokerage effect is examined. Their experience will be compared with these expectations.

2.2.2.2 Product Characteristics
One of the characteristics of a firm that will influence the benefits it accrues from e-commerce is the type of product it sells (Mariotti & Sgobbi, 2001). Consideration of the key characteristics is facilitated by first considering physical and then non-physical products.

The first product characteristic relevant for e-commerce potential is a product’s sensitivity to communication costs. Three sub-attributes identified as determining this sensitivity are asset

13 An electronic matching function is one that matches supply and demand either through specific offers placed by sellers or through seller and buyer characteristics (geography, output capacity, etc.). Electronic negotiation may take the form of an auction or a system may be set up to ask the buyer and seller questions about their priorities for the deal to help reduce negotiation time.

16 Although not considered here, Malone et al. (1987) also proposed the electronic integration effect, which has been demonstrated by Zotte et al., ???)
specificity, ease of product description, and tangibility. Use of the Internet is expected to reduce the transaction costs associated with highly specific assets, increasing the likelihood they would be traded via electronic markets (Benjamin & Wigand, 1995; Malone et al., 1987). The second trait, ease of product description, refers to the amount of information needed to specify the attributes of a product. With complex products Internet use is expected to reduce communication costs as well as search costs (Bakos, 1991). Thus, more complex products are likely to traded online and this has been supported by empirical investigations (Chan, 1997; Kraut et al., 1998). The third sub-attribute is tangibility, which is operationalized as the ability to execute the transaction entirely through an electronic network with currently existing technology. This attribute was also found to effect the likelihood that firms would use electronic networks (Kraut et al., 1998).

Product characteristics affecting firms dealing in non-physical or digital goods also affect the potential impact of e-commerce on industries and firms. The three physical characteristics of digital products are (1) indestructibility (2) transmutability and (3) reproducibility (Choi et al., 1997). The indestructibility of digital goods gives them similar characteristics as durable goods, vis-à-vis non-durable goods. However their durability is so good that products on the second-hand market are physically as good as those bought new. The second characteristic transmutability, that they are easy to modify, can cause problems for product distribution, requiring a very secure channel. Finally, there is reproducibility, which potentially creates problems for licensed or copyrighted digital products and represents one of the greatest legal challenges involving electronic commerce (Choi et al., 1997). In this research issues of potential digital products for firms in two industries and their implications for e-commerce are explored.

E-commerce is also expected to greatly affect markets for information goods as well as their cost structures (Shapiro & Varian, 1999). Information goods exist in both physical (newspaper) and non-physical forms (online weather reports) and have four fundamental properties: dependence on individual preferences, transitory or cumulative utility, externalities, and the combined value of exclusivity and uniqueness (Choi et al., 1997). The demand for information goods relies on individual preferences, where subgroups of consumers with homogeneous preferences are smaller than for other products. Thus, producers must rely increasingly on customization. The utilities for information goods, which are transitory (weather information) or cumulative (news stories), complicate, among other things, pricing strategies for information products. The externalities of information products result in interdependence among users, having both negative and positive consequences. The exclusivity and uniqueness characteristics of information goods provide avenues for building value. In this research we will examine the products offered in two service sectors as well as a trade information program. This research will compare the attributes of the goods, their theoretical potential for e-commerce, as well as the realities observed.

2.2.2.3 Information Flows

In addition to the characteristics of digital products, e-commerce is affected by changes in information flows. A possible consequence of reduced communication costs is changes in the flow of information between producers and consumers (Shapiro & Varian, 1999). Information channels in electronic commerce are broken into three categories: consumers, producers, and third party sellers (Choi et al., 1997). In e-commerce, consumers are expected to be able to provide preference information directly to producers. Producers may be proactive in gathering this information to pursue a customization marketing strategy, as in the case of
Producers also provide a great deal of product information via Web sites. This availability creates trade-offs for producers in that the quality and prices of their products are accessible to their competitors. Uncertainty surrounding these new flows is bound to have implications for attitudes toward this new medium.

E-commerce will also affect information by changing the nature of markets for information services. Third party suppliers of information can be broken into two types: public and private. Libraries and government agencies are examples of public forms whereas financial brokers, trade intermediaries, and marketing consultants are examples of private forms. E-commerce will have implications for both groups. Changing cost structures may result in privatization of what were traditionally public information services (Soete, 2000). On the other hand private organizations may find their value diminished as information is increasingly available for free on the Web. Indirect third party suppliers of information will also play a valuable role in e-commerce as they pass along information such as the reputation of a supplier or consumer. There is debate over how these types of informal communications will be transferred onto an online environment. In this study we will see how the information channels are an important part of each industry and how the ability of firms to go online may be a reflection of the attitudes toward change within a particular industry.

2.2.2.4 Contextual Factors

These economic analyses of electronic markets, and their effect on firm organization, product characteristics, and information flows, are the bases of expectations for electronic commerce. As stated in the introduction to the section however, increasingly these economic analyses will include contextual factors. The following two cases demonstrate the effect of contextual factors and how they alter economic analyses.

Early expectations for electronic markets were that price setting conflicts, resulting from high levels of competition, would reduce producer profitability and increase consumer surplus (Bakos, 1991; Benjamin & Wigand, 1995). However, a case study of an electronic market for used cars called AUCNET found ‘selling prices’ for cars in this particular market were higher than in other non-electronic used car markets. This was partially explained by the higher quality of cars available in the auction. Another explanation offered was that purchasers are willing to pay higher prices for the increased convenience of the Web-based market. This finding adds a caveat to the ‘reduced price hypothesis,’ namely that when electronic marketplaces are introduced into existing markets with large numbers of buyers and suppliers, the welfare of both groups is increased by market efficiency (Lee, 1998). Here, as in the next example, the context in which the market is developed affects its outcomes, and potentially its success.

When an electronic market was implemented by France TV to help their media sellers in coordinating sales of advertising time slots, they were surprised to find that the transparency of the transactions impeded use. Sellers had previously relied on information asymmetries in their negotiations with media buyers and once the selling prices and available time slots were known to the buyers through the electronic markets, the seller lost power in negotiations. As a result, sales of ad time were performed in the electronic market only 55% of the time, with the rest taking place over traditional phone and fax (Caby, Jeager, & Steinfield, 1996).

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The above cases demonstrates how a purely economic analysis was only partially supported by the evidence. In both cases issues of context and power were mediating factors in the economic outcomes. This research will explore further which contexts and mediating factors influence the acceptance and use of electronic commerce.

2.2.3 SMEs, Economic Development, and E-commerce

Until now this discussion of electronic commerce has referred to all firms, as if they were a homogeneous group. However, firms' abilities to benefit from e-commerce vary based on a wide variety of factors, one of which is size. Thus, the following discussion will be limited to small-to-medium-sized enterprises (SMEs). This section will address questions concerning the role of SMEs in the economy and in economic development. Also discussed are the ways SMEs differ from large firms, particularly in their use of ICTs and e-commerce. The definition of a SME used in the research is a firm that employs between 1-499 persons\(^\text{18}\).

2.2.3.1 SMEs in the Economy

Over the last two decades greater attention, particularly in economic development circles, has been focused on SMEs. Explanations for this increased attention vary. One proposal credits the trend of globalization. National and local governments shifted attention away from large firms when they became less integrated with the local economy. Other explanations rely on the increasing need for innovativeness in a post-Fordist economy, and SMEs are seen as more innovative than larger firms are. A third explanation cites the decline in mass production and the focus on flexible production. Flexible production is expected to occur through networks of SMEs. This coincides with a trend in declining firms sizes due to re-engineering and the adoption of flexible modes of production within firms. Downsizing has in turn increased reliance on outsourcing, which has also increased the number of SMEs and hence their importance in terms of the their contribution to GDP (La Rovere, 1996).

The attention paid to SMEs can be justified by their numbers alone. Table 2.2.3.1.1 lists the number of firms categorized as SMEs in a range of countries. The number of SMEs is significant particularly when compared with the number of people working in each country. If we look only at Europe, for example, SMEs represent 99.8% of all enterprises and provide 70.2% of employment and 69.7% of business revenues (Turner, 1997).

\(^{18}\) There is little agreement on the exact parameters of SMEs. Most definitions use the number of employees, but variations exist that also include revenues or different standards for SMEs in different sectors (i.e. service industry SMEs are smaller than manufacturing SMEs). The definition used here is that adopted by Eurostat, which includes the following subdivisions: 1-9 employees (micro), 10 to 99 (small), and 100 to 499 (medium).
<table>
<thead>
<tr>
<th>Country</th>
<th>Working Population</th>
<th>Number of SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>15.6 million</td>
<td>2.5 million</td>
</tr>
<tr>
<td>Mexico</td>
<td>40 million</td>
<td>100,000</td>
</tr>
<tr>
<td>Germany</td>
<td>35.8 million</td>
<td>3.3 million</td>
</tr>
<tr>
<td>Italy</td>
<td>20 million</td>
<td>3 million</td>
</tr>
<tr>
<td>Netherlands</td>
<td>6.4 million</td>
<td>0.44 million</td>
</tr>
<tr>
<td>U.K.</td>
<td>29 million</td>
<td>2.9 million</td>
</tr>
<tr>
<td>Japan</td>
<td>67.9 million</td>
<td>6.4 million</td>
</tr>
<tr>
<td>Singapore</td>
<td>1.93 million</td>
<td>92,000</td>
</tr>
<tr>
<td>Egypt</td>
<td>55.7 million</td>
<td>1.57 million</td>
</tr>
</tbody>
</table>

Table 2.2.3.1.1: SME and Working Populations in Various Countries
Source: [http://www.ispo.cec.be/e-commerce/g8/documents/g8finalreport.doc](http://www.ispo.cec.be/e-commerce/g8/documents/g8finalreport.doc)

Although SMEs are considered potential engines of growth in developing countries, the political economy of those countries can make it difficult to compete. In commenting on the effects of bureaucratic constraints, Rauth (1997) observes:

"Large firms have access to senior government officials as well as financial and human resources to cope with these constraints. Meanwhile, informal micro-enterprises can often evade the second-tier constraints. In contrast, formal small- and medium-scale companies are more visible than their micro-enterprise counterparts and lack high level contacts that their larger competitors have. As a result, formal small and medium enterprises (SMEs) are often the least capable of competing in highly constrained regulatory environments." p.12.

According to Rauth, the likely result of such forces is a segmented economic structure consisting of large formal enterprises and informal micro-enterprises.

2.2.3.2 Differences between SMEs and Large Firms

SMEs are different from larger firms in several ways. SMEs tend to have a relatively short life span (6 years on average in the U.S.). They also tend to have higher rates of indebtedness and are thus more sensitive to economic cycles (La Rovere, 1996). A study of rural SMEs in Britain found the greatest challenges were cashflow, lack of demand for goods and services, hiring suitable staff, and promotion (Clark et al., 1995). These challenges may be similar to those faced by larger firms, however SMEs have fewer resources in terms of time, capital, and employees to address them.

SMEs do have some advantages over their larger counterparts, however. The flatter hierarchies of SMEs and the fact that competencies are not as clearly defined, results in high staff involvement in all business processes making it easier to re-engineer if necessary and/or possible (Chappell & Feindt, 1999). SMEs are also seen as having a higher propensity to innovate than larger firms because they are thought to be more flexible, dynamic and responsive to shifts in demand and changes in economic conditions (North & Smallbone, 2000). Furthermore, when SMEs adopt ICTs they usually have a greater ability to produce new products, while large firms tend only to diversify the existing range of products (La Rovere, 1996). SMEs are also seen as playing an important role in the growth of the information society. The advantages and innovative qualities of SMEs can be seen from the fact that many of today's leaders in ICT were SMEs in the USA less than 20 years ago (Troye-Walker, 1998).
Although SMEs in developed countries are not a homogeneous group, they may appear to be when compared with those in developing countries. SMEs in developed countries vary mainly on characteristics such as firm size and technology, while in developing countries they are heterogeneous groups of firms, characterized by the coexistence of both very small enterprises in the informal economy and small and medium sized businesses in the organized sectors (La Rovere, 1996). And as noted by Rauth (1997) developing country SMEs differ from their larger counterparts in that they lack the resources to deal with the much more bureaucratic government processes their context presents. Research on Russian SMEs found institutional constraints, as compared to demand and resource constraints, to be their largest obstacle (Polishchuk, 2001).

2.2.3.3 SMEs and E-commerce

One way that SMEs differ from large firms that is particularly relevant to electronic commerce is in their adoption of ICTs. Despite the fact that the ICT sector is being driven by innovative small start-ups, research has found that the majority of SMEs are much less likely to adopt ICT technologies than large firms (Gibbs & Tanner, 1997). When SMEs do adopt ICTs they often lack the resources, both in time and finances, to create the necessary conditions to fully integrating the ICTs into their business processes. Furthermore, they lack the resources to identify, examine, and possibly re-engineer these processes to make them more efficient, a pre-requisite to ICT integration (Chappell & Feindt, 1999). It should be noted however that not all large firms who have the resources have made good use of the Internet (Dutta & Segev, 1999).

Due to these historical problems with ICTs, and given their importance for economic growth, SMEs were early targets for e-commerce development programs. As soon as the potential for e-commerce was recognized international, national, and local governments began initiatives to ensure that SMEs could maximize its advantages. The European Union has launched a variety of initiatives, including support of the G8 “Global Marketplaces for SMEs” project. In the U.S. the Small Business Administration (SBA) also supports a variety of programs targeted at e-commerce in this group. At the international level, in 1993 UNCTAD launched its Trade Point initiative to help developing country firms, particularly SMEs, enter into Internet-based international trade.

Research on electronic commerce among SMEs has shown the critical success factors for SMEs carrying out e-commerce do not differ significantly from those of larger firms in the same field. As noted by Mansell, Steinmueller & Hawkins (2000, p. 215), "although cyber trading systems are scalable, there is little evidence that smaller or more specialized firms can wreak disproportionately large cost savings from the e-commerce approach relative to their larger rivals. As the scale of their business grows, the cost of maintaining and integrating their e-commerce sites scale upwards as well." This is not to say however that typical SME attributes such as lack of resources and more chaotic organizational structures will not hamper efforts (Chappell & Feindt, 1999). In addition to typical constraints, SMEs will also face more general problems implementing e-commerce. The competitive advantages of SMEs are often that they develop more personal relationships with their clients, customize products, and serve niche markets. E-commerce will make it easier for larger firms to compete in this sector while

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19 For more in-depth discussion of the EU’s policies see “Electronic Commerce: EU policies and SMEs” at http://www.ispo.cec.be/e-commerce/sme/reports/policies.htm.
21 See http://www.unctad.org for more information.
it is unlikely SMEs will be able to enter the markets of larger firms, whose competitive advantages are often secured by economies of scale and scope and possibly reputation (Kleindl, 2000).

SMEs in e-commerce can typically be differentiated into two groups: new Internet start-ups or new channel experimenters. The start-ups are characterized as having close to 100% of their sales and customer contact online. Channel experimenters are those who augment their 'real world' business with experimental electronic trading across the Internet. Such companies typically generate only a fraction of their overall sales from the Internet. Derived from research on 89 SMEs involved in electronic commerce, Figure 2.2.3.3.1 shows the percentages of revenues firms could attribute to their Internet operations. The largest group, 36 percent of firms, generated no revenue from their e-commerce activities.

![Precent of Revenues from Ecommerce](image)

Figure 2.2.3.3.1: Percent of Revenues SMEs Earned in E-commerce
Source: Chappell & Feindt (1999)

This research shows that already the majority of SMEs are engaging in e-commerce activities as a result of competitive pressure. They are experimenting, not to be left behind by the competition. SMEs perceive the advantages of e-commerce to be access to new markets, improved customer relations, and new ways of marketing. Issues such as time benefits, which allow quicker response to markets and quicker processing of orders, and cost savings, which allow lower personnel costs and lower logistics costs, were deemed less significant. The greatest challenge was seen mostly as the cost of investment. Other problems ranked highly were cultural barriers, infrastructure, and security. Issues with infrastructure were network congestion and the high price of local calls in some European countries. For those firms selling information intensive or digital products, there were regulatory hurdles such as intellectual property rights. Internationally active firms cited the lack of cross-border harmonization in data protection and taxes as a challenge (Chappell & Feindt, 1999).  

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22Some of the literature on SME adoption of e-commerce assumes every firm will benefit from the use of this medium. This perspective leads to negative judgments made against those firms who chose not to adopt. Take for example the following statement: "However, many new channel experimenters have low expectations and matching low levels of commitment. They update their sites on an ad-hoc basis, often after working hours and irregularly. They are satisfied if they receive a handful of sales through the Internet. They are therefore unlikely
This research on SMEs in electronic commerce has already begun to challenge some of the theoretical expectations. For example, one of the expected advantages of the Internet is it will allow more ad-hoc business relationships, driving down prices to the advantage of small, flexible businesses. However the experience of SMEs suggests that stable electronic trading relationships are important. They not only create trust, seen as essential for transactions concerning intellectual property, but they also overcome technological obstacles which can be a barrier to trading with new parties (Chappell & Feindt, 1999).

In this research being developed here we will examine the opportunities that e-commerce creates for SMEs and compare them with the theoretical notions presented here. In the following section we consider the attributes of a sub-set of small firms: service sector SMEs.

2.2.4 Service Sector Firms and E-commerce

In the previous section the special characteristics of SMEs and their importance to economic growth were discussed. An equally important trend is the growth in the economic contribution made by the service sector. By the mid-1990’s services in OECD countries accounted for some 70% of GDP and 65% of total employment (Murphy, 1999). The international tradability of services has increased due to trends such as higher quality and reduced costs of communication services along with greater personnel mobility (O’Farrell, Wood, & Zheng, 1998).

2.2.4.1 Characteristics of Service Sector Firms

This increasing importance of service firms has raised the question: How do service firms differ from other firms in the economy? Services also have unique product characteristics. The distinguishing characteristics of services are their intangibility, inseparability of production and consumption, heterogeneity, and perishability. One can also distinguish services from manufacturing not by precise differences in product attributes but perhaps more in the importance particular attributes play in the production process. For instance, although customization and client/supplier interaction, two characteristics of the business services production processes, may be important to manufacturing, they are fundamentally inherent in business service transactions (O’Farrell et al., 1998). These distinctions create substantial differences in the ways service firms operate. For example, the intangibility of services results in increased importance of personal recommendations when choosing a service, and this impacts sales and advertising strategies (Mortimer & Mathews, 1998). Furthermore, service firms’ relationships with other firms, particularly when one considers forms such as strategic alliances, differ from manufacturing firms. Strategic alliances in service firms are more difficult to identify (O’Farrell & Wood, 1999).

To facilitate research on the impact of these differences, academics have attempted to create typologies of service firms. From a marketing perspective, typologies are based on criteria such as tangibility, differentiation, object of transformation, type of customer, and commitment. From an operations perspective, customer contact, capital intensity, customer involvement, employee/provider discretion, and production process describe firms. Cook,

to succeed in the long term on the Internet against competitors that take e-commerce more seriously.” (Chappell & Feindt, 1999, p.13). Contrary to this assumption, the research undertaken in this study attempts to remain neutral about the usefulness of e-commerce.
Goh, & Chung (1999) propose a hybrid method of creating typologies that combines both perspectives and include the social and economic environment of the firms. A graphical representation of the dimensions is shown in Figure 2.2.4.1.1.

Figure 2.2.4.1.1: Service Typology Dimensions and Their Relationships
(Source: Cook et al. 1999)

Services include the sub-categories of business services and knowledge-intensive services (KIS). Business services include such diverse firms as management consultants and corporate cleaning services. These firms have experienced a boost in their economic strength by recent outsourcing trends. Alternatively, KIS firms have been defined as private sector organizations that rely on professional knowledge or expertise relating to a specific technical or functional domain. KIS firms may be primary sources of information or knowledge (through reports, training, consultancy, etc.) or else their services form key intermediate inputs in the products or production processes of other businesses (e.g. communication and computer services). KIS products are seen to contain a high degree of tacit ('intangible') knowledge. Specialized expert knowledge, research and development ability, and problem solving know-how are the core competencies of knowledge-intensive services. In delivering their products KIS firms engage in a high degree of client interaction, and thus the success of product production relies, to some extent, on the characteristics of the clients (Windrum & Tomlinson, 1999).

Unlike business services, KIS may target consumers or businesses. An example of a consumer-oriented KIS is legal services for divorce. The supplier of the service, the lawyer, will have similar credentials to a corporate lawyer, but the service provision, as well as the marketing of such services, differs greatly. Thus, a further sub-category of business services,
KI-business services, is warranted. Due to the high rates of diffusion of the Internet through businesses, KI-business services are expected to reap great advantages in electronic commerce.\(^{23}\)

The trend has already started. Although services initially lagged in their success, or at least notoriety, on the Internet, they are now beginning to catch up. Services have attributes that present both benefits and challenges to firms selling them online. For example, the importance personal recommendations play in choosing a service provider may create challenges for selling services online. On the other hand, intangibility, a key characteristic of services, is theoretically an important factor for determining how well products will sell online. It has yet to be seen how these various attributes will affect online sales of services, and which attributes affect which types of services. The types of services that can presently be found online include technical services, business networks, consulting, cybermalls, data entry, translation services, and auctions for everything from counseling to employment services (Chappell & Feindt, 1999). Online services can be offered at much lower costs, allowing them to compete with their traditional counterparts (Anderson, 1998).

2.2.4.2 Services in Developing Countries

In the past two decades, service firms, similar to their manufacturing counterparts, have started moving operations to lower-cost developing countries. Countries with high levels of education and English language ability are expected to benefit from this migration. Conditions in some developing countries, such as complicated trade and investment rules, made it difficult for them to compete for offshore manufacturing. To service exporters, however, these characteristics have less significance. Important for service providers are reliable electricity and telecommunications infrastructure, which many countries have significantly upgraded in the past decade. Thus the competition for the offshore provision of services is expected to be greater than for manufacturing.

Similar to offshore manufacturing, however, developing country service providers will need to remain competitive in both costs and varieties of services offered. The well-known example of Indian software services exports has led to diversification in the types of services offered there. Firms in the Philippines that once held cost advantages in data-entry, now face competition from lower-cost China. Services provided in the Philippines have become more knowledge-intensive as the establishment of a customer and technical support center for America Online demonstrates (Goad, 1999).

For developing countries service exports provide an opportunity to channel acquired skills into high-value export earnings and can be crucial in diversifying away from dependence on one or two primary commodities. Attracting investment to the services sectors and acquiring technologies so as to strengthen the positions of services producers in developing countries are both a key to success. The following have been described as essentials for facilitating the exports of services from LDCs:

1. governments should give the highest priority to services sectors with export potential, improve service infrastructure and undertake human and institutional capacity-building and regulatory reform;

\(^{23}\) Although business services and KIS allow for some generalizations among these sub-categories, industry level differences are still relevant (Domke-Damonte, 2000).
2. private sector firms should have sufficient capacity to produce the critical mass of services necessary for exports;
3. services should be cost-competitive;
4. services produced should be of an acceptable international quality level;
5. service firms should be given sufficient support and incentives to develop market linkages; and
6. firms should have access to target markets (UNCTAD, 1999a, p.3).

At present, only a few developing countries are using the Internet for accessing foreign markets to supply services. Lack of awareness among developing country companies of the relevance of the digital economy, and the high cost of setting up an e-commerce site has contributed to this. For the time being, therefore, developing countries are mainly consumers of Internet-based services and use the Internet for a limited range of tasks. The primary ones are to access consumer and marketing information, email, and promotion of products and services (UNCTAD, 1999a).

In addition to costs of setting up a Web-based firm, knowledge intensive services face an additional barrier in international trade: the lack of mutual recognition of diplomas and professional qualifications. Solving this problem will require harmonized curricula or mutual recognition of qualifications by governments and professional associations. Recent attempts at mutual recognition agreements have been made as several countries have drafted mutual recognition agreements under GATS Article VII:4. In the Asia-Pacific Economic Cooperation (APEC) nations, work has started on the preparation of a directory on the requirements for provision of professional services, including accountancy, engineering and architecture. A large number of bilateral agreements on recognition of practice standards have also been concluded in the region. In June 1999, a text for a United States-European Union (EU) framework agreement for negotiating mutual recognition was finalized, although it still has to be approved by the governments. The agreement would set conditions for all services sectors for the licensing, accreditation and certification of service providers (UNCTAD, 1999a, p.10). As developing countries face a credibility gap regarding the level of competence and sophistication achieved by them in science and technology and other knowledge-based fields, it is hoped harmonization will partially overcome this barrier. If so, one less hurdle to the export of knowledge intensive services will exist.

In this research two of the cases will focus on firms in the services sector. As noted, the services sector represents an important area of growth for developing countries. This study will examine the opportunities e-commerce represents to firms in two service sector industries and will examine the influence of institutions on these opportunities. Thus, the benefits of being in the services sector, such as lowered reliance on physical infrastructure, can be compared with the benefits/challenges of the operating institutional environment.

2.2.5 Business to Business E-commerce

The above discussions of SMEs and service industry firms have laid the groundwork for further narrowing on the subject of e-commerce. In this section the focus turns to business-to-
business (B2B) transactions\textsuperscript{24}. This in turn will provide the background necessary to consider
the issues of small and service industry firms in the realm of electronic commerce.

Electronic commercial transactions can be grouped into two segments: business-to-consumer
(B2C) and business-to-business (B2B)\textsuperscript{25}. The segmentation of e-commerce into these two
groups is not arbitrary. The issues for each type of commerce vary, as do the technologies.
This is expected given the great differences in these groups in traditional commerce, where
not only are packaging, delivery, payment, and relationships different, but they are supported
by different management and marketing strategies.

Although business-to-business e-commerce has been developing right along with business-to-
consumer e-commerce, greater emphasis and hype first centered on the latter. This changed in
the spring of 2000 when Internet stocks dropped significantly and greater attention was given
to the lack of profits in many business-to-consumer sites, shifting the hype suddenly to
developments in the business-to-business side. In addition to being primed by the slide of
consumer based e-commerce, B2B e-commerce received greater attention due to the high
levels of anticipated revenues (Reinbach, 2000). Business-to-business e-commerce is touted
as a more secure environment given that it can create earnings in its own right, and if the
consumer side is rejuvenated it will require a solid base on the business-to-business side,
further increasing revenues. Furthermore, in traditional commerce B2B generates roughly 10
times the revenue as consumers sales, in this should continue in e-commerce (Anderson,
1998).

Another development warranting greater attention on business-to-business e-commerce is the
emergence of business-oriented electronic markets. These markets are developing in two
modes. The first can be described as an exchange, where access is open to all and transactions
are mainly driven by price. An alternative model is the trading community. Trading
communities focus more on customer service and performance, and tend to have more
regulations associated with participation. Covisint, the B2B e-commerce application
established by the U.S. 'big three' automakers, is an example of a trading community (Anon,
2000b)\textsuperscript{26}.

Actually, business-to-business electronic commerce is nothing new and has been around for
nearly twenty years in the form of electronic data interchange (EDI). The main difference
between business oriented e-commerce and EDI is that B2B e-commerce is typically not
limited to a closed user group, is not based on proprietary technologies, and does not rely on
leased line connections to a central hub. Presently, many existing EDI systems are being
migrated to the Internet (UNCTAD, 1998).

In addition to EDI systems when migrating to the Internet, firms must also consider other
corporate networks, such as enterprise resource planning (ERP) systems, when entering

\textsuperscript{24} In this research business-to-business e-commerce is also meant to include transactions between governments
and firms.

\textsuperscript{25} It is expected that in the future these categories will become increasingly blurred. Eventually the distinction
may well be between customer-facing and supplier-facing e-commerce, where a customer may be a business
customer or a consumer (Chappell & Feindt, 1999).

\textsuperscript{26} As of February, 2000 Daimler-Chrysler, Ford Motor Company and General Motors agreed to work together in
developing on online business-to-business exchange. In April, 2000, Nissan and Renault also agreed to join. See
business-to-business e-commerce. These concerns may be less for business-to-consumer firms. Further differences can be seen in the use of information. In B2B e-commerce firms may be required to share information with clients that they would not have to disclose in a B2C environment. Information such as sources of supply and levels of inventory are typically not disclosed in consumer based transactions. In B2B transactions this information may be vital to the exchange. This highlights another difference in B2B transactions and that is that they are more of a collaboration between partners than the typical B2C transaction (Anon, 2000a). This requires a certain willingness to share information and collaborate, which may also require trust. These differences are reflected in requirements for Website software, and are shown in a table in Appendix I.

The last and perhaps most important difference in B2B and B2C e-commerce is how they are affected by public policy. Digital signatures legislation, for example, is expected to have a greater impact on B2B transactions than on B2C transactions (Betts, 2000). Payments in consumer-oriented transactions have largely been carried out through credit cards or continued offline, and these transactions rarely require a signature. In business-oriented transactions, however, the transaction may begin by signing a contract. The lack of digital signature legislation has slowed efforts to settle contract issues completely online. In addition to contracts, business relationships rely on signatures when placing orders or submitting bids. Firms also use signatures when submitting forms with governments such as securities reports, tax forms, and environmental fulfillment reports.

On the other hand, consumer-oriented e-commerce is more vulnerable to policy issues related to privacy and copyright protection. The most contentious e-commerce privacy debates have centered on Website data collection and marketing activities for private consumers. Similarly the most contentious digital copyright debates have centered on the music and publishing industries, which are typical consumer-oriented concerns. Although these issues may lurk on the periphery of B2B e-commerce, they are rarely central to the business process.

In terms of developing countries the prospects for business-to-business e-commerce seem much greater than for business-to-consumer e-commerce. A plethora of issues ranging from low levels of teledensity, computer penetration, IT skills, and availability of credit cards hinder the wide spread of domestic consumer demand for e-commerce. Certainly consumer-oriented e-commerce that targets developed country markets does have prospects. The issues of payments and complications of low-volume shipments, however, may make business-oriented e-commerce promising. Furthermore, the policy issues relevant for business-oriented e-commerce are easier for developing countries to solve. Digital signatures legislation requires mainly that courts recognize these as legally binding. Consumer-oriented issues may be easy to resolve in terms of legislation, however the enforcement required to protect copyrights and monitor Web-site collection activities to ensure privacy are likely beyond the means of many developing countries.

Furthermore, developing country firms interested in B2B e-commerce may find that, similar to the B2C environment, entry barriers have been reduced. Although the advertising benefits of the Web may not be as substantial as they are in B2C, small producers of intermediate products need to make contact with potential business customers and to convince them of their capacity to supply products to specification, on time, to an acceptable standard of quality and at a competitive price. The Internet does almost certainly make this process easier. Indeed, in principle, access to the large B2B portals being established by developed country based
companies in sectors such as auto parts, steel, and chemicals is open to any potential supplier on an equal basis, regardless of location. And even if a developing country SME is not ready to join in direct competition on the world market, a Web presence can signal to potential customers that they have at least a certain level of technical and commercial sophistication and may communicate that they are ready to learn (Goldstein & O’Connor, 2000).

This research is focused on B2B e-commerce primarily because it is expected to represent greater opportunities for developing country firms. In this discussion it was mentioned that the legislative hurdles were easier to resolve than in consumer based electronic commerce. This research will examine the benefits and hurdles that the institutional environment creates for B2B e-commerce.

2.3 Institutional Theory and E-commerce

The above discussion has identified the significant issues for explaining the impact of institutions on electronic commerce in developing countries. First the literature on institutions was discussed. From there attention was turned to the role of institutions in economic development, as well as the placement of this research in the broader scope of institutional analyses. Following that the economic effects of e-commerce were discussed, including the implications of electronic markets, product characteristics, and information flows on the potential for e-commerce. Considering the unique characteristics of small firms, service sector firms, and business-to-business e-commerce narrowed the discussion. In the following paragraphs a synthesis of the discussion will be made, resulting in observations about areas of overlap in the fields of institutional economics and e-commerce for developing country SMEs.

The area of overlap between institutional economics and e-commerce is based primarily on their mutual interest in the functioning of markets. As discussed in this chapter, markets are institutions in and of themselves, shaping the patterns of economic interaction. However, markets are also subject to the influences of the broader institutional environment, and hence are not autonomous entities whose features fully establish the terms of exchange. E-commerce, whether between many firms or simply on a bilateral basis, is a market and will also be affected by many levels of interacting institutions. Given this fundamental overlap in the aims of the theories, the next step is to identify the characteristics of markets, or more specifically e-commerce, that will enable SMEs in developing countries to tap its potential. This issue is taken up extensively in Chapter 3, where the framework for this investigation is presented.

Beyond seeking the ideal characteristics for markets, the two bodies of literature point to many areas in which one can inform the other. For example, given the affect of institutions on firm behavior it is likely they will also have ramifications for e-commerce adoption. Case studies applying institutional analysis demonstrate firm behavior is constrained by institutions in a myriad of ways, including constraints on the availability, cost, and feasibility of various technologies. This research will identify ways institutions constrain or enable the availability of basic e-commerce technologies for firms.

Furthermore, the research on e-commerce can be informed by the debate within NIE on the importance of contextual variables. Within NIE, transaction costs analyses are criticized for what are seen as unrealistic assumptions, such as risk neutrality of parties to an exchange, and for the lack of attention paid to contextual variables. Similar criticisms could be made
concerning theories of e-commerce based on transaction cost economics. NIE has in some sense resolved this issue by allowing differences in emphases of various factors and learning from critiques from the various factions. E-commerce research may follow a similar path, broadening its scope and embracing a diversity of research that emphasizes transaction costs in some cases and institutions in others.

The effects of institutions on economic development, particularly in the transition from personalized to impersonalized exchange, may also inform studies of e-commerce in developing countries. Issues that may have hindered traditional commercial development, such as deficiencies in parallel markets and codified information, as suggested by Murshid (1997), are likely to affect the development of e-commerce. Simply being unfamiliar with these institutional forms could present another hurdle to the adoption of e-commerce. Although beyond the scope of this investigation, one might also consider the reverse effect: that e-commerce could facilitate the development of these institutions, having spill-over effects for development in traditional commerce.

Examining the different genres of case studies found in institutional analyses reveals the enormous potential this method and theoretical base represent for e-commerce scholarship. One can imagine the variety of national or sectoral institutional studies that could trace the history of the sector, patterns of relationships among firms, and their relationship with the broader political and legal environment, to demonstrate the implications institutions have for shaping the various forms of electronic commerce that will emerge. The United States, with its 20 years of Internet history, is certainly ripe for such an analysis. Furthermore, micro level institutional analyses limited to firms, which necessarily account for a variety of institutional factors, could be used as a basis to produce more realistic 'best practices' for firms trying to implement e-commerce.

Although the focus of this research is on institutional theory, this research will also have implications for e-commerce hypotheses. For example, the UNCTAD case study with its electronic market is likely to reveal the implications of institutions for the 'electronic brokerage effect.' Furthermore, the effect institutions have for theoretical benefits of certain product characteristics are likely to be exposed. Also, the concept of the market maker will be expanded by including, along with the benefits of their role, the responsibility for institutional design and its subsequent effects on participants and market outcomes.

This research is also concerned with the issues facing SMEs in developing countries. Firms busy overcoming bureaucratic hurdles are unlikely to have time to explore the potential of e-commerce for their business. Service sector SMEs, on the other hand, may face fewer of these hurdles, and may be more aware of the potential e-commerce presents. This research will explore the role of institutions in shaping this potential, as well as creating awareness.

This synthesis of institutional and electronic commerce literature presents a variety of concepts on which this research is based. Notions such as institutions, institutional change, transaction costs, the development of electronic markets, the decisive characteristics of products and firms, and implications of e-commerce for service sector SMEs, are all integral

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27 Oliver Williamson's perspective on such contextual issues as social networks and trust have evolved over the years, incorporating criticisms from various scholars. See for example his evolution from 'atmosphere' in Markets and Hierarchies (Williamson, 1975) to 'institutional environment' in The Economic Institutions of Capital (Williamson, 1985).
to this investigation. What is still lacking, however, is a framework for interpretation. Although the conceptual boundaries have been laid, the theoretical boundaries are still somewhat vague. In the following chapter the theoretical boundaries are narrowed by identifying the key factors for well-functioning markets. Limiting the investigation to the consideration of these institutions allows for greater consistency across the cases. Additionally, the limitation provides a focus which in turn creates a solid base for further theoretical development.
Chapter 3:

Institutional Foundations for E-commerce

Institutions are expected to create a myriad of implications for e-commerce. When considering e-commerce in developing countries the scope of relevant institutions is diminished, however only slightly. In this chapter we propose to further limit the theoretical boundaries by focusing on the key institutional elements for well-functioning markets. These institutional elements are those that play a significant role in traditional commerce, having created the existing commercial environment, as well as those expected to play a significant role in e-commerce.

The list of fundamental institutional elements for well-functioning markets was formed through an iterative process combining reviews of the institutional economics and e-commerce literature and preliminary case study analysis. This process ensures that all elements are practically as well as theoretically relevant to both bodies of scholarship. The elements represent a diverse range of theoretical approaches and levels of analysis, which is common in studies involving comparative institutional analysis.

This chapter begins with a presentation of the fundamental elements. In each case the discussion of the element begins with a definition, which is followed by a review of expected effects, research findings, and relationships with other elements. The elements define the theoretical scope and serve as the framework for this investigation. Following presentation of the institutional elements, the research design, which includes the measurement model, method, and plan of analysis, is discussed.

3.1 Fundamental Institutional Elements for Well-Functioning Markets

The list of fundamental elements for well-functioning markets includes the following: property rights, contracting, enforcement, competition, information flows, networks, trust, and intermediation. Some of the elements are institutions in their own right, while others are effects of an institutional environment (trust, information flows, competition). All of the elements play a significant role in institutional theory and are expected to shape the potential for e-commerce. The elements are not mutually exclusive items. Indeed, the overlap and complexity of relationships between these factors reflect the realities of economic life.

3.1.1 Property Rights

Property rights are defined as the rights individuals appropriate over their own labor and the goods and services they possess (North, 1990). In general, there are three types of property rights: the right to use or transform an asset, the right to earn income from an asset, and the right to transfer ownership (Eggertsson, 1990). These rights are established through norms and bilateral agreements but are most explicitly defined by the state.

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28 This list of institutional elements originally contained additional factors including commercial law and the court system. Preliminary analysis of the Tanzanian and U.S. case studies showed that these institutional foundations had no bearing on the adoption of electronic commerce for small firms and hence, although discussed in the individual cases, were dropped as fundamental elements.
States place assets in the private or public domain and define the limits of rights of private property holders. Actions such as regulation of firms are ways in which the state limits the bundle of rights held by private owners (De Alessi & Staaf, 1995). Limits are typically based on the delineation and partitioning of rights, in which the state also plays a role. The delineation of rights may not be clear, such as the rights to clean air. Ownership of the rights to clean air and who can be excluded from these rights are not well defined. Poor delineation may be caused by a weak state, difficulties in measurement, and changes in the distribution of wealth (Eggertsson, 1990). States also partition rights, such as those associated with land. Rights to land include rights of trespass, rights to the water flowing under the land, and rights to fly over the land. Partitioning rights influences how these rights are distributed among parties such as the state, the public, or a private landowner.

Delineation and partitioning influence the ease of enforcing these rights. A weak state will have great difficulty in delineating and protecting the property rights of owners. Also, a society where power and wealth are unequally distributed may result in inconsistent protection (Eggertsson, 1990). Although state enforcement is important and plays a large role in determining the value of assets, informal institutions and norms also play and important role. For example, the public property rights to a river may restrict access to dumping of toxic wastes by private parties. Monitoring water to detect dumping incurs very high costs on the government. Protecting the public’s right to this asset will be much more effective when combined with informal institutions, such as norms of responsible environmental behavior.

Although the goal of the property rights system is efficient use of resources, not all systems achieve this goal. States create property rights, and therefore factors such as politics, power, and public welfare are involved. These forces put pressure on the cost benefit analysis performed in the creation of rights and depending on the strength of these forces inefficient property rights may be the result. Property rights may also be inefficient due to changes in the scarcity of resources. An asset once considered to be most efficiently used as private property may later require being brought back into the public realm. This redefinition of property rights creates winners and losers, and the power wielded by these winners and losers will influence the state’s ability to react to changes in scarcity. States, either through weaknesses in enforcing rights or in a lack of flexibility to changing scarcities, may therefore perpetuate an inefficient system of property rights (North, 1990).

Property rights serve as the foundation upon which markets are built. Theoretically, property rights separate the concept of possession of an asset from ownership. This allows exchange to be concerned with rights to an asset rather than possession, and allows owners to temporarily transfer rights to an agent (Commons, 1934). Property rights also allow contracting. Without the right to transfer ownership of an asset, contracting would be useless. Property rights also provide incentives for investment and are a key component of economic development. Empirical cross-national research on the relationship between property rights and poverty has found a direct relationship between the two (Norton, 1998).

Property rights are particularly significant for international markets. Because property rights are typically defined and protected by states, international trade may become problematic when firms facie different property rights regimes. Recent debates over intellectual property for both traditional and electronic international commerce highlight the difficulties involved.
What is a strongly protected right that serves as the basis for profitability of a firm in one country, may be only weakly protected in another.

Further pressure for changes in property rights stems from the technological changes that have enabled e-commerce. In turn, property rights will shape the form and function of electronic markets. The source of the pressure for this change is described by Garcia (2000):

"How these electronic organizations and markets evolve, and the actual form that they take, will have significant consequences for the functioning of the economy and the way in which costs and benefits are distributed. Increasingly, much of the information and knowledge that was once held personally is now embedded in software based components and networks, where it can be used to support a wide range of economic activities. Depending on the way in which such networks are configured, and how they structure relationships and perceptions as well as distribute information, they can be employed either to empower or weaken the position of parties in an economic transaction or exchange....Given such possibilities, contests over property rights will increasingly focus on the issue of network architecture and design." p.13.

This research will investigate how differing property rights regimes may hinder both domestic and international electronic commerce. Issues such as intellectual property rights, inherent in such issues as trademark and patent protection, may have different protection under the law in various countries. It may be that the different levels of protection are really a result of variance in enforcement. This will affect which countries are allowed to participate in certain types of electronic commerce as well as which industries can take advantage of the medium. Property rights may also be protected indirectly as they are often embedded in contracts. As we shall see in the next section, enforcement of contracts is a key component to well-functioning markets, and will affect e-commerce.

3.1.2 Contracting

The exercise of property rights over goods and services is typically accomplished by means of a contract, verbal or written, which stipulates the terms of exchange. Contracts facilitate exchange in several ways. First, they make details of the transaction explicit. There are typically legal protections of contracts and hence protections for the agreed-upon details. This legal protection reduces uncertainty and allows exchange to occur.

Contracting also affects exchange as it makes up a large part of the cost of a transaction. Two types of transaction costs associated with contracting are distinguished: ex ante and ex post. Ex ante transaction costs are the costs associated with drafting, negotiating, and safeguarding an agreement. This process can result in a complex document covering numerous contingencies. Or, on the other hand, the document can be incomplete; the gaps to be filled in by the parties as contingencies arise. Ex post costs of contracting take several forms. These include the maladaptation costs incurred when transactions come upon unexpected situations. They also include the haggling costs incurred if bilateral efforts are made to resolve the unexpected situation. Further ex post costs include the setup and operational costs associated with institutions (often not the courts) to which disputes are referred, and finally the costs of achieving secure commitments. Although these costs are identified as two separate categories they are in reality interdependent. Firms must address ex ante and ex post costs simultaneously as the ex ante agreement is likely to determine which ex post costs of contracting will emerge (Williamson, 1985).
The structure and content of contracts vary greatly. The structure of a contract is influenced by the attributes of the assets being exchanged, as well as by the system of property rights reflected in the legal system and social norms. When a detailed legal framework and strong social norms exist, a less specific contract is required. Contracts are, however, left unspecified for reasons other than confidence in the political system. In modern complex economies contracts must cover a range of issues and a considerable period of time. These constraints make it difficult to think of every possible contingency and thus complex contracts are rarely fully specified. This can reduce ex ante costs, but may increase ex post costs in the long run (Williamson, 1985).

The structure of the contract may also affect the transaction costs. Standardized transactions occurring in an economy with a stable government, stable technology, and stable relative prices may lead to the use of a standard contract. Adoption of standard contracts will also be facilitated by strong institutions within an industry. Standard contracts save on transaction costs involved in several steps of the contracting process.

Parties to an exchange often rely on what Williamson refers to as 'private orderings.' Private orderings are the ways in which firms safeguard agreements either through governance structures (such as joint ownership) or the establishment and use of third party mediators. Although the state plays an important role in the protection of property rights and enforcement of contracts, an overemphasis on the role of the state does not reflect reality and is merely a result of legal centrism. Research results show that even disputes that could be settled in a court are often settled through private negotiations, social networks, or plain problem avoidance. These ex post support institutions affect firm behavior and transaction costs. Thus, one must consider a broad spectrum of influences in the study of contracts and markets (Williamson, 1985).

International trade in both traditional and electronic forms will also be affected by what Commons (1934) describes as informal contracts that are derived by custom29. These informal contracts are the norms of business in a particular culture. He refers to them as contracts because they make clear the expectations of the two parties. They are often related to issues such as form of payment and working hours that may be specified in a contract, but with incomplete contracting are left out. These informal contracts are imprecise and may give rise to disputes. These disputes are often settled by a formal institution and thus the informal contracts may eventually become formal rules embodied in formal contracts.

This notion of informal contracts certainly has implications for the functioning of international markets. What is considered an 'unwritten rule' in one culture may be unknown elsewhere. This challenge to international commerce is not new. However, it may point to an increased need for formalization of informal contracts in a globalized economy.

Contracts not only influence the costs of a transaction and the efficiency with which the market operates, they may also affect the market structure through their influence on firm structure. With employees, suppliers and buyers all contracting with a firm, a firm can be thought of as a web of contracts. The structure and content of the contracts will affect the structure of the firm (Egger, 1990). The greater the diversity in contractual forms, and

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29 Commons sees 'norms' as informal contracts whereas North views them as informal institutions.
particularly in the complexity of agreements firms are willing to make, the more diverse will
be the structure of firms and hence the structure of the economy.

The structure of the economy will further be affected by firms' decisions to 'make or buy'
inputs. If contracting for inputs creates high levels of vulnerability, particularly in a situation
where property rights and contracts are weakly protected, a firm may prefer to 'make' rather
than 'buy' an input to production. This may have implications for overall economic growth as
firms turn inward rather than create markets in which entrepreneurs are given opportunities.
The economy may become dominated by a few large firms, which are typically less likely to
innovate. Thus, the types of contracts and the security they afford can affect the functioning
of the market and the economy as a whole.

In conclusion, contracts are significant determinants of the transaction costs faced by a firm.
They also have significance for market structure and the overall economy. In this research we
will examine the influence of the state and industry norms on contracting and their
implications for electronic commerce. It is expected that differences in contracting norms will
create challenges for international business-to-business e-commerce, and may limit the
adoption of this form of exchange.

3.1.3 Enforcement

In the previous two sections the implications of property rights and contracts for well-
functioning markets were discussed. In both cases much of the value of these institutions
relied on enforcement. In this section issues concerning enforcement, the application of
sanctions, will be presented.

Institutions have been referred to as working rules or maxims of conduct that indicate what
individuals 'can, must, or may, do or not do' and they are enforced by collective sanctions
(Comans, 1934)\textsuperscript{30}. Applying sanctions, or enforcement, has several implications for
transactions. The first effect is that enforcement adds to the cost of a transaction. Transaction
costs are dependent on the cost of information, particularly information related to measuring
the valuable attributes of an asset, protecting rights, and policing and enforcement of
agreements. The evidence of the effort taken to measure, enforce, and police agreements are
obvious in the warranties, guarantees, trademarks, sorting and grading, bonding of agents,
arbitration, mediation, and entire legal systems societies develop (North, 1990).

The second effect of enforcement is concerned with the value of assets. Enforcement of
property rights increases the value of assets (Eggertsson, 1990). This issue is particularly
important when trade occurs across enforcement regimes. Similarly, when enforcement of
property rights declines the value of assets can decline, and in turn owners may lose
bargaining power.

\textsuperscript{30} The issue of enforcement is one over which disagreements exist in institutional economics. As North (1990,
p.54) explains: "This emphasis upon enforcement is another major difference between Oliver Williamson's
approach to transaction costs and the one taken in this study. Williamson assumes enforcement to be imperfect
(otherwise opportunism would never pay), but does not make it an explicit variable in his analysis. Such an
approach simply does not lead the scholar to be able to deal with the problems of historical evolution, where the
key problems of institutional change, of contracting, and of performance turn on the degree to which contracts
can be enforced between parties at low cost."
Enforcement should not be taken for granted as the ability of institutions to enforce property rights, contracts, and norms vary. When enforcement is weak, self-interested behavior will foreclose complex exchange. Exchange is foreclosed because of the excessive transaction costs that are created by the uncertainty in the environment. Through this process problems with enforcement become the critical obstacle to increasing specialization and division of labor (North, 1990) Thus, the third effect of enforcement on transactions or the functioning of markets is that it can limit the scope of the types of transactions that can be undertaken.

However, even where there is effective state enforcement, contextual issues are relevant. For example, when the size of the transaction is small or when the parties to the transaction have little or no assets to foreclose on, the deterrent effect of the legal system alone may be insufficient. This means that legal institutions alone are unlikely to provide sufficient protection against opportunistic breach of contract in the overwhelming majority of market transactions that take place in poor countries (Fafchamps & Minten, 1999, p.2).

In these situations it is theoretically possible to rely on third party enforcement via voluntary institutions. However, as North (1990) observes, the transaction costs of a purely voluntary system of third-party enforcement in a modern interdependent economy could be prohibitive. Voluntary enforcement is not a worthless endeavor however, as many self-regulatory mechanisms are in place in various industries. If the parties to exchange enjoy ample state protection, voluntaristic enforcement has been shown to greatly enhance the overall enforceability of contracts. Thus, in less developed countries, enforcement should be carried out through a combination of state and voluntaristic mechanisms.

The mechanisms for efficient voluntaristic enforcement are as yet unclear. For example there has been much theorizing on the role that loss of reputation can play as an informal sanction (see Humphrey & Schmitz, 1998). This sanction is usually applied through meso level institutions that normally take the form of a network of business relationships. However, in a review of studies of traders in various African countries Fafchamps (2000) found that none of these studies uncovered evidence of systematic exclusion of cheats from future trade. One possible explanation is that loosely organized market networks lack the coordination mechanism required to trigger expulsion. Furthermore, these studies also found no evidence that firms that deal with cheats get ostracized. There is clearly need for more research in this area.

In this research we will examine the nature and consequences of enforcement, highlighting the effects of differences in institutional environments. Initial expectations are that new institutional forms will develop with implications for enforcement in online transactions. Otherwise, weak enforcement could hamper e-commerce adoption. Furthermore, the global nature of e-commerce may place greater emphasis on informal mechanisms of enforcement as the cooperation required for state enforcement is extremely complex.

3.1.4 Competition

There are many forms of competition and combined they play a vital role in well-functioning markets. In neoclassical economics price competition is seen as central to the role of the

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31 Examples include the U.S. Motion Picture Association's rating system to control content and TRUSTe's system of protecting privacy of consumers in e-commerce.
market itself: allocation of resources. Competition allows the price mechanism to efficiently allocate resources by distributing goods to those who value them most highly.

In addition to the efficient allocation of static resources, competition is important to economic systems as it spurs innovation and investment. Not price competition, but competition in the form of a new commodity, new technology, new source of supply or a new organizational form, is most often what spurs innovation (Schumpeter, 1942). These types of competitive pressures drive firms to continually innovate, which in turn stimulates investment. Recent research on the role of competition in telecommunications services found ample evidence for the importance of this fundamental institutional element:

"In addition to the direct benefits of increased investment, lower prices and higher levels of connectivity, quality of service and innovation, competition reinforces the organizational reform of the incumbent, contributes to the consolidation and legitimation of regulation and prevents rollback of advances in organizational reform of the incumbent and in regulation." (Samarjiva, 2000)

Sources of imperfectly competitive market, which hinder the formation of such benefits, are abundant. Issues such as the nature of the product, imbalances in wealth, imbalances in access to resources, and imbalances in access to information, will all affect the competitiveness of the market. Whether a cause of or in response to imperfectly competitive markets, power differentials often exist between firms. These power differentials determine the types of sanctions that can be used in inter-firm commerce. In highly competitive markets (whether the competition is based on price, quality, or technology) firms involved in cooperative agreements can impose the sanction of choosing an alternative partner if the terms of an agreement are breached. This sanction, the threat of defecting to a competitor, is informal but quite powerful in keeping firms in alignment with agreements. If competitive conditions do not exist, firms with power can deal arbitrarily with their less powerful peers.

The competitiveness of markets is often influenced by government policy. Markets can be protected from competition or may be made de facto un-competitive through the granting of monopoly rights. The measure of market competitiveness is difficult as it requires both delineation of market boundaries and allocating market shares. These problems of measurement often plague competition policy. Furthermore, Establishing which firm practices are responsible for market concentration and creating policies to attenuate these practices is difficult. More difficult still is enforcement of these policies.

E-commerce and competition are mutually reinforcing forces. The expansion of e-commerce is expected to increase the competitiveness of markets. Not only does e-commerce reduce entry barriers, it provides access to distant markets. Even firms not engaged in e-commerce may find themselves competing with this new sales and distribution channel. Furthermore, firms may find competitive pressures are the driving force behind their adoption of electronic commerce, thus completing the cycle.

The case studies in this research will examine the perceptions of competitive pressures by firms and their implications for electronic commerce adoption. Furthermore, the competitiveness of the telecom market will be described and may serve as an explanation for differences in the use of e-commerce.
3.1.5 Information Flows

The implications of the access to and cost of information in an economic system are many. Already in this discussion of well-functioning markets the effects of information on contracts, enforcement, and competition have been discussed. Access to information, particularly inequalities of access, have been shown to affect market performance and are one cause of economic underdevelopment. In discussing the issue of capital markets Stiglitz (1989) observes:

"The LDCs are thus at a double disadvantage: not only are there informational imperfections, leading to credit and equity rationing; not only are these information imperfections likely to be more important within LDCs because the process of change itself leads to greater informational problems; but more importantly, the institutional framework for dealing with these capital market imperfections are probably less effective, because of the small scale of firms within LDCs and because the institutions for collecting, evaluating, and disseminating information are likely to be less developed."

The costs of and access to information are largely a result of the institutional environment of an economy. Institutions provide communication channels to convey norms, as well as the instances of application of sanctions when the norms have been violated (North, 1990). The norms they convey also determine privileges that influence the levels of sensitivity and grades of quality of information that can be accessed. Therefore the cost of accessing this information must include the cost of acquiring such privileges, whether that be through education, political ties or social ties.

One way to increase the flow of high quality (high use-value) information is through promoting transparent processes. Transparency, sharing information about the theoretical and practical means by which transactions and decision-making occurs, provides valuable information. Without transparency this information exists as tacit knowledge and may not be available to all. Hence, transparency reduces information asymmetries as well as creates expectations which reduce uncertainty. More specifically, transparency reduces the value of knowledge of the process, thus reducing the ability to demand bribes or the need to offer them. Furthermore, transparency can enhance credibility, promote political stability, and as results from telecom regulation demonstrate, stimulate investment (see Pertrazzini, 1997).

Information also plays an important role in enforcement. The use of public punishment in traditional societies overcame the problem of distributing information concerned with enforcement. Information flows are critical for communicating when enforcement has occurred, but they may also play a role in how well enforcement is carried out. Enforcement by reputation sanctions, for example, is particularly dependent on information flows. Markets, depending partly on the flow of information, vary in their ability to support reputation sanctions (Williamson, 1985; Fafchamps, 2000). Important qualities here include the validity of the information and the speed with which it is disseminated. Significant determinants of these qualities are the use and characteristics of information and communication technologies.

Information flows will both affect and be affected by e-commerce. The need to increase the speed and quality, or decrease costs of sending and receiving information may be an important incentive for the adoption of electronic commerce. As firms migrate functions online traditional information flows may change. This may in turn have implications for other of the above mentioned fundamental market elements such as contracts and enforcement, and as we will see in the next section, networks.
In this research the role of information flows is expected to vary by program, country, and industry. Also the significance of these flows and the types of messages they carry are expected to vary. These will be influenced by institutions and hence their role in e-commerce adoption and use will be explored.

3.1.6 Networks

As mentioned above one of the fundamental roles of networks is to be a channel for information flows. Here the discussion will focus on the concrete effects of networks and information flows. Information that flows through networks has the benefit of coming directly or indirectly from a known individual or entity. This caveat is important to establishing the validity and quality of information. In this way networks have the effect of reducing uncertainty and may help in informal enforcement of contracts. In their capacity as information flow channel, they also help match supply and demand. Moreover, networks may serve as a basis for cooperation among firms. Fafchamps (2000) found that in Sub-Saharan Africa relationship networks performed a variety of economic functions such as information sharing, informal enforcement of contracts, and interlinking.

But what is meant by the term 'network'? In this research a network is considered a set of relations, or ties, among actors (either individuals or organizations). A tie between actors has both content (the type of relation) and form (the strength of the relation). More specifically, from an economic perspective, networks can be seen as a way of governing relations among economic actors or as a means of building and sustaining socioeconomic boundaries between individuals and organizations (Powell & Smith-Doerr, 1994). Key functions of networks are information access, timing of information, and referrals (Burt, 1992). These result in employment prospects, the mobilization of resources, and the diffusion of ideas and policies. With networks, the information that is transmitted is not typically available to the public, thus enhancing its value.

Networks can serve several purposes and are found in diverse forms. Here we focus on inter-firm networks and, based on characteristics such as their members and the type of information they transmit, they can be broken into three categories (Powell & Smith-Doerr, 1994). The first category is a professional network in which information about best practices and industry norms are communicated. These types of networks have grown and become more formalized in recent years as professional and trade associations promulgate standards about appropriate professional behavior. Universities, training institutes, professional journals, and the business press all serve to elaborate on information about current best practices. A second type of network is that formed by inter-organizational relations. Members include suppliers, key customers, and members of relevant regulatory agencies, for example. The inter-organizational network is a critical source of news about administrative and technological innovations. The last type of network has been referred to a status network and it includes the firm and other firms it considers as exemplars for a range of behaviors. The information transmitted through this network provides the basis for firm imitation and facilitates such practices as price leadership.

This process of mimicry is also facilitated through the movement of key personnel across organizations and the presence of professional associations. Both of these factors further contribute to the role of networks in the diffusion of standard solutions to organizational
problems and the spread of new technologies. Further evidence of the positive effects of networks is described by research on embeddedness. Where embeddedness does occur, networks tend to generate trust and discourage malfeasance (Granovetter, 1985). Furthermore, inter-firm relations have been shown to positively impact on firm performance (Kraut et al., 1998; Uzzi, 1996). And where embeddedness does not occur, and individuals act as rational profit maximizers, economic activity is often stymied by the lack of interpersonal trust required to delegate authority and resources to others.

This is not to say networks and embeddedness are all positive. Inter-firm networks and embeddedness can have negative effects as well. Once new ideas introduced through networks are adopted and developed, subsequent change may well be retarded because of interdependencies among members of the network, resulting in lock-in (Shapiro & Varian, 1999). Also, fledgling firms in tightly formed networks may have troubles growing as obligations to other members make reinvestment of profits difficult.

Besides categorizing inter-firm networks by the members and types of information shared, inter-firm networks can also be described by their structure. The structure is often a reflection of the market structure within the industry. They can be centralized and hierarchical like a bureaucracy, with a dominant organization at the peak. They can also be segmented into multiple more-or-less hierarchical clusters, or disorganized and even fractious, as in highly competitive industries. These patterns of inter-firm networks reflect market structure and hence are significant both for the life chances of individual organizations and for explaining patterns of organizational behavior such as e-commerce adoption.

Ignoring differences in membership or structure, networks can be viewed as a resource and their distribution throughout an economy can be examined. Studies have shown that education is a key to creating larger numbers of contacts as well as more advantageous contacts. Thus one might expect different network structures in industries with large numbers of college educated professionals. Of course the form of and use of networks will also vary with firm size. For example, small firms are more likely to rely on networks to find employees than large firms, who tend to use more standardized processes (Powell & Smith-Doerr, 1994).

In this research the role of networks in traditional commerce will be examined, as well as ways in which the functions of networks such as sharing of information and providing leads is being transferred to the electronic realm. Furthermore, the role of networks as an impetus for e-commerce adoption will be examined. Finally, the role of networks as intermediaries in electronic information flows is appraised.

3.1.7 Trust

The previous sections have described elements of a well-functioning market economy. In this section we continue this process by considering the role of trust. Trust is a multi-faceted construct and has been studied from a variety of perspectives. Viewing trust as a societal characteristic, its implications are likely to affect the overall potential for electronic commerce. On the other hand, viewing trust at the interpersonal level informs our investigation in terms of firm-level e-commerce adoption. Based on an interdisciplinary meta-analysis of trust research trust is defined as follows:
"Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another." (Rousseau, Sitkin, Burt, & Camerer, 1998, p.396)

Integrating trust into economic analyses is a controversial issue. Some economists see trust simply as implicit contracting where oral agreements are upheld (Zucker, 1986, p.56). More in-depth treatments are considered problematic because trust is difficult to define and measure and we often take it for granted. Despite these hurdles trust is creeping into economic analyses, particularly those in institutional economics, as recent research on trust, contracts and cooperation demonstrates (see Lorenz, 1999). Eggertsson (1990) sees trust as fundamental to exchange, arguing that even something as basic as the acceptance of token money requires trust. The acceptance of token money requires trust in both the bank and the state. We accept the vulnerability that they could refuse to accept the money based on positive expectations built up through years of stable currency, government acceptance, and a stable banking system. Without trust, the un-willingness to be vulnerable would foreclose exchange (McCarty, 2001), and hence it is a fundamental element for well functioning markets.

Trust can be examined more closely by considering its two component parts separately. First there is the willingness to be vulnerable. In commerce, this is often determined by the risk preferences of managers. Risk preferences vary based on a range of factors including individual dispositions, national culture and organizational culture (Chiles & McMackin, 1996). The second dimension of trust, that the willingness to be vulnerable is based on positive expectations of behavior, is very much affected by the institutional environment.

The relationship between trust and institutions, particularly in economic development, is demonstrated in Zucker’s (1986) historical analysis of the U.S. economy. The research identified four formal trust producing structures: the spread of rational bureaucratic organizations; professional credentialing; the service economy, including financial intermediaries and government; and regulation and legislation (Zucker, 1986, p.54). These structures reduce uncertainty and provided a basis for expected behavior. In her analysis she describes three different types of trust with the categorization stemming from the source or basis for trust. The types of trust are: process-based, characteristic-based, and institutional-based trust.

Process-based trust develops from past exchange. With this type of trust actual experience may be replaced by the experience of others as a basis for trust. This experience-of-others is often communicated through reputation or brand name. Characteristic-based trust is tied to a person, depending on characteristics such as family background or ethnicity. It can be considered ‘free’ since it is derived from general societal processes. Also, it can neither be bought nor invested in. Finally, institutional-based trust is derived from broad societal institutions, depending on individual or firm-specific attributes (e.g. certification as an accountant) and on intermediary mechanisms (e.g., use of escrow accounts). With both types of institutional trust, trust becomes a saleable product. It is a social commodity that is

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32 This is similar to the consequences of excessive transaction costs (Williamson, 1985). The reasoning here is, however, more specific. Transaction costs can foreclose exchange for many reasons, but when the reason is extreme uncertainty, it means that the parties are not willing to be vulnerable because there is a lack of trust. This conceptualization allows for the possibility where uncertainty is great (thereby making transaction costs potentially high) but exchange goes on because one or both firms are willing to be vulnerable.

33 Here reputation is considered a symbolic representation of past exchange history, while brand name is a deliberately constructed proxy for reputation (Zucker, 1986, p.62).
manufactured by individuals, firms, and entire industries. Brokers in insurance, stocks, and real estate are to some extent selling services that provide trust (Zucker, 1986, p.60).

In addition to being derived from different sources, trust also exists at different levels: minimal and extended (Humphrey & Schmitz, 1998). Minimal trust is the socially based trust considered by Platteau and Fukuyama (as explained in Chapter 2). It is the type of trust that allows the development of impersonalized exchange. Extended trust, on the other hand, provides the basis for inter-firm cooperation.

The role of trust in cooperative ventures is a subject in economic sociology. Powell and Smith-Doerr (1994) raise the following questions: Can cooperation come about independent of trust? Can trust be a result rather than a precondition of cooperation? (Powell & Smith-Doerr, 1994). In their review of literature on networks and collaborative arrangements they argue that sources of good faith vary significantly with the type of collaboration. For example, in industrial districts trust is built on norms of reciprocity that are present due to ties of place and kinship. On the other hand, trust in R&D collaborations tends to develop based on the bond of common membership in a professional community. These bonds may in turn facilitate the flow of information, which has been shown to affect the level of trust (Tomkins, 2001).

The issue of trust in commercial transactions can be summarized as follows. Greater levels of trust and greater variety of sources of trust will create more fluid exchange in an economic system. In addition to sources and levels of trust, trust can be viewed from both a static and dynamic perspective. A one-shot, non-standardized, non-recurring transaction requires trust. However, this level of trust will be different from the kind of trust developed over years of relational contracting between firms. Trust at some level is the basis for cooperation. Cooperation is an important aspect of an economic system for it often allows for such advanced processes as specialization and the capture of economies of scale and scope (North, 1990). If exchange partners are unwilling to cooperate specialization would fail, as specialized firms would be left with incomplete products. Specialization increases vulnerability and hence requires greater levels of trust. Thus, the extent to which trust is present in an economic system will have implications for the level of cooperation, which in turn influences the types of economic activities, the types of contracts, and the efficiency of the economic system. But as North (1990, p.34) points out: "There is nothing automatic about the evolution of cooperation from simple forms of contracting and exchange to the complex forms that have characterized the successful economies of modern times."

3.1.7.5 Trust in Electronic Commerce

The issue of trust has received a great deal of attention in e-commerce research and practice. Here we discuss the relationship from two perspectives: the technical aspects and the social aspects. Although the popular discourse on trust often focuses on the technical aspects, such as security of transmission and identity of senders, there are many social and institutional aspects of trust that will affect electronic commerce as well.

3.1.7.5.1 Technical

Establishing trust, particularly the expectations of positive behavior, for commercial transactions on the Internet requires the development of secure and reliable technologies. Security for e-commerce can be examined at two levels. The first is Internet security and the second is transactions security (Ratnasingham, 1998). Internet security is concerned with the network, system and applications components of the electronic commerce solution.
Transaction security is the protocols, both procedural and technical, that affect transactions. In general electronic commerce security must address each of the following: authorization, authentication, integrity, confidentiality, availability, non-repudiation, and privacy. These are addressed by firewalls, encryption, digital signatures, digital certificates, and secure network and application protocols. Privacy is protected through policies and procedures that limit the distribution of information collected online\(^\text{34}\).

The development of secure processes and technologies will go a long way towards establishing positive expectations, or trust, for electronic exchange. The expectations, however, will not only be based on the quality of these solutions but their reliability as well. In terms of reliability, trust can be affected by actual issues with reliability, such as server outages, firewall software glitches, and broken cables. Perceptions of reliability, such as those formed by newspaper articles lauding the skills of hackers, are important as well (Schneider, 1999).

### 3.1.7.5.2 Social

The variety of types and bases for trust demonstrates the complexity of the concept. Minimal trust often has its basis in shared social norms and is thus somewhat at odds with the distance spanning properties of the Internet. Research in the coming decade should be able to assess how geographically constrained these social norms are. From the discussion of extended trust and cooperation it is possible to speculate that some bases for trust, such as membership in common professional communities, may well be transferable to the Internet environment.

There are actually many reasons why trust in e-commerce may differ from that in traditional commerce (Ratnasingham, 1998). Issues such as the ability to easily change identity make traditional bases for trust, such as reputation, challenging in e-commerce (Friedman & Resnick, 1998). E-commerce also presents a variety of new tools and processes for exchange, and the lack of experience with these tools also creates challenges for trust (Tan & Thoen, 2001). Electronic commerce may also affect trust through its effect on value chains. Transactions that were once mediated, may become more direct. Intermediation may continue but will need to adapt to this new environment. These new intermediaries may play the role of 'trusted third parties' and may combine existing cospecialized assets, such as expertise and relationships, with new technologies to provide services such certification, time stamping, and electronic notarization.

Business-to-business (B2B) e-commerce will face its own set of trust issues. The reluctance of managers to adopt e-commerce has been shown to be related to three risk factors: client risk, financial risk and legal risk. Of the three, legal risk has the greatest affect on firm adoption decisions. The relative importance of the risks varied by industry with manufacturing having the least concern about legal issues, compared with their service sector counterparts (Schoder & Yin, 2000). Overcoming the legal issues that will allow firms to trust e-commerce systems will require not only policy changes but education about the changes and their integration into trusted business processes.

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\(^{34}\) Privacy policies, which differ between the European Union and the United States, are a prime example of how national level differences influence even the technical aspects of the Internet and electronic commerce (Camp, 2000).
In some ways, however, the issues of trust in business-to-business e-commerce are similar to those experienced in traditional commerce. As in traditional commerce, the flow of trust in electronic commerce must be two-way. Firms must be trustworthy, but they must also be willing to trust others. As reflected in the research by Schoder & Yin (2000) decisions about transaction partners are likely to balance the value of the transaction with various risk factors, similar to decision processes used in traditional commerce. In traditional commerce, however, these decisions are often based on reputations. It is unknown how firms will establish themselves as trustworthy business partners in an online environment, although research about various collaborative reputational mechanisms is underway (Zacharia, Moukas, & Maes, 2000).

Establishing new institutions to facilitate trust in e-commerce may be even more challenging for developing countries, as observed in a recent OECD report:

"In many societies, especially in the developing world, trust is established and reinforced through family association, repeated personal contact and interaction. Modern societies have devised ways of extending the basis of trust through the impartial enforcement of the law and its adaptation to a new technological environment. This is the basis of the trust that underpins e-commerce in the developed world. Where legal and juridical institutions are underdeveloped, as in much of the developing world, e-companies find themselves at a disadvantage because of insecurity, whether real or perceived." (Goldstein & O'Connor, 2000, p. 23)

In this research we will examine the role of trust in the commercial environment, in networks, and at the firm level. We will explore the role of trust in business-to-business e-commerce adoption and the effect of e-commerce on the development of trust. Interactions between various fundamental elements, such as contracts, enforcement, and trust, will be explored as well as their implications for e-commerce. Furthermore, we will examine developing country commercial practices and assess whether or not they will be at a disadvantage for forming trust in e-commerce.

3.1.8 Intermediation

The final concept in the list of fundamental elements of a well-functioning market is intermediation. An intermediary is an economic agent that helps buyers and sellers meet and transact, and sometimes in doing so takes possession of goods (Spulber, 1996). In traditional commerce intermediaries have performed a variety of tasks and filled several roles. It is generally recognized that intermediaries perform four functions: match buyers and sellers (brokers); buy & sell (retail); transform goods (transformation); and information brokerage (Choi et al., 1997). Furthermore, the actions of intermediaries can be generalized into four distinct market roles.

First, intermediaries reduce search and hence transaction costs and second they smooth out the transaction process. Primarily the first two types of intermediaries (brokers and retailers) achieve this. Intermediaries also absorb risk. This function accounts for a significant amount of the value of international trade intermediaries, as demonstrated in a study of U.S. international trade intermediaries by Perry (1992). Intermediaries' ability to absorb risk relies to great extent on their knowledge of the trading partner. Thus, networks of business relations are part of an intermediary's assets. Finally, intermediaries can also assess product quality and in turn create pressure for greater quality. Typically an intermediary involved with assessing
quality must be a long term player to reap the benefits of the sunk costs of gaining expertise as well as to reap the benefits of their truthfulness.

From this discussion we can see how the use of an intermediary can help the market work efficiently. At times when a firm in an unintermediated market may chose not to trade with another firm, either due to uncertainty about the quality of the product or the honesty of the firm, intermediaries can step in and facilitate a transaction. This may occur even if use of the intermediary adds to the cost of the transaction.

Electronic commerce has instigated a process of change among many intermediaries. The earliest thoughts about how this change would occur focused on the ability of the information infrastructure to make transaction costs insignificant such that firms would begin to interface directly with consumers, threatening the viability of intermediaries (Benjamin & Wigand, 1995; Wigand & Benjamin, 1995). Later it was observed that the assumption of extreme reductions in transaction costs is unrealistic, leading to an analysis that predicts intermediaries will exist but only those who adapt to the new environment (Choi et al., 1997; Sarkar, Butler, & Steinfeld, 1995). Subsequent analysis now predicts an intermediation, disintermediation, reintermediation (IDR) cycle by which reintermediation allows a disintermediated player to reenter the value chain (Chircu & Kauffman, 2000).

Examining the role intermediaries have traditionally played, it is expected they will continue to exist if for no other reason than simply to absorb risk. The need for intermediaries based merely on conditions of uncertainty is supported by the anarchic organization of the Internet, in and of itself (Borenstein, 1996). Furthermore, as information becomes easier and less expensive to access it is assumed the value of intermediaries will rely less on transactional efficiencies. Networks of connections with people, and the ability to process and apply information to very specific tasks will more importantly determine the value of an intermediary. This ability to match buyers and suppliers is expected to be a great asset of electronic markets, and research is being carried out to establish creative mechanisms implemented through software that will provide efficient match making and hence bring about reductions in search costs (see e.g. Geihs & Farsi, 1997; Schmid, 1997).

This research will examine the role of intermediation and its implications for the use of electronic commerce. Furthermore the possibilities for intermediation in particular industries and interactions between fundamental elements such as information flows, networks, and intermediation will be examined. The issue of intermediation is particularly relevant for analysis of the Trade Point program, whose agents act as information brokers.

3.1.9 Interactions

The fundamental elements described in the previous sections represent the foundations for well-functioning markets in traditional commerce. An assumption of this research is that the success of electronic commerce will rely on the same fundamental requirements as traditional commerce. Certainly there will be differences, but these are expected to be marginal. In the following paragraphs key interactions between some of the foundational elements will be described. As previously stated, the relationships between these variables are too complex to suggest a causal model or even a model that includes all variables. By discussing relationships between subsets of variables and their dependencies, their implications for e-commerce can be seen.
The differences in levels of analysis must also be addressed. As discussed in presenting the definition of institutions, this research assumes that institutions exist at the macro, meso, and micro levels. Behaviors at all levels are shaped by the institutions at the other levels, particularly the levels 'above.' This may appear to violate a rule of traditional theoretical investigations. However, in the case of institutional economics there is a call for accounting for the various levels in analyses. The current debate is less about which level of analysis should be employed, they are all recognized as having an important contribution, but more on the emphasis placed on the various levels given the perspective of various researchers. For example, Williamson (1996) in discussing the role of institutional economics in economic development recognizes the important contribution of a property rights regime. He does however contest the importance placed on this level of analysis given his own emphasis on more microanalytic levels:

"...there is also a concern that too much weight will be assigned to the institutional environment, as opposed to the institutions of governance. The exaggerated weight that is placed on court ordering (as provided by the institutions of the state) in relation to private ordering (as crafted by the immediate parties to and affiliates of a transaction) is one example." (Williamson, 1996, p. 328)

As implied by the research question that asks 'Which institutional foundations and at what level have the greatest impact on electronic commerce adoption by small firms?' this research attempts to address Williamson's query concerning which levels are most important, given the context of business-to-business e-commerce in developing countries. A potential point of conflict in such an analysis is the contradictions in assumptions that are present in each theoretical perspective. There are differences in assumptions about the propensity for opportunistic behavior, as well as assumptions of risk neutrality and uniformity of enforcement. By examining which levels of institutional analysis matter for electronic commerce, and more importantly in which contexts and to what extent, this research will examine the sensitivity of these assumptions and their implications for the theories presented.

The first three variables to be discussed are property rights, contracts, and enforcement. Of the three, property rights are a pre-requisite. The protection of property is a fundamental element of exchange. Indeed, property rights establish the right to exchange. The concept of a contract is thus meaningless without property rights. Property rights are rarely non-existent. What might be seen as variations in property rights are often in fact variations in the enforcement of property rights. Thus, the effectiveness of contracts in a commercial environment and the extent to which they reduce uncertainty is a function of both property rights and their enforcement.

Property rights, enforcement, and contracts are expected to affect electronic commerce in two ways. The level of enforcement of property rights, particularly in the realm of copyright, will partially determine what types of industries take advantage of e-commerce. Furthermore, in business-to-business e-commerce variance in the enforcement of contracts may also influence which industries are able to take advantage of e-commerce.
Next the relationship between competition, information flows, and networks and their association with enforcement are discussed. Competition was described as a fundamental element in that it spurs important functions such as innovation and investment that are signs of well-functioning markets. Competitive markets are expected to be an important factor in reducing prices and stimulating the adoption of electronic commerce. Moreover, competition helps enhance performance of contracts as both consumers and other firms can defect to alternative firms in the case of contract non-compliance. A second factor that aids enforcement is information flows, which are in turn enhanced by the presence of networks.

Trust also interacts with several fundamental elements as depicted in Figure 3.1.9.3. First as discussed trust may act as a substitute for a contract, may enable the use of contracts, or may result from contracts. Trust certainly also enhances the flow of information through networks, and networks and information flows may in turn influence trust.

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35 The diagrams presented here and throughout the text use circles and lines in place of arrows and boxes to emphasize that the shapes and lines indicate inter-relatedness, not causality or the quantitative measure of particular relations.
Finally, we consider the role of intermediation. Intermediation helps smooth the functioning of markets by absorbing risk. In this way they may facilitate exchange and allow contracting. Intermediaries can also enhance information flows by increasing the quality of information available. Additionally, networks may act as intermediaries in providing information or matching buyers and sellers.

3.2 Research Design

The objective of this research is to examine institutions and their impact on electronic commerce, specifically in terms of the opportunities created for developing countries. The goal of the research design is to specify the approach used in answering the following research questions:

- How do institutions impact on electronic commerce adoption by small firms?
- Which fundamental institutional elements and at what level have the greatest impact on electronic commerce adoption by small firms?
• To what extent do institutions influence the scope of opportunities electronic commerce represents to developing countries?
• How do developing/developed country institutional differences affect the prospects for electronic commerce being an equalizing force in global commerce?

To assess the relationship between institutions and e-commerce, the focus has been narrowed to consider the fundamental institutional elements described in the previous sections. The fundamental institutional elements limit the scope of the concept of institutions as well as providing an explicit link between the concept of an institution and theory. However, in practice fundamental elements are often difficult to observe first hand. Instead their presence or lack of presence must be observed in the practices and procedures followed in a commercial system. For example, the presence of trust may be indicated when a firm is willing to begin work on an order before a contract is signed (Sako, 1992). Similarly, weakly protected property rights are signaled by the amount of pirated goods available to the average consumer. In this research the practices and procedures that result in such occurrences are referred to as intermediate institutions. The goal is to examine these intermediate institutions, analyze their relationship with the fundamental elements, and determine how both shape the potential for e-commerce.

In addition to exploring the relationship between fundamental institutional elements and intermediate institutions and their implications for e-commerce, the research must also consider the multiple levels of institutions (macro, meso, micro). Considering multiple levels and units of analysis is typical in case study research (Yin, 1994). To account for both, the following research model is used.

![General Analysis Diagram](image)

**Figure 3.2.1: Research Model**

Figure 3.2.1 shows intermediate institutions (the lower box) are assessed at the macro, meso, and micro levels. At the macro level the general commercial environment, particularly as it relates to e-commerce, is examined. The meso level is indicated by either industry-level...
processes and procedures, or in the case where industries are not constrained, the level of program or policy is considered. Again, only those processes and procedures relevant for electronic commerce are considered. Finally, the micro level is indicated by processes and procedures of firms within an industry or by participants of a program. In each instance both formal and informal institutions will be observed.

Again referring to Figure 3.2.1, the diagram also indicates that two aspects of electronic commerce are included. The first is actual adoption or use. In this instance the effects of institutions on present adoption and use are explored. For this research it is also important to address the potential for e-commerce adoption and use. The potential adoption and use reflect the future possibilities for various characteristics of markets to develop on the Web. Institutions tend to develop along trajectories, or are often path dependent (Eggertsson, 1996), and therefore an assessment of existing institutions can be extrapolated to the future potential use of electronic commerce.

Finally, Figure 3.2.1 also indicates the various levels of analysis. In the lower box, where assessment is indicated by boxes with dotted lines, the relationships between the intermediate institutions and Internet use are examined. These analyses occur within each case and will be useful in making practical recommendations at the firm, industry or programmatic level. The general analysis will examine the relationships between the intermediate institutions and the fundamental elements, and between indications of Internet use and overall possibilities for electronic commerce. Then relations between the fundamental elements and the possibilities for electronic commerce will be identified. This ‘higher’ level of analysis will help advance theories involving the various institutional elements and may provide insight that can be used as the basis of extending existing theory or creating new theory.

3.2.1 Strategy

Using the research model and theoretical background for guidance the research approach is exploratory. Attempts to derive precise measures of either the fundamental institutional elements or their intermediate counterparts are not made. Instead, the research explores how institutions impact on e-commerce and subsequently examines how these intermediate institutions map onto the fundamental institutions. The goal is to gain a better understanding of how institutions play a role in this particular 'sector' leading to a model of this process, which can serve to structure future research questions.

To provide evidence for building such a model case studies that embody different institutional environments are used. Institutions, the rules of the game, are promulgated by a variety of organizations. Thus cases reflecting various sources of institutions were chosen. In the first instance two cases that include institutions framed by the state were chosen. This is the classical type of institutional analysis. In e-commerce, however, some of the relevant factors exist beyond the realm of the state. To explore these factors, a third case that includes the institutions of a Web-based matchmaking program developed specifically for small firms in developing countries were also included.

The first two cases were chosen to be juxtaposed to highlight differences in their national level institutions. First, a city in a developing country, Dar es Salaam, Tanzania, was examined. Since Dar es Salaam is in one of the world’s least developed countries, and is undergoing significant institutional transformation, a city in one of the world’s most developed and stable
countries, the United States, was chosen for the second. The United States also has the reputation of being a favorable institutional environment for e-commerce. This design follows a multiple-case design where cases are chosen to produce contrasting results that can be explained theoretically (Yin, 1994). Thus, the extreme variations expected in the commercial environments between the two cases should present a strong case for the impact of national level institutions. One should note, however, that the variations in commercial environment are expected to be the result of both differences in institutions and differences in the functioning (enforcement) of similar institutions. Furthermore, within these very different contexts surprising similarities may be found demonstrating the ubiquitous influence of some institutions.

One of the important constraints of this research is that it examines the opportunities e-commerce presents for developing country firms in business-to-business e-commerce. Although business-to-business e-commerce is expected to be affected by national-level institutions, industry-level institutions are also expected to play an important role. Many comparative institutional analyses aim to control for industry-level factors by examining the same industry across countries. One example of this type of analysis is that performed by Stone, Levy, & Paredes (1996) who 'test' for the effects of different regulations (institutions) on the garment industry in Chile and Brazil. To test whether the regulations caused differences in firm behavior, managers were interviewed. They also interviewed lawyers, bankers and public officials to gain a perspective on the commercial environment and the institutional history. Although a similar approach is used here, in this research we also want to examine the industry-level effects which requires comparison between at least two industries. In two of the case studies we were able to restrict the research to two industries. These industries serve as 'embedded units' within the cases (Yin, 1994). Embedded units are analyzed both within and across cases. Thus, this design provides industry level controls when examining both macro and micro level institutions and permits an assessment of meso or industry level institutions.

In the two case studies with embedded units we propose to study the effect of the institutional environment on firm Internet adoption and use, which requires a consideration of the external environment of the firm. The relation of the firm to its external environment and the impact of the external environment on firm behavior and performance have been studied from a variety of perspectives. To link a firm's strategy with its environment Porter proposed a Five Forces model (Porter, 1980). The model explains the competitive nature of an industry as a function of the threat of new entrants, bargaining power of customers and suppliers, and the threat of substitute products and services. The center of the model is the industry. An adaptation of this model that puts the firm at the center was developed by Cummings & Doh (2000). They consider their model complementary to Porter's in that both attempt to identify the commercial context of the firm. The latter is focused on identifying key stakeholders in a variety of contexts. The model includes customers, suppliers, competitors, and complementors. The model is applied in the market, political/social, and technological contexts to identify these stakeholders.

These models are too general for the purposes here. A more specific model relating external environment to firm use of technology is the Information Technology Interaction model, which specifically relates consequences of a firm's information system to its context (Silver, Markus, & Beath, 1995). In this case 'context' includes system effects, the organizational context including the environment and elements of the organization, the features of the
information system, the fit between the system features and organizational context, and the implementation process. The particular aspects of organizational context of interest here are factors such as the competitive structure of the industry, relative power of buyers and suppliers, the basis of competition, regulation, and technological deployment.

Although this model makes a more explicit connection between technology use and the context of a firm it is still considered inadequate for the purposes required here. It is expected that given the nature of small firms and their sometimes ad-hoc approach to information systems, as well as the focus here being more on external rather than internal context a unique and somewhat simpler model is required. The model used here places the firm at the center and examines the functions of the firm through their relationships with those entities outside the firm. This research views the Internet as a tool to connect the firm with other organizations for commercial purposes, and thus relationships are an appropriate focus. The crucial relations are between the firm and their customers and suppliers, where communication is greatest. A secondary relationship is that between the government and the firm. Thus, the model, shown in Figure 3.2.1.1, provides a framework for assessing Internet use by firms and the influence of various actors in their institutional environment on that use.

In exploring these relations it is expected that firm age, size, and ownership may have some effect. Previous research on Internet use by small firms found that although firm age did not have a significant impact, size of the firm partially explained regularity of Internet use and whether or not a firm had a Web site (Dandridge & Levenburg, 2000). Ownership, or more specifically, whether or not it is a subsidiary, is expected to effect the formation of relations with customers, suppliers, and government. Furthermore, branch offices may have different communication needs that provide incentives for Internet adoption. The environment of the firm, including its relationships, and their exposure to institutional forces is depicted in Figure 3.2.1.1.

![Diagram of Firm, Key Relationships, and the Institutional Environment](image)

**Figure 3.2.1.1: The Firm, Key Relationships, and the Institutional Environment**

The third case applies a different strategy. In the third case the institutional environment is that of a development program. More specifically, the case examines the institutions of both
the online match making program and that of a global network of program offices. The online matchmaking program is compared with a similar program. The implications of the institutions of the network of program offices on e-commerce are drawn from interviews with the program office managers. Here again intermediate level institutions such as the role of certificate authorities are considered. Once these key institutions and their implications for e-commerce are identified a comparison is made between these findings and those of the first and second cases.

3.2.2 Strategy for Analysis

Recall that the overall approach of this research is to assess the intermediate institutions in each case and relate them to the fundamental elements for well functioning markets and then analyze their impact on electronic commerce. In the analysis the three cases are drawn together in the following way. A two level analysis is performed, where the first two cases are compared and subsequently intra-case and inter-case findings from these two cases are applied to the analysis of the third case.

This method of applying knowledge from one case to a subsequent is known as explanation building. Explanation building is an iterative process that relies on analyses performed both within and between cases, where with each subsequent case knowledge acquired from the previous case is applied (Yin, 1994). In the research performed here there is, particularly with the first two cases, tension between the need for replication for making comparisons and incorporating new knowledge. Here the new knowledge is integrated to the point that it does not seriously compromise the comparability of the two cases. This is less of a problem when moving from the second to the third case.

Thus, the analyses of the three individual cases focus on issues concerned with intermediate institutions, e-commerce, and small firms. In the first two cases, within each case relationships between the industries and the national institutions are described. Subsequently the two cases are themselves compared, seeking to find similarities and differences in institutions and whether or not they can explain similarities and differences in e-commerce use and potential. In the third case the institutions of the online matchmaking program and the interoffice network are described and their implications for e-commerce use and potential are analyzed. The analyses within and between the cases are represented in Figure 3.2.2.1.

![Figure 3.2.2.1: Relationships Between Cases](image-url)
These case level analyses are followed by an overall analysis in which the findings from the three cases are combined to identify those intermediate level institutions and their levels that are most critical for the adoption of electronic commerce. Subsequently, connections between the intermediate institutions and the theoretically derived list of fundamental elements for well functioning markets are described. From this description the critical institutional foundations are identified and their implications for e-commerce in developing countries are assessed. The assessment is first limited to observations from the study that directly apply to small firms. Subsequently, the scope is broadened and the implications for e-commerce in general are described. Finally, the opportunities electronic commerce creates for economic growth are discussed.

This mode of assessing the relationship between institutions and e-commerce is fundamentally one of comparative statics and is often used in policy and institutional analyses (Alston, 1996). Focusing on a single point in time facilitates comparison but does have the drawback of suppressing dynamic aspects of relationships. In this research a static perspective has limited significance for institutions, which change slowly. However, with e-commerce, in which processes and technologies change rapidly, the consequences are more significant. There is a danger of drawing conclusions between institutions and e-commerce that are actually temporary, having more to do with the process of diffusion of a new technology and being at a particular location along that diffusion curve. In the analysis this possibility will be considered and conclusions will be take this possibility into account.

3.2.3 Cases

As previously described, the cases were chosen to represent different institutional environments. The first two cases provide a bold institutional contrast. Dar es Salaam being the de facto capital city in one of the world’s poorest countries which is also a former socialist country was chosen based on English language ability of its people and the availability of funding for the research.

Given Dar es Salaam as the city for the first case study, it was then necessary to identify the two industries that served as control variables when analyzing macro level institutions as well as defining the meso level institutions. The industries were chosen using the following theoretical and practical criteria. The theoretical criteria are first that it be an industry that could hypothetically benefit from or is likely to use inter-firm electronic commerce. To maintain this inter-firm focus industries in which direct consumer contact is a major function of the firm were not considered. The industry should also work with information intensive products or products that can be easily transformed into digital goods. Firms in the services sector typically deal in these sorts of products. The service sector was also seen as a good choice due to the growth potential of these sectors in developing countries. A study of SMEs in Botswana found that service firms and those involved in export where far more likely to use email than manufacturing or non-exporting firms. Service industry firms also made the greatest use of computers (Duncombe & Heeks, 1999). Practical considerations were focused on which service sector industries would be found in Dar es Salaam and furthermore which industries would be conversant with Internet technologies. Furthermore, it would be beneficial to examine an industry in which the firms were aware of the pros and cons of electronic commerce and additionally were aware of the limitations of their commercial
environment. Thus, the chosen industries are likely to represent more advanced ICT users than in the commercial environment in general.

The 1995/96 Tanzania Business Contacts Directory was used to identify service sector firms. The directory was published by the Tanzanian Chamber of Commerce, Industry and Agriculture and was the most recent listing readily available through the Chamber at this time. Table 3.2.3.1 lists the service sector industries identified by the directory:

<table>
<thead>
<tr>
<th>Architectural / Civil Engineers</th>
<th>Laundry Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auctioneers</td>
<td>Management Consultants</td>
</tr>
<tr>
<td>Automotive Workshop / Garage</td>
<td>Manufacturers Representatives</td>
</tr>
<tr>
<td>Banking &amp; Finance</td>
<td>Printers / Publishers</td>
</tr>
<tr>
<td>Bureau de Change (Forex)</td>
<td>Real Estate Developers / Agents</td>
</tr>
<tr>
<td>Car Hire &amp; Rentals</td>
<td>Restaurant / Bar Operators</td>
</tr>
<tr>
<td>Clearing &amp; Forwarding Agents</td>
<td>Secretarial Services</td>
</tr>
<tr>
<td>Construction</td>
<td>Security Services</td>
</tr>
<tr>
<td>Debt Collection Agency</td>
<td>Tailoring</td>
</tr>
<tr>
<td>Fabrication Metal</td>
<td>Tourism</td>
</tr>
<tr>
<td>Hair Salon / Beauty Clinics</td>
<td>Training Institution</td>
</tr>
<tr>
<td>Hotels</td>
<td>Transportation</td>
</tr>
<tr>
<td>Insurance Brokers / Agents</td>
<td>Warehousing</td>
</tr>
</tbody>
</table>

Table 3.2.3.1: Tanzanian Service Sector Industries

Using the criteria discussed above, a short list of industries was prepared and the number of firms listed in the directory associated with each was tallied. The results are shown in Table 3.2.3.2. The most active industry in terms of having web sites is tourism, however most of the sites were geared not for business-to-business use but direct consumer contact. After considering the short list a search for web sites was undertaken and the industries of consulting engineering (architectural/civil) and clearing & forwarding agents were chosen.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural / Civil Engineers</td>
<td>20</td>
</tr>
<tr>
<td>Auctioneers</td>
<td>2</td>
</tr>
<tr>
<td>Banking &amp; Finance</td>
<td>7</td>
</tr>
<tr>
<td>Clearing &amp; Forwarding Agents</td>
<td>17</td>
</tr>
<tr>
<td>Insurance Brokers / Agents</td>
<td>12</td>
</tr>
<tr>
<td>Management Consultants</td>
<td>9</td>
</tr>
<tr>
<td>Real Estate Developers / Agents</td>
<td>9</td>
</tr>
<tr>
<td>Secretarial Services</td>
<td>13</td>
</tr>
<tr>
<td>Security Services</td>
<td>2</td>
</tr>
<tr>
<td>Training Institution</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 3.2.3.2: Short List of Service Sector Industries

Clearing & forwarding agents, also known as customs brokers, are intermediaries in international trade who help importers and exporters move their goods through customs. Engineering consultants operate as independent entities providing engineering designs for one-time projects such as environmental remediation or bridge and road construction. In
addition to meeting the above criteria, these sectors also have the benefit of consisting mostly of small firms, another sector expected to have growth potential for developing countries. Also, the firms in these industries have many international connections which require them to be aware of the latest communication technologies, thus creating awareness of the potential of electronic commerce. Furthermore, both customs brokerage and engineering consulting are licensed industries. Licensing is becoming increasingly international and thus although national level differences will exist there is a basis and desire for greater similarities.

The process of choosing a city for the second case study required simultaneous consideration of the relationship between the city and other cities in that country, in terms of its representativeness, as well as its relation with Dar es Salaam in terms of its comparability. Deemed particularly important in this case were institutional factors, port and customs licensing factors, and general demographic factors.

To ensure comparability with the Tanzanian case, one of the first requirements was that the city has both customs brokerage and engineering consulting firms. Since customs brokers congregate in port cities, this became one of the criteria. To maintain some level of comparability with the Tanzanian customs brokers extremely large ports such as New York and Long Beach were not considered. Based on these factors a short list of cities was developed that included Baltimore, Maryland; Boston, Massachusetts; Philadelphia, Pennsylvania; Richmond, Virginia; San Diego, California; Savannah, Georgia; and Wilmington, North Carolina. Data on each of these cities is shown in Appendix III.

To further insure comparability the institutional environments were also considered. Without prior in-depth knowledge of a city, the presence of organizations such as a Chamber of Commerce, an engineering consulting industry organization and a customs brokerage organization were used as indicators of the institutional environment. The parameters of interest were first the existence of such institutions, the number of members, and the location of the organization. In some cases the organizations were located at a distance to the firms. For example in Savannah, Georgia the engineering firms belonged to an industry association in Atlanta. This distance could effect the role the industry association played in terms of networks among firms. Thus, for this category of organization it was deemed important that they be present in the chosen city. Of the seven port cities considered only Baltimore and San Diego fulfilled this criterion.

The third criterion used to make the decision was concerned with customs brokerage licenses. In some cases the U.S. customs license districts are geographically large, including as many as 12 ports. In Tanzania the firms were clearing goods at only a few ports (the harbor, the airport, an inland border crossing). Since the ports themselves could impose particular institutional structure it was decided to limit the number of ports a broker served. Those cities in which the customs license district included three or fewer ports are Baltimore, Richmond, San Diego, and Savannah.

Finally a comparison of general demographic factors (per capita income and size) were made. Size and income were considered as factors influencing the development of the institutional structure. Although no comparison based on wealth can be made between Dar es Salaam and an American city, the wealth of the city will affect how well it represents other American port cities. American port cities are relatively wealthy. Statistics ranking cities based on personal income show that of the seven port cities considered here, six rank in the top 50%. For the
cities with the best institutional structure and low numbers of ports in their licensing district (Baltimore and San Diego) the per capita personal annual incomes and ranks are $27,770 (41) and $24,965 (89), respectively. In terms of size, San Diego with a population of 1.25 million was a close match to Dar es Salaam's 1.5 million. Therefore, for all of these reasons San Diego was chosen for this research.

For the third case, the one that examines institutions of a Web-based match making program, the UNCTAD Trade Point program was chosen. The case examines how the institutions, or rules of the game, developed by the program and reflected in its match making program, effect the commercial environment and potential for e-commerce. The Trade Point program has two distinct elements. One is the Web-based matchmaking program and the second is a network of offices around the world. The institutional environments of both aspects of the program are considered in the analysis as they are intended within the program to complement one another.

### 3.2.3.1 Data Collection

In each of the three cases a variety of information sources was used. The goal for choosing the sources was data triangulation, used to increase the construct validity in the study. In the first two cases, information on the institutional environment was gathered through in-depth interviews from several viewpoints, including organizations in the general commercial environment as well as firms in the chosen industries. These perspectives were compared with information gathered from documents including newspaper articles, government policy papers, and political speeches. For example, one intermediate measure of enforcement was use of the court system for contract violations. Information on the use of the courts gathered from organizations in the general commercial environment was compared with government reports on the use of small claims court, which was compared further with firms' perceptions of the effectiveness of small claims court.

In each case use and potential of e-commerce was also assessed. In the first two cases this information was gathered from the interviews with organizations and firms. In interviews with organizations, managers reflected on their own Internet use as well as use in the commercial environment in general. In interviews with firms the model shown in Figure 3.2.3.1 suggests Internet use be assessed through interaction by firms with external parties, such as customers, suppliers and the government. Reflecting on the basic tasks of firms, finding, negotiating with and managing customer relations were chosen as potential key uses of the Internet. In the knowledge intensive service sector suppliers can be considered the intellectual resources used to create the service. In this case these are the firms' employees. Since the management of employees requires little external communication, we focused on the task of finding employees. The external environment also includes the government however we expected the frequency of communication between the firm and the government to be lower than with the other forces in the external environment. Consequently, firms were asked about their Internet-based interaction with the government but it was expected this would be lower than with the other groups.

The micro level institutional environment is reflected in the 'rules of the game' firms establish in their key relationships. These relations are themselves micro-level institutions with norms for behavior and associated sanctions and mechanisms of enforcement. The institutions

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36 In addition to these factors San Diego was the only city that had a Trade Point office, which was helpful in a subsequent part of this study. Statistical source: U.S. Dept. of Commerce, [http://www.bea.doc.gov/](http://www.bea.doc.gov/)
embodied in these relations were expected to partially account for the potential for Internet use. To assess the impact of these norms on Internet use firms were asked about their Internet use with suppliers, customers and government. The relations and their associated measurements are given in Table 3.2.3.1.1.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer relations</td>
<td>-finding customers</td>
</tr>
<tr>
<td></td>
<td>-negotiating terms / contracts</td>
</tr>
<tr>
<td></td>
<td>-working with clients (what happens when things go wrong)</td>
</tr>
<tr>
<td></td>
<td>-delivering products</td>
</tr>
<tr>
<td>Suppliers</td>
<td>-finding employees</td>
</tr>
<tr>
<td></td>
<td>-managing employees (what happens when things go wrong)</td>
</tr>
<tr>
<td>Government</td>
<td>-licensing</td>
</tr>
</tbody>
</table>

Table 3.2.3.1.1: Constructs and Measures used in Firm-Level Interviews

Thus, in the first two cases the relationship between the institutions and use of e-commerce was assessed through interviews with managers in which the basic tasks of firms were discussed. By probing the reasons for use/non-use of the Internet for accomplishing these tasks it was possible to discover when institutional factors were involved with use/non-use. In the third case the relationship between the institutions and use of e-commerce was assessed through interviews with program managers as well as reviews of the operation of the match making system. In the interviews with the managers they were asked to identify problems their clients faced and their causes.

In this research interviews were performed in person and were taped, with some simultaneously note taking as well. There were three instances in Dar es Salaam where taping was not allowed (two government agencies and one multinational) and one instance in San Diego where an interview was held over the phone. In these instances notes had to suffice. The interviews were semi-structured with both similar and different questions being asked depending on the interviewee's role in the research (macro, meso or micro level information being provided), industry and/or program. The interviews lasted roughly 45 minutes on average, with the shortest being 15 minutes and the longest 2 hours. In most cases, one person per organization was interviewed and attempts were made to insure this person was knowledgeable about a wide range of organizational issues.

The tapes were subsequently transcribed by the author. Although time consuming, this method allows for a synthesis of the information gathered through the semi-structured interviews. Furthermore, the accents of the various interviewees could have been difficult for a third party transcriptor to understand. The information from the transcripts was then organized into various categories for use in the analyses detailed in the following section. Before describing the method of analysis, specific information about the samples are given in the following sections.

3.2.3.2 Dar es Salaam

The case study in Dar es Salaam took place in October and November of 1999. In the case macro, meso and micro institutions and e-commerce use and potential were assessed. The interviews can be broken into two categories: those for collecting evidence on the macro level institutions and those for collecting evidence on the meso and micro level.
At the macro institutional level three categories of organizations were targeted. First, government bodies responsible for policies affecting the Internet and e-commerce were sought out. This category included the Communication Commission and the Ministry of Communication and Transport. The Ministry sets policy in the telecom and Internet services market and the Communication Commission implements the policies. The Bank of Tanzania serves as the country’s central bank and makes recommendations concerning issues such as payment systems. The Bureau of External Trade is responsible for promoting exports and is developing ways to use e-commerce to increase exports.

It was also considered critical to discuss the potential for e-commerce with representatives of the general commercial environment. In this case a bank, a lawyer and the Chamber of Commerce were consulted. The bank served as a crosscheck for the central bank as the central bank regulates banking activities in Tanzania.

The last category is the telecom and Internet services providers (ISPs). Again these firms are regulated by the Communication Commission and were able to provide a different perspective on the market and the constraints they face. The interviewees also countered one another in that they all serve different roles in the market. The three ISPs represent the largest players in the market and one of them serves as the country’s domain name registration body. Interviews were also held with the dominant telecom provider, TTCL and with one of the data network operators, Datel. These interviews were arranged through direct contact via the Internet, contacts made through the University of Dar es Salaam, and from references from interviewees. The organizations and their categories are shown in Table 3.2.3.2.1.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Category</th>
<th># Persons Interviewed</th>
<th>Position of persons interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzanian Communication Commission</td>
<td>Government</td>
<td>2</td>
<td>Director General; Director Telecom Development</td>
</tr>
<tr>
<td>Ministry of Communication and Transport</td>
<td>Government</td>
<td>2</td>
<td>Principal Executive Engineer, Legal Advisor</td>
</tr>
<tr>
<td>Board of External Trade</td>
<td>Government</td>
<td>1</td>
<td>Head of Trade Information Services</td>
</tr>
<tr>
<td>Bank of Tanzania (Central Bank)</td>
<td>Government</td>
<td>3</td>
<td>Director, National Payment Systems; Senior Legal Counsel</td>
</tr>
<tr>
<td>CRDB Bank</td>
<td>Commerce</td>
<td>1</td>
<td>Head of Information Systems</td>
</tr>
<tr>
<td>Kessaria -- lawyer</td>
<td>Commerce</td>
<td>1</td>
<td>Lawyer</td>
</tr>
<tr>
<td>Chamber of Commerce</td>
<td>Commerce</td>
<td>1</td>
<td>Executive Officer</td>
</tr>
<tr>
<td>CATS</td>
<td>Telecom / ISP</td>
<td>1</td>
<td>Group Managing Director</td>
</tr>
<tr>
<td>CyberTwiga</td>
<td>Telecom / ISP</td>
<td>2</td>
<td>President</td>
</tr>
<tr>
<td>Raha.com</td>
<td>Telecom / ISP</td>
<td>1</td>
<td>Managing Director</td>
</tr>
<tr>
<td>TTCL</td>
<td>Telecom / ISP</td>
<td>1</td>
<td>Engineer</td>
</tr>
<tr>
<td>Datel</td>
<td>Telecom / ISP</td>
<td>1</td>
<td>General Manager</td>
</tr>
</tbody>
</table>

Table 3.2.3.2.1: Sample for Interviews Concerning Macro and Meso Institutions

Information concerning the meso and micro-level institutions and their impact on Internet use was gathered through interviews with firms in the engineering consulting and customs brokerage industries. To ensure having interviews with firms that were familiar with the Internet and the institutional impact on its use three tactics were followed. Firms were first identified through searching for Websites and through references from ISPs. The ISPs were asked to recommend clients in the customs brokerage or engineering industries who were regular users of email. These firms would not necessarily have a web site so its use of email
would be 'hidden' from a search on the web. Once these means were exhausted firms were identified through the online yellow pages and through referrals from within the industry. The online yellow pages allowed firms to post an email address and these firms were targeted first. Firms without email listings were also contacted by phone. In the engineering field most firms had email while the prevalence of email was less in the customs brokerage field. The firms, their ages, size of the local office, and ownership are given in Table 3.2.3.2.2.

<table>
<thead>
<tr>
<th>Firms</th>
<th>Ownership / Operation</th>
<th>Size</th>
<th>Age</th>
<th># Persons Interviewed</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineering</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TanCountry</td>
<td>Tanzanian / Tanzanian</td>
<td>15</td>
<td>10</td>
<td>2</td>
<td>Engineer, Comptroller</td>
</tr>
<tr>
<td>EM Consultants</td>
<td>Tanzanian / Tanzanian</td>
<td>15</td>
<td>9</td>
<td>2</td>
<td>Managing Director; Director</td>
</tr>
<tr>
<td>Norplan</td>
<td>Norwegian / Tanzanian</td>
<td>30</td>
<td>22</td>
<td>1</td>
<td>Resident Manager</td>
</tr>
<tr>
<td>COWI</td>
<td>Danish / Danish</td>
<td>25</td>
<td>35</td>
<td>1</td>
<td>Managing Director</td>
</tr>
<tr>
<td>Howard Humphrey</td>
<td>U.S. / British</td>
<td>50</td>
<td>60</td>
<td>1</td>
<td>Resident Manager</td>
</tr>
<tr>
<td>Inter-Consult</td>
<td>Tanzanian / Tanzanian</td>
<td>30</td>
<td>21</td>
<td>1</td>
<td>Director</td>
</tr>
<tr>
<td><strong>Freight Forwarders</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ocean Link</td>
<td>Tanzanian / Tanzanian</td>
<td>30</td>
<td>10</td>
<td>1</td>
<td>IT Manager</td>
</tr>
<tr>
<td>Ocean Freight</td>
<td>Tanzanian / Tanzanian</td>
<td>30</td>
<td>15</td>
<td>1</td>
<td>Manager</td>
</tr>
<tr>
<td>ZamCargo</td>
<td>Zambian / Zambian</td>
<td>29</td>
<td>20</td>
<td>1</td>
<td>Managing Director</td>
</tr>
<tr>
<td>GNM</td>
<td>Tanzanian / Tanzanian</td>
<td>18</td>
<td>12</td>
<td>1</td>
<td>Managing Director</td>
</tr>
<tr>
<td>Sangare Express</td>
<td>Tanzanian / Tanzanian</td>
<td>10</td>
<td>11</td>
<td>1</td>
<td>Director</td>
</tr>
<tr>
<td>Regent</td>
<td>U.K. / U.K.</td>
<td>36</td>
<td>10</td>
<td>1</td>
<td>President</td>
</tr>
<tr>
<td>SS International</td>
<td>Tanzanian / Tanzanian</td>
<td>20</td>
<td>4</td>
<td>1</td>
<td>Managing Director</td>
</tr>
</tbody>
</table>

Table 3.2.3.2.2: Service Sector Firms in Sample

To explore the impact of institutions on e-commerce use and potential it would have been preferable to also include non-users. Had these subjects been pursued the research would run the risk of spending time interviewing subjects who were unaware of how institutions impact on the potential for and use of the Internet. Unfortunately, time did not permit consideration of these perspectives. Fortunately, however, the firms in the sample were new enough adopters that they could recall issues concerned with first becoming connected to the Internet. Furthermore, some of the firms had lost their connection and had to start again.

Although the method was structured for separating the macro, meso and micro institutional levels, in reality they all impact one another. Due to this 'interactivity' sources at one level did at times give information relevant to other levels. Thus firms were sometimes able to comment on the macro level institutions and organizations at the macro level were able to provide insight on meso or micro level institutions for firms.
3.2.3.3 San Diego

The method used to collect data in this study is similar to that used in the Dar es Salaam case. The data collection occurred in May and June of 2000. Interviews and secondary sources were used to collect data at the macro institutional level, while firm level interviews and industry organizations were consulted for the meso and micro level institutional environments. Below we discuss each in turn.

In collecting data on the commercial environment in San Diego one general difference from the Tanzanian case exists. Here, the investigation of macro level institutional structure focused on secondary sources as opposed to interviews. The wide range of material available on the web from which the macro institutional environment could be assessed allowed the interviewing to focus on the firm level. The macro level commercial environment investigation did consist of three interviews with key players. They were the Chamber of Commerce, the Better Business Bureau, and a local ISP, SanDiego.com.

To examine the impact of meso and micro level institutions, firms and organizations were targeted for interviews. Samples of engineering consulting and customs brokerage firms were constructed as follows.

Names of engineering consulting firms were gathered from two sources, the first of which is the online yellow pages of Ameritech (www.yellowpages.net). The online yellow pages are a service offered by Ameritech and no Internet account is required to be listed. The listings include only the phone number and address of the firm. This was less sophisticated than the Tanzanian online Yellow Pages, which also included an email address, when available. The list was formed by searching on 'engineers—consulting' in the central San Diego section of the site. This resulted in a list of 136 firms. The second source of engineering consulting firms was the Consulting Engineers and Land Surveyors of California (CELSOC) web site, which listed its members. The CELSOC site lists 67 members. The online yellow pages was chosen as a source for firms because it is known to have wide coverage and provides a list of firms not associated with any particular organization (as would be the case using firms' names obtained from the Chamber of Commerce, etc.). CELSOC was chosen, as it appears to be the leading engineering consulting organization and to judge the usefulness of membership of this organization (meso level institutional structure) it was deemed appropriate to have a sample that included both members and non-members.

Eliminating duplicates, a sampling frame of 194 alphabetically listed firms was created. Using systematic random sampling (Henry, 1990), a list of 35 firms was created. Firms were contacted through any means available, with fax being the most frequent mode.

The customs broker sample was constructed in a similar manner. The sampling frame was a compilation of two lists, one from the online yellow pages and one from the National Customs Brokers and Forwarding Agents Association (NCBFAA). In searching the online yellow pages under customs brokers firms from both San Diego and south of San Diego were chosen. The southern part of San Diego was included, as this is the geographic center for customs and
forwarding activities. Firms listed on the NCBFAA Website were chosen for similar reasons as those discussed above for CELSOC. The names are taken from the city listing on the national organization’s Website. After eliminating duplicates the list consisted of 49 firms.

Attempts to contact and set up interviews with the 32 engineering firms and the 49 customs brokers resulted in interviews with 19 firms. The firms, their ages, size, and ownership are given in Table 3.2.3.3.1.

<table>
<thead>
<tr>
<th>Firm Name</th>
<th>Locally owned</th>
<th># of employees</th>
<th>Age</th>
<th># Persons Interviewed</th>
<th>Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineering</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Law Crandall</td>
<td>No</td>
<td>125*</td>
<td>15*</td>
<td>1</td>
<td>Asst. Vice President</td>
</tr>
<tr>
<td>Haley &amp; Aldrich</td>
<td>No</td>
<td>8*</td>
<td>3*</td>
<td>1</td>
<td>Vice President</td>
</tr>
<tr>
<td>EarthTech</td>
<td>No</td>
<td>36*</td>
<td>10*</td>
<td>1</td>
<td>Vice President</td>
</tr>
<tr>
<td>RBF</td>
<td>No</td>
<td>50*</td>
<td>12*</td>
<td>1</td>
<td>Engineer</td>
</tr>
<tr>
<td>Wootton Land Consultants</td>
<td>Yes</td>
<td>2</td>
<td>18</td>
<td>1</td>
<td>President</td>
</tr>
<tr>
<td>Snipes-Dye Associates</td>
<td>Yes</td>
<td>14</td>
<td>26</td>
<td>1</td>
<td>Principal</td>
</tr>
<tr>
<td>Gilbert Technical Services</td>
<td>Yes</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>President</td>
</tr>
<tr>
<td>Corrao Group</td>
<td>Yes</td>
<td>10</td>
<td>10</td>
<td>1</td>
<td>President</td>
</tr>
<tr>
<td>Nurlogic Design</td>
<td>Yes</td>
<td>40</td>
<td>4</td>
<td>1</td>
<td>Marketing Manager</td>
</tr>
<tr>
<td>Sys</td>
<td>Yes</td>
<td>12*</td>
<td>16*</td>
<td>1</td>
<td>Vice President</td>
</tr>
<tr>
<td><strong>Aver.</strong></td>
<td></td>
<td>30</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Customs Brokers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanyo Customs Brokerage</td>
<td>No</td>
<td>19*</td>
<td>2*</td>
<td>4</td>
<td>President, Comptroller, IS Manager</td>
</tr>
<tr>
<td>Miles &amp; Joffrey</td>
<td>No</td>
<td>19*</td>
<td>11*</td>
<td>1</td>
<td>Branch Manager</td>
</tr>
<tr>
<td>Western Overseas</td>
<td>No</td>
<td>3 (150)</td>
<td>15 (50)</td>
<td>1</td>
<td>Manager</td>
</tr>
<tr>
<td>International Customs Brokers</td>
<td>Yes</td>
<td>24</td>
<td>2</td>
<td>1</td>
<td>Import Manager</td>
</tr>
<tr>
<td>Am-Mex International</td>
<td>Yes</td>
<td>50</td>
<td>16</td>
<td>1</td>
<td>President</td>
</tr>
<tr>
<td>Paxton, Shreve &amp; Hays</td>
<td>Yes</td>
<td>17</td>
<td>66</td>
<td>1</td>
<td>Manager</td>
</tr>
<tr>
<td>Ferrer Brokers</td>
<td>Yes</td>
<td>14</td>
<td>18</td>
<td>1</td>
<td>President</td>
</tr>
<tr>
<td>International Automated Brokers</td>
<td>Yes</td>
<td>30</td>
<td>12</td>
<td>1</td>
<td>President</td>
</tr>
<tr>
<td>Casas International Brokerage</td>
<td>Yes</td>
<td>115</td>
<td>16</td>
<td>1</td>
<td>President</td>
</tr>
<tr>
<td><strong>Aver.</strong></td>
<td></td>
<td>32*</td>
<td>18*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*These data are for the local office only.

Table 3.2.3.3.1: Firms in the San Diego Sample

The interviews with these firms were similar to those performed in Dar es Salaam. They were designed to reveal the impact of the institutional environment on firms' use of the Internet. Findings from these interviews are combined with those of the investigation of the macro
level institutional structure. A description of the macro level institutional structure is given in the following section.

3.2.3.4 Trade Point
The third case, the Trade Point program, begins by analyzing data collected from the GTPnet web site. Background information was gathered through UNCTAD and third party reports, supplemented by discussions with UNCTAD staff. The online match making system developed by UNCTAD is open and can be readily observed. To gain first hand experience a subscription to the match making service was kept for one week during the fall of 1998. During that time hundreds of offers for products were received via email and the format and content were observed. Information about the usability of the ETO system was also gathered from Trade Point operators.

Data for the second part of the analysis were collected at the annual meeting of the Trade Point operators in Lyon, France in November of 1998. Interviews with 14 Trade Point operators representing a variety of regions of the world were performed. These operators are an important source of information regarding both traditional and electronic international trade. They typically have several years of experience in international trade and were able to comment on a wide range of issues relevant to the Trade Point program. Before commencing interviews, each subject was verbally briefed about the nature of the study, its independence from UNCTAD, and that confidentiality will be maintained.

3.2.4 Plan of Analysis
As described in the strategy for analysis, the analysis in this research consists of several layers. The first layer is the intra-case analyses performed on the Dar es Salaam and San Diego cases. This is followed in Chapter 6 by a comparative analysis of the two cases. In Chapter 8 all three cases are synthesized and a mapping is made of the intermediate institutions onto the fundamental institutional elements. Each of these analyses is discussed below.

3.2.4.1 Intra-Case Analyses
These intra-case analyses focused on several areas. For the Dar es Salaam and San Diego cases the data was broken into two parts. First data that could be used to describe the general commercial environment was reviewed. For Tanzania, this data came mostly from interviews with persons in government and in the telecom and Internet services sectors. Some data were also taken from interviews with firms and secondary data sources were used to fill in details were possible. In the U.S. this data was mostly secondary data as much information is available online. The decision to use secondary data versus first hand interviews was made partially based on time constraints in the data collection trip to San Diego, with priority going to interviews with firm managers. The result was descriptions of the intermediate institutions relevant for e-commerce in the general commercial environment. In the Trade Point case a comparable section describing the program was developed.

The unique problems created in electronic international trade have caused some U.S. firms to limit their electronic business to the domestic realm (Chemdex.com, and gap.com, are just two examples).

Confidentiality was assured in this case due to the relationship between the operators and UNCTAD. Managers in the first two cases were not assured of confidentiality although care has been taken to not disclose strategic information.
The Dar es Salaam and San Diego intra-case analyses continued by constructing tables to categorize the information from the interviews with firms and program managers, in addition to information provided in the program and general commercial environment descriptions. The categories of tables used to analyze firm interviews were: demographics, industry associations, use of email, web, risk preferences, and use of the Internet in relations with customers and suppliers. From the table subjective assessments were made to identify intermediate institutions that had an influence on the use and potential of e-commerce. This influence was further differentiated as either direct or indirect. Direct effects were those that have a direct impact on use or the potential to use e-commerce. An example of a direct effect is the high cost of international telecommunication services providing an incentive for managers to adopt email use. Indirect effects are those that affect a wide variety of other factors but in turn affect the adoption of or future adoption (potential) of e-commerce. An example of an indirect effect is when a firm is reluctant to invest in an Internet connection because the license required to operate the firm may not be granted in the following year.

In addition to separating the intermediate institutions and their influence into direct and indirect influences, the manner in which the influence occurs, labeled as 'mechanism of effect', were also identified. A wide variety of idiosyncratic mechanisms were identified, however most could be seen as special cases of more general mechanisms and hence the number of mechanisms was reduced to three: cost, uncertainty, and perceived benefit. Although this classification is presented in the case level analyses, it is not discussed until the general analysis in Chapter 8.

The result of these larger tables was more condensed tables that summarize the institutions deemed to have an influence on e-commerce. In the Dar es Salaam and San Diego cases the tables appear in the text and indicate whether or not the institution had a direct or indirect influence on e-commerce use and potential, the mechanism of effect, and whether or not the influence was positive or negative. There are separate tables for macro level institutions and meso/micro institutions. The separate tables for each level of institution allow a comparison of the influence of the various levels. At the meso and micro level in the Dar es Salaam and San Diego cases the tables are also divided by industry. This allows a comparison of the influences of intermediate institutions across industries as well.

The Trade Point case, which begins with a general program description is followed by a description of the institutions of the matchmaking program and the network of Trade Point offices. A synthesis of the information concerning the role of the institutions on the use of e-commerce provides a basis for a description of these influences. In the Trade Point case mention is made of macro level institutions, principally to indicate their lack of effectiveness in such a program. The case is mainly concerned with meso level institutions and hence level-based comparisons are a less significant part of the case.

Thus, the intra-case analyses serve to 1) identify the intermediate institutions that influence the use and potential for e-commerce, 2) identify mechanisms of effects, 3) provide an initial indication of the significance of various institutional levels, and 4) provide an initial indication of the significance of industry for various institutional influences. Cases conclude with recommendations for ways to enhance positive influences or reduce negative influences of intermediate institutions on the use and potential for e-commerce.
3.2.4.2 Comparative Analysis

The comparative analysis is reported in Chapter 6, where the Dar es Salaam / San Diego comparison is made, and at the end of Chapter 7, where the findings from the Trade Point case are integrated with those from Chapter 6. The analysis began with constructing general tables to bring the information from the San Diego and Dar es Salaam cases together. The tables separated the information into the following categories: General commercial environment (which changes to industry specific categories as the different levels were analyzed), general effect, present day firm-level e-commerce effects, present and future society-wide e-commerce effects, institution, mechanism for effect, and Trade Point implications.

The comparison made in Chapter 6 was mainly concerned with identifying the similarities and differences between the cases. In making the comparison, the assumption was that the influence of an institution could only be argued if certain conditions exist. First, if both institutional environments and Internet use differed then a claim could be made that the differences in Internet use could be partly explained by the differences in institutions. Influences of the institutions might also be found when similarities in institutions were related to similarities in Internet use. Furthermore, similarities and differences in intermediate institutions that may have been used to explain Internet use and potential in individual cases are tested in the comparison, increasing the validity of findings in the individual cases.

In the comparison between the Dar es Salaam and San Diego cases there are four different sets of relations: (1) between macro level institutions at the national level, (2) between both sets of industries at the meso level, and at the micro level, (3) between the customs brokers in both countries, and (4) between the engineering consultancies in both countries. First the differences in all four sets of relations were examined, followed by the similarities. The similarities and differences in the institutions were also labeled as having had an influence on e-commerce or not. This judgement was made in a two step process. The first step considered both actual and probable influences, with the second step taking a more 'strict' interpretation of influence. By using a two step process, the relations that clearly did not have an influence are eliminated.

Thus, the information in the tables used at the beginning of the analysis was taken and categorized according to similarities and differences at the various levels. The information is cataloged in a set of tables in Appendix IV. Once this information was synthesized and presented in Chapter 6 the comparison continued after the description of the Trade Point case. At the end of the Trade Point case in Chapter 7 a comparison of the findings of that case, particularly in terms of the implications of meso level institutions, is made with those presented in Chapter 6.

3.2.4.3 General Analysis

There are several goals in the general analysis. The first goal is to map the intermediate institutions with the greatest implications for e-commerce onto the fundamental institutional elements. This 'mapping' occurred through the use of tables in which the fundamental element, if any, with which an intermediate institution is associated was identified. The second goal was to differentiate the strength of the influence of the institutions. Thus, the intermediate institutions were also given a score indicating the strength of their influence (high, medium or low) on both e-commerce use and potential. In this way, as the intermediate institutions were mapped onto the fundamental elements, it was possible to simultaneously
discern the relative importance of the fundamental elements. The mapping tables are presented in Appendix V.

The third goal in the general analysis was to compare the relative importance of the various levels (macro, meso and micro). This was accomplished by creating yet another table that summarized the results of the mapping tables. This table listed the fundamental institutional elements on one axis and the level of the institution on the other. The influence of fundamental institutional elements at the various levels was counted and entered in the table. This table also allowed us to meet the fourth goal which was a comparative assessment of the fundamental institutional elements. This table is presented in Appendix VI. The results of the general analysis is a model that describes the relationship between the fundamental institutional elements and e-commerce.
Section II

Service Sector SMEs and E-commerce
Chapter 4:

Prospects for Electronic Commerce in Dar es Salaam, Tanzania

To understand the effect of institutions on B2B electronic commerce for small-to-medium sized enterprises we use case studies representing different institutional environments. The first of these examines the institutional environment and its effects for e-commerce in Tanzania\(^{39}\). Tanzania, shown in Figure 4.0.1, is located on the east coast of Africa, south of Kenya and north of Mozambique. It is one of the least developed countries in the world, ranking 156\(^{th}\) out of 174 countries on the UNDP Human Development index. Table 4.0.1 illustrates that peaceful Tanzania’s per capita GDP, $173 per year, is less than some other war-torn countries such as Angola and Eritrea. Its teledensity, the number of telephones per 100 inhabitants, is far less than 1.

![Map of Africa showing Tanzania](image)

Figure 4.0.1: Location of Dar es Salaam, Tanzania

(Sources: [www.embassyworld.com](http://www.embassyworld.com) & CIA World Factbook

Despite its lack of wealth and the underdevelopment of its telecommunications infrastructure, Tanzanians are becoming interested in electronic commerce and what it has to offer. There is a growing base of Internet users in the capital Dar es Salaam and the signs of penetration in the commercial sector are everywhere: URLs on billboard advertisements, email addresses in newspaper and yellow pages advertisements, and a change in culture that has firms without an email address feeling left behind. These signs indicate that there is potential for inter-firm electronic commerce in Dar es Salaam. As Table 4.0.1 shows, Tanzania has 536 Internet hosts, which is similar to other African countries. This leads us to consider how much potential there is and how the commercial environment that keeps the traditional commercial sector from being successful will affect the prospects for electronic commerce.

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\(^{39}\) The choice of Tanzania was made based on its language (English) and the availability of funding. Funding for this case study was provided by the Dutch government NUFFIC program in cooperation with the University of Dar es Salaam. Helpful comments on this chapter were provided by Deo Fuli and Adam Messer.
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<td>Angola</td>
<td>527</td>
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Table 4.0.1: Tanzania’s Relative Development Status: HDI Rank, GDP, Teledensities, and Hosts


The case study focuses on the city of Dar es Salaam. Dar es Salaam is not representative of the commercial environment in the rest of Tanzania, as infrastructure for both traditional and electronic commerce is significantly better there. Thus, in terms of examining the potential for e-commerce in the country as a whole, Dar es Salaam is the best-case scenario.

In the context of the overall study the objective of this case is to provide evidence for answering the general research questions:

- How do institutions impact on electronic commerce adoption by small firms?
- Which fundamental institutional elements and at what level have the greatest impact on electronic commerce adoption by small firms?
- To what extent do institutions influence the scope of opportunities electronic commerce represents to developing countries?
- How do developing/developed country institutional differences affect the prospects for electronic commerce being an equalizing force in global commerce?

This case addresses, in particular, the first two of these questions. To this end more specific questions considered here are:

- How do the macro, meso, and micro-level institutions affect the use of the Internet by firms?
- How do firms use the Internet in their relations with customers, suppliers, and the government?
- How do the effects of macro level institutions compare with those of meso (industry) level institutions for Internet use?

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http://www.itu.int/tfi/industryoverview/at_glance/basic.pdf and Internet Software Consortium

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The general commercial environment will reflect the macro level institutional environment, particularly the aspects of the general commercial environment that impact on the use of e-commerce. In this case we examine the telecom market, the market for Internet access services, and the labor market. In terms of the general commercial environment issues such as taxation, the commercial legal environment, and the role of organizations such as the Chamber of Commerce are considered. The meso level is reflected in the commercial environment specific to the two industries examined: engineering consulting and customs brokerage. Of particular interest are the licensing process and the role of industry associations in the commercial environment of the firm. The micro level institutional environment is reflected in the relationships the firm has with customers, suppliers, and the government. Examining both the potential and actual use of the Internet in the firms’ relationships will assess the implications of all three institutional levels for e-commerce.

In what follows we first discuss the commercial environment in Dar es Salaam through its macro-institutional environment. Following this the meso and micro-level institutions for two specific industries are described. The case concludes with an analysis of the implications of the various institutions on the use of the Internet for inter-firm electronic commerce.

4.1 Macro-Level Institutional Environment

The commercial environment of Dar es Salaam is described in two parts. The first section describes the commercial environment from a broader perspective. It includes aspects of the economy that impact on both traditional and electronic commerce such as the legal system, the tax system, and banking. The second section examines the aspects of the commercial environment that directly affect the prospects for electronic commerce. They include the telecommunications and computing environment, the market for Internet services, and the availability of a computer-trained workforce.

4.1.1 General Commercial Environment

A commercial environment is formed by a variety of forces including history and culture, whose influence is observed in business practices and institutions such as licensing, contract law, and payment mechanisms. Typically, there exists a general environment that applies to all industries, as well as an industry-specific environment, which reflects the idiosyncrasies of each sector. The following paragraphs will describe the institutions that make up the general commercial environment in Dar es Salaam.

Dar es Salaam is a bustling East African city that serves as the de facto, although not official, capital of Tanzania. After gaining independence from Britain in the mid 1960's, Tanzania built a socialist economy. By the mid 1980's it was clear these policies were unsuccessful and the country started its slow progression toward a more open, market-oriented economy. In recent years, this transformation has brought about the privatization of large parastatals and a greater reliance on small new entrepreneurial firms. This change in the structure of the economy has required changes in a number of institutions.41

41 In his article on bureaucracy and African business, Rauth (1997) points out that although macro level reforms, mostly associated with structural adjustment programs have been carried out, second tier reforms that address the bureaucratic processes continue untouched. The lack of second tier reforms has hindered the 'realization' of approved foreign investment. "Ghana, Tanzania and Uganda each approved projects representing $1.7bn during the first four years of their newly liberalised investment codes. The percentage of investment that has actually
4.1.1.1 Commercial Legal System

One such institution is the commercial legal system. Theoretically, the uncertainties of commerce in a market economy are partially reduced by verbal and written contracts. The real mechanism for reducing uncertainty through contracts, however, comes from enforcement through the courts. There are two main problems hampering the functioning of the courts. The first of these is understaffing. Given that there are not enough judges to hear cases in general, firms are loath to go to court over a contract violation. A typical case is expected to take three to four years to resolve. The second problem with the courts is corruption, which can be seen as a consequence of underpaid judges or a general acceptance of what some would call immoral behavior. Whatever its cause, and whatever its extent (which is very difficult to accurately assess), the perception of bribes being a normal part of court expenses, and hence the cost of justice, is widely held.42

Attempts to decrease the delays associated with entering the legal system have been made. Tanzania has recently introduced alternative dispute resolution procedures. The procedures, modeled on the U.S. system, require cases to go to arbitration before moving to trial. Each case goes through arbitration approximately three to four months after filing a case. The results have been positive, with over 50% of cases settled by the alternative dispute resolution process.43 Despite these attempts to streamline the legal process, small firms generally continue to regard court as a waste of time and money, particularly if the issue is related to payment.

A second aspect of the legal system that shapes the commercial environment in Tanzania is the foreign ownership law. Presently, ownership laws allow international firms to operate wholly owned subsidiaries in the country. However, the government is threatening to change the investment laws. Firms with even partial foreign ownership may be affected by these changes, and the prospective changes are a great source of uncertainty for all foreign-owned firms.44

The commercial environment is shaped by a third aspect of the commercial legal system, that is intellectual property rights (IPR). The protection of IPR in Tanzania can be assessed simply by observing the amount of pirated goods available in the local markets. Assessing the situation for potential investors the U.S. Embassy summed up the situation as follows:

been implemented (known as the realised share rate) however, is far below these levels.” Robert K Rauth Jr. (1997) "How bureaucracy is killing business in Africa“ African Business; London; Apr 1997; Iss. 220; pp.12-14. 42 Corruption is not just an issue in the legal system, but in the economy as a whole. In Transparency International’s Corruption Perceptions Index Tanzania scored 76 out of 90 worldwide and in comparison with its sub-Saharan neighbors it ranked 13 out of 19. See http://www.transparency.de/documents/cpi/2000/report.html (viewed Oct. 9, 2000). The issue of corruption has had implications for the liberalization program as a scandal implicating senior government officials led to the suspension of negotiations with the IMF in 1994. The donors estimated the scandal cost the state more than $300m in IMF loan revenues. Maja Walengreen (1997) "Tanzania: IMF releases $37m” African Business; London; Dec 1997; Iss. 227; p. 41. 43 Tanzania is not alone in attempting commercial legal reform. Other countries such as Zambia, Uganda, Tanzania, Kenya, Mozambique, Namibia, and Ghana have undertaken projects as well. In addition to individual national reforms efforts to harmonize business laws across nations are underway. One, the treaty of the Organization for the Harmonization of Business Law in Africa (OHADA), has already been signed by 17 nations. See Joann C Sparacino (1997) "African commercial law must be reformed" African Business; London; Oct 1997; Iss. 225; pp. 30-31. 44 This issue was raised unsolicited by multinational firms in both the engineering consulting and customs brokerage industries.
Although trade marks, copyright and patent laws are in the statute books, the machinery for their automatic enforcement is nonexistent. As such, redress depends largely on the aggrieved party's legal pursuit of the issue. This process has been known to take years to complete." (U.S. Embassy, 1998)

The situation is, however, being addressed. The government prepared and sent an updated Intellectual Property Rights Bill to the Parliament in April 1999. The Bill conforms to international copyright and property rights conventions. The Bill was passed by the parliament and awaits approval by the President before it can formally be applied\(^45\).

4.1.1.2 Payments and Banking

This brings us to the third institutional characteristic of the commercial environment: payments and banking. First, payments will be considered. Receiving payment is a widespread problem in the commercial environment of Dar es Salaam, and Tanzania in general. This situation is likely to be caused by two factors. The first factor is non-payment caused by a company honestly not having the money to make the payment. They have entered into a business agreement with the intention to pay but due to circumstances beyond their control, such as non-payment by their clients (government or private) or fraud by their clients, they are unable to pay. The second factor is non-payment directly due to fraud. Of course there are also scenarios that fall between honest inability to pay and outright fraud, which can be considered a gray area.

In a country like Tanzania, where non-payment and hence firms genuinely not having money occurs frequently, choosing a course of action is difficult. If a firm takes a client to court and they honestly do not have the money, the firm could lose a potentially lucrative customer.

The situation of resolving non-payment is further complicated by cultural norms around going to court in general. As previously stated, firms are loath to take clients to court not only due to time and money, as well as the potential of damaging a valuable relationship, but some are also afraid of creating a negative reputation. Even in the case where fraud is involved and losing a relationship with a client is not really a loss, there is still fear that going to court could cause the firm to have a negative reputation among other potential clients. This perception, that non-payment issues are something that should be kept within the relationship of the two firms, is widely held. Firms are equally uneasy about merely damaging the reputation of a non-paying client as they are about taking them to court. Generally firms were willing to be patient in receiving their payment and many stated that 'at the end of the day they will pay.'\(^46\)

One of the customs brokers who was owed Tsh 900,000 by a client explained it in this way:

"We could take him to court because there’s enough evidence, but we normally do not prefer to take a client to court because once you take a client to court the newspapers or TV will report it and it can ruin your business in one way or another. Everybody will be afraid of you because they’ll think if they have trouble paying, you’ll take them to court too."

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\(^45\) Source: U. S. Department of Commerce - National Trade Data Bank, June 21, 2000
http://www.tradeport.org/ts/countries/tanzania/nrr/mark0002.html

\(^46\) There are circumstances, however, where the firm does not have a choice but to bring a client to court. If the firm must answer to a board of directors or auditors, these authorities may require a court case to prove non-payment. This action provides the managing director with an excuse to go ahead with court, although the result may merely be excessive legal fees.
Many Tanzanian firms have circumvented the whole problem of deciding whether or not a client honestly cannot pay by requiring pre-payment for their goods or services. The business community and consumers accept this pre-payment requirement in general.\(^{47}\) Prepayment for services such as mobile telephony and Internet services are standard. Although prepayment is an appropriate solution for businesses that fear non-payment, it can lead to inefficiencies and lost revenue. For example, if a customer works for an employer who is late paying her salary, her mobile telephony or Internet service may be suspended for non-payment. This of course leads to lost revenues for the service provider as well as the inconvenience of restoring service once the bill is paid.

The payment situation is exacerbated by (or perhaps the cause of) a severe lack of credit. Limited availability of credit is endemic in developing countries, however in Tanzania it seems to be present at an even higher level\(^{48}\). The situation can be summarized by one single observation: it is impossible to get a credit card from a local bank. Even the wealthy elite, who drive luxury cars and build large homes, cannot obtain a credit card from a Tanzanian bank. These people do have credit cards but they are issued by banks in the U.K., the U.S., or even Kenya. Of course this requires having an account in those countries, with the probable result of Tanzanian earnings being sent abroad. But the lack of credit cards means more than just inconvenience and money leaving the economy. It results in one less mechanism to grease the payment system. Credit cards allow small firms to purchase inputs on credit while maintaining the cash flow necessary to keep their businesses operating smoothly. Without them there is greater possibility the payment 'wheel' will grind to a halt with all the subsequent effects down the value chain.

The lack of credit cards is a result of a combination of factors. The most fundamental of these is that the banks perceive consumers as untrustworthy\(^{49}\). The small numbers who are do not warrant the investment and risk to establish a credit card system. One bank recently went through the process of becoming a VISA agent, able to pay cash advances to VISA customers, but did not bother to apply to become a VISA card issuer. One reason banks may perceive people as not being credit worthy is the lack of verifiable information. There are no credit reporting agencies in Tanzania. This further contributes to the pre-payment, cash-based commercial environment. A second reason for the absence of credit cards is that it would require the banks to cooperate in developing a payment clearing system. To date, they seem unwilling to pool the expense and risk of such an undertaking.

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\(^{47}\) This payment issue affected Tanzania beyond its borders. In international trade transactions, letters of credit issued by banks are used to guarantee payment. At one point Tanzania had a foreign exchange crisis where the central bank intervened and controlled all remittances of foreign exchange. As a result Tanzanian banks were unable to honor their letters of credit, with the blame for non-payment eventually falling on Tanzanian firms. This has resulted in stronger pressure for Tanzanian importers to prepay in full. This puts Tanzanian firms at a competitive disadvantage as firms in other circumstances may be offered the goods with partial payment or on credit. It also increases the risks faced by Tanzanian firms as prepaid goods are sometimes never received.

\(^{48}\) A lack of access to credit is not just a problem for SMEs. In Tanzania and Zambia, where a six month loan is considered long term, even large firms find the terms undesirable. Robert K Rauth Jr. (1997) "How bureaucracy is killing business in Africa" African Business; London; Apr 1997; Iss. 220; pp. 12-14.

\(^{49}\) This is not only the perception of the banks. In his speech introducing the government's budget to the National Assembly, the Finance Minister stated "There is a serious problem of many borrowers not being creditworthy as they do not repay loans at the appropriate time. I request the Honourable Members of Parliament to assist in the task of educating the public on the importance of repaying loans." (Hon. Daniel N. Yona (MP), (1999) Tanzania Budget Speech 1999/2000, given by Finance Minister, Hon. Daniel N. Yona (MP), to the National Assembly of Tanzania, June 10th, 1999, p. 7)
So far the commercial institutional environment has been characterized as having significant problems in payments and credit. It must also be noted, as alluded to above, that Tanzanians often choose to use cash over checks or bank transfers. This preference exists for several reasons, such as confidentiality, reliability, and convenience of transferability at full face value. First, the banks are very slow at clearing checks, which can take between 3 and 28 days. Second, there is not a bank branch in every town. Also, cooperation between banks is not such that money held in an account at one bank can be withdrawn from another (as is the case in interconnected automatic teller machines). Government checks and (for the few with them) credits cards are not widely accepted, thus people have not developed the habit of using them. Although banks do have policies to discourage check bouncing, businesses feel they incur all the risk of accepting checks. Therefore, they usually accept checks from customers only after dealing with them for some time. The extent of the use of cash is summed up by a data network provider when asked if he received payments electronically. The idea made him laugh and he explained:

"No. No. Even when I joined the company two years ago some clients paid in cash."

It should also be noted that not everyone has a bank account. A savings account can cost as much as Tsh 50,000 (roughly $60) to set up with checking accounts costing even more. This makes corporate policies, such as direct deposit of salaries, difficult for firms to implement. Debit cards are available with one bank but with very few automatic teller machines (ATM) this does not imply the convenience that exists in countries with widely deployed networks of ATM machines. A second bank previously offered debit cards, but the bank failed and when it was bought the service was canceled. Bank failures have hindered development of the sector in general, which was liberalized in 1992.

One more broad issue that may be a cause for the use of cash is the inflation rate. High inflation rates encourage cash payments, which are immediate, and discourage the use of checks and transfers, which take time. Tanzania has had a history of high inflation, however, in the past few years this has come under control. In just three years the rate has gone from 16.1 percent in 1997 to an all time low of 7 percent in 1999. Despite this low level of inflation, payment habits have yet to change.

In addition to paying in cash to circumvent the problems discussed above, Tanzanians also continue to use barter as a means of payment. This is not typically a firm’s main means of receiving payment but in terms of receiving payment when a client cannot pay, a client may pay with their assets. For example, a client who cannot pay a bill may offer to give an under-

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50 The Bank of Tanzania estimates that only 40% of business transactions are handled through the banking system.
51 This is not the case in the Dar es Salaam area but does exist in rural areas. The Bank of Tanzania, in its report "Tanzania National Payment Systems Modernization Project: Situational Analysis and Stocktaking Report" (January 1998) identified that 85% of the population live in rural areas where there are no banks and this is why the acceptance of checks is so limited.
53 http://newafrica.com/news/#inflation (Tanzania hopes to bring inflation to its knees from Business Times, 7 January, 2000)
used computer as payment. The barter system has also worked its way into electronic commerce. Several of the ISPs have agreed to post advertisements on their Web sites in exchange for free services from those companies. Thus companies who might find it difficult to find the money for Internet advertising in the budget, but for whom providing services or products is easy, this is a way to get into e-commerce.

4.1.1.3 Registration and Taxation
In addition to liberalization and privatization efforts, the change from a socialist to a market economy also brought increased emphasis on formalization of the economy. Developing economies tend to have large numbers of informal, unregistered businesses. Historically businesses have complained that registration procedures were too costly and complicated and hence the procedure was ignored\(^\text{54}\). To alleviate this problem aid donors have been prompting countries, including Tanzania, to streamline business registration processes and reduce registration fees. The general perception among those interviewed for this study is that the process and cost of obtaining a business license are now quick and reasonable\(^\text{55}\). A further barrier to registration and formalization in general is a lack of fixed addresses. Firms usually use their post office box or the name of the building in which they are located as their address, as opposed to a specific street number.

Although registering firms is an important aspect of licensing businesses, the real value of business licensing in Tanzania is as a policing mechanism for the Tanzanian Revenue Authority (TRA). Most delays in obtaining a business license stem from the requirement of having a certificate of clearance from TRA. Having a certificate of clearance from the TRA can be difficult to obtain because adhering to the tax code is reported as being rather difficult. Firms complain not so much about tax rates but more about the number of different taxes they must pay.\(^\text{56}\) Furthermore, they complain the tax code is applied inconsistently, with fines being applied for non-payment of taxes not previously collected. The establishment of the TRA was supported by the U.S. Agency for International Development (USAID) who have also been supportive of programs for small business development. USAID has provided management training and technical assistance for small and micro enterprises\(^\text{57}\).

Fortunately, the lack of knowledge or understanding about commercial tax in general does not apply to the VAT. The VAT was introduced in 1998 and the TRA are given excellent marks

\(^{54}\) In Tanzania, many economists state that the real GDP is double official estimates due to the large size of the informal sector. This is partially due to the low education levels of many informal operators, which make it difficult for them to fill out the necessary forms, hire lawyers and maintain records required by the state. Prior to recent reforms the process for licensing took somewhere between 18 and 36 months. Issues such as the complexity of procedures, the number of agencies, the costs and the concentration of approvals available only in the capital cities, made it virtually impossible for small business, particularly those outside the capitals, to operate legally. Robert K Rauth Jr. (1997) "How bureaucracy is killing business in Africa" African Business; London; Apr 1997; Iss. 220; pp.12-14.


\(^{56}\) This is a complaint in many African nations. As Rauth (1997) reports "Although taxes have been simplified and lowered, they remain numerous, ambiguous and complex. In business Tanzania, officials at one prominent organisation estimate that 80% of all businesses must cheat to survive - and tax liabilities can represent as much as 60% of gross revenue." Robert K Rauth Jr. (1997) "How bureaucracy is killing business in Africa" African Business; London; Apr 1997; Iss. 220; pp.12-14.

for their efforts to educate the business community about it. Although the VAT does attempt to distribute the tax burden more fairly, in Tanzania it puts additional pressure on the payment issue. VAT liability for a merchant is incurred when an invoice is issued. In cases of non-payment the merchant is liable for the VAT unless court documents can prove no payment was received. With the general inclination to go to court being low, and the occurrence of non-payment high, pre-payment becomes necessary. A final issue for businesses related to VAT is that of refunds on VAT paid on exported goods. In some countries with VAT consumers are able to receive a VAT refund on goods taken out of the country. In Tanzania some export industries are able to apply for a VAT refund of domestically purchased inputs. However, receiving this money from a government with chronic cash flow problems is difficult.

Customs is a second form of taxation and the customs authority in Tanzania is part of the TRA. Recent reform of customs duties has resulted in a simplified five-tier structure with a simple average of applied import duties of 16.2%. This tariff structure has been described as 'escalatory' as Tanzanian processed products receive a higher effective rate of protection along the processing chain. From the perspective of the World Trade Organization (WTO), such a tariff structure provides substantial import protection to higher-level processing activities, causing resource misallocation and inflicting higher costs on Tanzanian consumers (WTO, 2000). The WTO also notes that the Government of Tanzania relies heavily on revenues from tariffs and VAT and that consequently there is pressure to maintain revenues through high tariff levels. One way to maintain revenues while reducing tariffs is to reduce the number of exemptions permitted.

4.1.1.4 Commercial Organizations, Trust, and the Press

In addition to the legal structure, banking and payments, licensing, and taxes, the commercial institutional environment consists of commercial and industry organizations. Common to almost all economies, commercial organizations include Chambers of Commerce, Rotary Club, and the World Trade Center, for example. In Dar es Salaam these general business organizations are weak.

The weakness of these organizations is partially due to Tanzania's socialist past in which previously active industry organizations all but disappeared (Heilman & Lucas, 1997). It is also partially due to historical animosities between Asians and indigenous Tanzanians in the commercial sector. Although these animosities have subsided in recent years (Hewitt, 1999), in the early 90's it led to a split in the business community, which, in turn, segmented the voice of commerce in the government. The pro-indigenous stance of the national Tanzania Chamber of Commerce (TCCIA) led a member of TCCIA to defect and in 1991 they established the Confederation of Tanzanian Industries (CTI). The result is the CTI is a voice for the larger manufacturers, while TCCIA represents smaller organizations.

As a representative for smaller firms, TCCIA is relatively young, formed in 1988, and is seeking to establish value for their membership. The need to establish this value is indicated

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58 It should be noted that developing country exports face the same type of processing intensive trade barriers when exporting to other countries. For example, although the Generalized System of Preferences (GSP) eliminates duties for many goods from developing countries, more processing intensive goods such as foot-wear and textiles are excluded from GSP. See http://www.customs.ustreas.gov/travel/gsp.htm (viewed Oct. 12, 2000).

59 This also results in different agendas when dealing with the government. The TCI, as an industrial representative, is more active in lobbying the government for protectionist policies (Heilman & Lucas, 1997).
by the significant difference in the number of members and the number of members who actually pay their dues. Other international organizations such as the Rotary Club, which have a strong presence in other East African countries, are not significant in Tanzania.

The weakness of these more general commercial organizations is juxtaposed with the strength of some industry-specific/professional organizations. Certainly, this is not true of all industries, but those that tend to be influenced by multinationals (mining and construction) and those with histories of stability in the sector (engineering) tend to have well-organized associations. The associations provide a forum for making business contacts, communicating sectoral needs to the government, and helping the sector run more smoothly. Organizations promote efficiency by establishing ethical codes and dispute resolution systems for their members. These dispute resolution systems help firms avoid court and unwanted publicity. Organizations may also draft general business practices including standard contracts. These organizations and their policies and practices may have international counterparts, promoting efficiency globally as well as nationally.

Although not officially considered commercial or industry organizations, the institutional environment of Dar es Salaam also includes social clubs. Social clubs allow members of the general business community to come together and socialize. Unlike industry organizations, members meet people from a wide variety of industries. Of course the focus in the clubs is not overtly commercial, however, the reality is that the social clubs form an intricate part of the commercial institutional environment. They help build networks and provide informal sanctions for unethical behavior.

There are two important clubs for businesspersons in Dar es Salaam. The Yacht Club and the Gymkhana Club. Two of the managers interviewed reported their membership dues to the Gymkhana Club, which are $200 per month, were paid by their firm. The clubs were popular with different groups. The Yacht Club entertains the expatriate crowd, while the Gymkhana Club is frequented more by local businesspersons. To join the Gymkhana Club, in addition to paying the monthly fees, a person must be recommended for membership by two current members. Expensive membership dues and the necessary recommendation create a tight-knit network of Dar es Salaam’s most successful businesspersons. Unfortunately, the separation of the expatriate and local memberships between the two clubs falls along racial lines. As one manager reflected:

"I think perhaps for the international community it's the Yacht Club. A lot of our business recently has been with the South Africans, and they won't go to the Gymkhana Club. Now the local consultants will probably make a lot of their connections at the Gymkhana."

This leads us to the issue of trust. Trust is a difficult construct to observe. In the preceding description of the Dar es Salaam commercial environment, there have been aspects that may indicate a lack of trust, such as the lack of cooperation through industry associations, the requirement of prepayment, the banks' view of their customers as being untrustworthy. In a study by Jacobsen (1999) comparing trust in political-administrative relations, he found that Tanzania had a trust-deficit in this area. The ramifications of this are inefficiency in

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60 One explanation for the low level of dues payment is the involvement of donors in the operations of TCCIA. See Hewitt (1999) p.388.
administration. Trust was found to be a factor explaining the amount of information an administrator would share with politicians when that information could cause political conflict. Furthermore, with greater trust in politicians, administrators acted more autonomously, increasing the efficiency with which decisions could be made (Jacobsen, 1999). If the lack of trust that exists in the political-administrative relations at the local level as shown in Jacobsen’s study, is also found at higher levels and in the capital, this comparative lack of trust by Tanzanian administrators could partially explain the excessive bureaucracy that exists in its commercial system.

Furthermore, it is easy to believe that this same lack of trust exists between administrators and business, or simply between businesses themselves. In one interview a manager described the relationship between the revenue authority and firms as the revenue authority assuming everyone is evading taxes and, unless the firm can prove otherwise, there will be a penalty. It could be argued that this is a realistic stance for the TRA to take because many firms do evade taxes. However, for the honest firms the distrust creates significant costs.

When asked about the possibilities for inter-firm electronic commerce in Dar es Salaam, a manager at one of the ISPs responded: "Well really, things have to change because there is a lack of trust between firms." When asked about whether or not the ISP would act as a trusted third party for electronic commerce the answer was a definite 'NO.' They considered the liability too high, as well as the risk. He stated: "Last year probably US $30 to $40 million walked out of this country with people who had the trust of the people within their own community." The accuracy of these numbers may or may not be correct. It is the impression that they are correct and that trust is a very risky undertaking in Dar es Salaam that is important here.

Finally, a comment on Dar es Salaam’s commercial environment would not be complete without mention of the press. Due to progressive educational policies of the past few decades Tanzania enjoys a relatively high literacy rate. There are several newspapers that circulate in Dar es Salaam and they play an important role in the commercial sector. The newspapers are an important source of information about commercial undertakings and firms are assumed to be knowledgeable about tenders posted there. Newspapers also play an important role in making, as well as damaging, reputations\(^2\). As one representative of an engineering firm described:

"There was a firm which had employed people who were not registered; for many, many years, they managed to get away with it. Then it was reported in the papers. That in a way has dented their reputation with our firm."

Further, a customs broker, in describing attempts to collect payment, explains:

"Some of the large companies, international companies, you can embarrass them tremendously. [For example,] The National Bank of Commerce [NBC] was owed tens of billions of shillings. And apparently they’d gone to some of their big debtors and said ‘give us the money’ and they say ‘sorry, haven’t got the

\(^2\) The following anecdote further demonstrates the importance of the press. In November 1996 a foreign investor’s conference was held at the Sheraton Hotel in Dar es Salaam. Many complaints were received from participants about the poor quality of phone service at the Sheraton. The Sheraton, frustrated by previous attempts to get TTDCL to fix the problem, placed advertisements in the local newspapers lambasting the phone company for its continued inaction. See Esipisu, Manoah (Jan/Feb 1997) "Tanzania rides again" Worldbusiness; New York; Jan/Feb 1997; vol. 3; Iss. 1, p. 12.
money, take us to court,' and -- as I say, there's no point going to court-- they [NBC] said 'no we don't intend to take you to court, we'll just publish your names in the newspaper. They paid. So it's embarrassment that works."

In this section the general commercial institutional environment of Dar es Salaam has been presented. Positive developments include the restructuring of the court system, the lower inflation rates that will hopefully spur a diversity in payment mechanisms, and the growth of general business organizations. Problems remaining include the overall court system, availability of credit, diversity of payment systems, and taxation. The possibilities for e-commerce will also be shaped by other factors in the macro institutional environment. The telecommunications and Internet services markets, as well as the market for skilled labor, will play an important role in shaping the potential for e-commerce. These topics are discussed in the following sections.

4.1.2 Commercial Environment for E-commerce

The overall prospects for electronic commerce will be strongly affected by the cost and availability of telecommunications and Internet services. The high cost of telecommunications services, which is a function of market structure, is one factor creating differences in the diffusion rate of the Internet across the globe (OECD, 1998). Similarly, the structure of the market for Internet services will also effect costs. Furthermore, the lack of availability of adequately trained personnel is a limiting factor for all interested in entering electronic commerce, whether they are in the public or private sector. The lack of high-tech workers has been a factor not only affecting developing nations, but developed nations as well.

4.1.2.1 Telecommunications and Computing

Although the telecommunications infrastructure in Tanzania is quite poor, the facilities in Dar es Salaam provide a reasonable base for inter-firm electronic commerce. The publicly owned operator, Tanzania Communication Company Limited (TTCL), has improved the network substantially in the past few years and is now being readied for a partial privatization. The waiting list for phone lines has decreased dramatically partially due to the roll out of mobile services. There are three competing mobile operators in Dar es Salaam. Other developments in the sector include the licensing of three international data network providers in 1996, which has led to decreased leased line prices in what has become a fairly competitive market.

Although firms in Dar es Salaam use computers to a much lesser extent than firms in a developed country, improvements are being made. Several projects are underway to computerize government departments, which should lead to greater use of computers throughout the commercial sector. There is still a way to go, however. The change in perception from the computer being used primarily for word processing, typically performed

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63 SITA is an airline communications cooperative. Wilken/Afsat is a wireless communications firm, and Datel is a joint venture between TTCL and a France Telecom subsidiary known as Nexus International. These three firms bought international data carrier licenses for 100,000 USD plus a royalty fee of 5% on annual turnover. The licenses are good for 10 years. See http://www.gondwana-it.org/ASBL/Telematics/TCP/TZ.html and http://www.imf.org/external/np/ppf/1999/Tanzania/
by the secretary, to a communications tool is still underway\textsuperscript{64}. Recently, the duty on computers was drastically reduced to help bring more computers into the economy at lower prices\textsuperscript{65}.

4.1.2.2 ISPs and Legal Structure for E-commerce

Although a robust telecommunications network and abundant computers are necessary conditions for electronic commerce, they are certainly not sufficient. Many countries have both and yet have not been able to make the transition to computers-for-communication. One of the primary drivers of this change can be a competitive ISP market where the ISPs are marketing their services and demonstrating the potential of the Internet for their client firms. In a highly competitive market ISPs will also compete on service, making Internet adoption as easy as possible.

The market for Internet service provision in Dar es Salaam is competitive. There are roughly 8 ISPs competing for a market of roughly 5,000 subscribers. Although three players dominate the market, these firms are extremely competitive with one another. Indications of the competitiveness of the market are the constant roll out of new services and the brutal tactics used to try to 'steal' customers from other providers. The ISPs are also quite shrewd with the data communication providers from whom they must buy their Internet gateway service. To drive down their costs and compete with the other ISPs, each ISP plays the three data communications providers against one another, attempting to negotiate the lowest access rates. The ISPs are constantly switching providers or re-allocating the amount of bandwidth they buy from the various suppliers. The result is that monthly rates for subscribers are internationally competitive, $53 per month on average versus $60 per month for all of Africa\textsuperscript{66}.

Many customers access the Internet through dial-up connections. Firms with networks or simply those frustrated by poor quality lines can have a microwave connection between their firm and the ISP. These services are sold and operated by the ISP.

Domain name registration in Tanzania is handled through the ISPs. These entities are in Dar es Salaam making registration convenient for those in the capital. Although registering in the .tz domain is a fairly easy process, Tanzanians wanting a .com domain name, which are typically purchased using a credit card via the Web, have experienced frustration.

\textsuperscript{64} In visits to government offices responsible for Internet policy some senior level managers did not have a computer on their desk. Instead, the computer was placed on the secretary's desk which allowed the secretary to print out emails to be given to the manager. 

\textsuperscript{65} The Tanzanian government had extremely restrictive policies toward the import of computers from 1974 through 1993. When the ban was lifted in June 1993, it was soon followed by an increase in the duty and sales tax on computers from 50% to 56%. By 1995 the duty had been reduced to 20% for computer hardware, a typical rate for East Africa, but not compared with duties of 4% in the EU, and mostly between 5-10% in Latin America. And finally, in the 1999/2000 it was proposed that duty on computers be reduced from 20% to 5%. See in order Shila, Howard "Case Study: Effectiveness of Informatics Policy Instruments in Tanzania" at http://www.bellanet.org/partners/aisi/policy/infopol/tanzania.htm#6.2; U.S. Dept. of Commerce, 1995, "Tariffs and Other Taxes on Computer Hardware and Software Worldwide" at http://www.tradeport.org/ts/ntdb/express/tarhtmls.html; and Hon. Daniel N. Yona (MP), (1999) Tanzania Budget Speech 1999/2000, given by Finance Minister, Hon. Daniel N. Yona (MP), to the National Assembly of Tanzania, June 10\textsuperscript{th}, 1999.

\textsuperscript{66} See www.eca.org report for details.
The Internet services market has experienced some regulatory instability in the past few years. Since 1996, when full Internet access became available, no special license was required. However, in 1999 the Tanzanian Communication Commission (TCC) decided to license ISPs. During 1999 several rounds of negotiations were held with the TCC proposing various draft license agreements, and the ISPs were able to comment on these drafts. Although far from presenting an entirely unified front to the regulator, the ISPs did cooperate in their response to these proposals. The result was a compromise licensing agreement whose terms include a U.S.$2,000 registration fee, an annual U.S.$10,000 contribution, as well as limitations on the type of services that can be offered (IP telephony). The illegality of these services could result in legal problems concerning the role of the ISP in policing use by subscribers.

Tanzania’s legal structure must go through some changes to be able to fully embrace electronic commerce. Presently the Ministry of Communication and Transport is examining how to go about making Tanzanian law compliant with UNCITRAL recommendations. One of the most important changes to be made is the recognition of digital signatures. The requirement to present documents in their original form with ’wet signatures’ is one of the key impediments to further computerization in both private and public bureaucracies in Tanzania. Furthermore, there has also been little or no discussion concerning the establishment of a certificate authority, which would be in charge of issuing digital certificates necessary to validate digital signatures. The issue of digital signatures is just one legislative change necessary to facilitate electronic commerce. Other issues include determining when a transaction is domestic versus international and tax treatment of electronic transactions. These are issues that all governments are dealing with. Tackling the requirements for paper versions of documents will foster computerization and clear a path through which electronic transactions can occur.

4.1.2.3 Labor

The availability of telecommunication networks, computers, and Internet services is meaningless without adequately trained persons to apply them. There is presently a shortage of technically trained professionals in Dar es Salaam and some firms have turned to importing labor from other countries such as Kenya and even as far away as India. Some of the work is also outsourced to India via the Internet, particularly in the case of software development. There is a concern, however, about developing local knowledge. One ISP owner discussed his preference for having work done in-house. He said that if they had to rely on people from outside the firm they preferred to have them located inside to help transfer skills.

As in many places, the shortage of technically trained persons is being addressed. The number of computer training schools in Dar es Salaam is growing and the University of Dar es Salaam

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67 Store-and-forward email ISPs existed prior to 1996, however, shortly after licensing the data communications providers in February 1996, store-and-forward ISPs were instructed by the TCC to either cease operations or go through a licensed carrier or their resellers. See Shila, Howard “Case Study: Effectiveness of Informatics Policy Instruments in Tanzania” at http://www.bellanet.org/partners/aisi/policy/infopo/tanzania.htm#6.2 ;
68 UNCITRAL is a United Nations body charged with harmonizing legal structures for trade around the world. UNCITRAL has developed a set of guidelines for countries to use to make their legal systems compatible with the needs of electronic commerce. A report on the steps necessary to make Tanzanian law compliant with the UNCITRAL framework was prepared under the auspices of the U.S. government and is now being considered by the Ministry of Communication and Transport. See Sahayachny, Simeon A. “Electronic Commerce for Economic Development and Modernization of Governance in Tanzania: Basic Legislative Framework.”
69 This is partly due to the strength of the Asian community in the Tanzanian ICT industry. Here ‘Asian’ refers to people who are of Asian decent, but who often have roots in Africa that go back two generations.
has recently opened a new building for its computing center. The emphasis on the use of computers in all disciplines at the university will increase, as well as the number of computer science majors.\textsuperscript{70}

As the above demonstrates, there are a variety of factors in the macro level commercial environment that will affect the potential for electronic commerce. In this case study these factors will be assessed on their own merit. Subsequently, in the overall study these macro level institutions will be compared with those of a developed country to assess the implications of the differences between the two. In addition to comparing macro level institutions across countries, the implications of the macro level institutions will be compared with those at both the meso and micro level. This comparison will identify the relative impact of the various levels of the institutional environment. The meso and micro level institutions of Dar es Salaam’s engineering consulting and customs brokerage industries are discussed in the following sections.

4.2 Meso Level Institutional Environment

In this research we consider institutions as existing at macro, meso, and micro levels. When establishing this particular ordering we pointed out that there is sometimes confusion as to where one level ends and another begins. To determine the level one can simply ask ‘To whom do these rules apply?’ By considering who is subjected to the rules it becomes clear that sometimes rules apply only to certain groups and one of these delineations can be made at the sectoral and industry level. In what follows we consider the overall services sector and its role in the Tanzanian economy. Subsequently the meso level institutional environments associated with engineering consulting and customs brokerage are presented. The evidence for this section was gathered through firm-level interviews as well as conversations with industry association leaders and members.

4.2.1 The Services Sector

Tanzania's economy is similar to other East African countries in that its main exports are agricultural products, which account for roughly 50% of GDP and 50% of export earnings.\textsuperscript{71} Other export earnings come from manufactured goods, which contribute 11%, minerals 19%, petroleum products 2% and other exports 18%. Manufacturing is focused on producing consumer goods such as beer, soap and textiles. Tourism, one of Tanzania’s more dynamic sectors, has shown significant growth in recent years. Although mining has also benefited from liberalization, it is relatively undeveloped. The service sector, which has grown in the past years, is an increasingly important source of employment.\textsuperscript{72} Table 4.2.1.1 shows the structure of the Tanzanian economy as a percentage of GDP. The service sector, unlike the agricultural sector, has shown consistent growth over the years and is expected to continue this trend.

\textsuperscript{70} Shila (1994) observed “Due to shortage of manpower, the University was able to launch only the BSc (with Computer Science) degree programme in 1991 with an intake of 25 students. The intake for 1992 was 25 students and 40 students in 1993. The first BSc (with Computer Science) graduates will be out in this academic year - 1993/94. This will raise the profile of the University in the industry.”

\textsuperscript{71} http://newafrica.com/agriculture/tanzania/ (viewed 15/12/99)

\textsuperscript{72} http://www.worldbank.org/afr/tz2.htm
### Structure of the Economy

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<th>1987</th>
<th>1997</th>
<th>1998*</th>
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<td>59.2</td>
<td>47.3</td>
<td>46.3</td>
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<tr>
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<td>11.9</td>
<td>14.3</td>
<td>14.1</td>
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<tr>
<td>Manufacturing</td>
<td>6.8</td>
<td>7.1</td>
<td>6.8</td>
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<tr>
<td>Services</td>
<td>28.9</td>
<td>38.4</td>
<td>39.5</td>
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Table 4.2.1.1: Structure of the Tanzanian Economy

The important role of the services sector, along with its growth potential was a partial basis for focusing on this sector. Furthermore, the services industry, whose products are often at least partially convertible to digital form, represents one of the most promising sectors for electronic commerce in Tanzania. As such, two specific sub-sectors of the more general services sector were chosen for this research.

The types of service sector firms in Tanzania are shown in Table 4.2.1.2. The table demonstrates diversity in the types of firms, and these firms also vary in terms of size, age, and ownership. In the services sector there are a few large multinationals, but many of the firms are small and Tanzanian-owned. The services sector also has the additional characteristic of requiring industry-specific licensing for some sub-sectors. In professional services, as in most countries, firms are required to have an industry specific license, in addition to the business license required of all firms.

### Types of Firms in the Services Sector

<table>
<thead>
<tr>
<th>Types of Firms in the Services Sector</th>
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<tbody>
<tr>
<td>Architectural / Civil Engineers</td>
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<td>Auctioneers</td>
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<tr>
<td>Automotive Workshop / Garage</td>
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<tr>
<td>Banking &amp; Finance</td>
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<tr>
<td>Bureau de Change (Forex)</td>
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<td>Car Hire &amp; Rentals</td>
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<td>Clearing &amp; Forwarding Agents</td>
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<tr>
<td>Construction</td>
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<td>Debt Collection Agency</td>
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<td>Fabrication Metal</td>
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<td>Hair Salon / Beauty Clinics</td>
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<tr>
<td>Hotels</td>
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<td>Insurance Brokers / Agents</td>
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Table 4.2.1.2: Tanzanian Services Sector


This research focuses on the sub-sectors of engineering consulting and customs brokerage, whose general characteristics will be described in the following sections. Each section is dedicated to one industry and describes the general meso-level institutional environment as well as industry associations, licensing, and the uncertainties firms in the sector face. We begin by examining engineering consulting.
4.2.2 Engineering Consulting Firms

4.2.2.1 General
The engineering consulting firms in Dar es Salaam typically handle a wide range of engineering activities. This is partly due to the lack of development in the services sector, which does not allow for extreme specialization. Although extreme specialization does not occur, the firms can be broken into two groups: those offering some level of specialization (electrical or civil engineering, for example), and those offering a wider range of services. The firms offering a wide range of services see their competitive advantage as being able to manage an entire project in one office. Whether or not the firm specializes, it typically cannot handle every aspect of a project, which results in the need to subcontract particular functions.

Engineering firms have a wide variety of clients. The government hires engineering consultancies for projects related to public infrastructure, as well as engineering for government needs, such as wiring for a new government office building. Money for these projects is sometime provided through donors. Donor funded projects may have stipulations about the type of engineering firm used. The project may require a firm from a particular country be used or may have requirements for using local firms, either as the prime or sub-contractor. Thus, multinational firms may be seeking Tanzanian partners while submitting a bid from abroad. If highly specialized skills are needed for a job, a Tanzanian firm may include a foreign firm as a subcontractor on a project. If the engineering firm is a multinational, it may also have work come to it from the head office. In addition to government projects, there are private construction and maintenance projects as well.

4.2.2.2 Industry Associations, Licensing, and Uncertainty
In an industry such as engineering consulting, where work comes not only from clients but also from other engineering and architectural firms, membership in industry associations is important. These industry associations allow members to get know one other, building networks for jobs. The industry associations are equally important for old and young firms. In Tanzania, engineers and firms can belong to the Institute of Engineers Tanzania (IET), as well as the Association of Consulting Engineers Tanzania (ACET), and the Tanzania Association of Consultants (TACO). The most active organization among these is ACET. ACET has roughly 40 members from 25 firms. The organization arranges for meetings and social gatherings. It also has a hearing procedure for settling disputes among members, as well as guidelines for dismissal from the organization if unethical business practices are uncovered. The organization is purely horizontal, meaning clients and suppliers of engineering consulting firms are barred from membership.\textsuperscript{73}

The engineering review board (ERB) carries out the licensing of engineers and their firms. Licensing provides a form of quality control by the government, and in some respects is taken for granted. Since a license is required for operating a firm, it does not serve as a qualifying mechanism for finding partners within the industry. Firms assume other firms are licensed when choosing partners. This holds for both the business license and the engineering license, although in general the business license provides even less validation than the engineering license.

\textsuperscript{73} Association of Consulting Engineers Tanzania Constitution and Bylaws (ACET 1985)
license. Similar to the business license, there is some uncertainty surrounding the licensing of engineers. During the time of this investigation two engineering firms were presented with large bills that local authorities claimed were due to non-adherence to licensing requirements. The firms claimed to be in line with licensing requirements and were surprised by the bills.

In Tanzania engineering is a profession where the risks of non-payment are high. Often funding for large projects cannot be paid up front and it is agreed that payment will be distributed on a pay-as-you-go basis. However, once the work is done and the firm loses bargaining leverage, payment is often delayed. In some cases, typically smaller projects, payment is made when the work is fully completed.

4.2.3 Customs brokers

4.2.3.1 General

The role of a customs broker in the commercial system is to serve as a middleman in the import/export process. In discussing areas of government that could benefit from increased computerization, Sahaydachny (1998) describes the import/export environment in Tanzania as follows:

"Inefficiency, delays, and excessive points of ‘discretion’ with their potential for corruption affecting the movement of cargo, including goods and raw materials, both into and out of Tanzania have been identified a primary targets for reform. Those circumstances add to the cost of doing business, diminish the confidence of traders and investors, and have caused transportation and port facilities in Tanzania to lose competitiveness and traffic as part of a regional transportation corridor."

In this import/export process customs brokers are necessary at land, air, and sea ports where goods cross borders. They function as an intermediary between the government customs authority and the owner of the goods. The owner of the goods sends the broker the appropriate paperwork (title, inspection certificates, etc.). The broker then receives the goods at the port, insures they match the description on the title (in terms of quantity and quality) and then pays the duty on the goods. In Tanzania it is often the case that the broker also acts as a freight forwarder, arranging for transport of the goods within the country or beyond.

Tanzania operates a container shipping port at Dar es Salaam, which serves as an ocean-shipping hub for goods entering the landlocked countries of Zambia, Uganda, Malawi, etc. Shipments also arrive at the international airport in Dar es Salaam. Goods coming into and staying in Tanzania are assessed duty directly. Transit goods going to interior countries are not charged duty in Tanzania as long as it can be proved the goods eventually did leave the country. Customs brokers are responsible for clearing goods through customs and insuring that transit goods leave the country. If the transit goods do not leave the country, referred to as ‘diversion’, the customs broker is liable for the duty on the goods.

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74 The business license is considered less valid because in a firm’s first year a business license can be obtained with little effort since the revenue authority’s tax certificate is not available. Therefore, a firm could have a valid license, swindle people, and close up shop before the Revenue Authority is there to catch them as tax evaders.

75 One firm reported the local authority presented them with a bill for US$20,000, which the firm claims represents an entire year’s worth of profit.
Risk in transactions involving customs brokers resides primarily with the exporter or importer. They send the title and the amount of money for duty on the goods to the broker and must know the broker will not steal the goods or the money. When large shipments are involved the value of these goods and the money involved can be quite significant. In this line of business, the customs brokers themselves incur risk by hiring others to transport the goods.

Customs brokers, similar to engineering consultants, typically have a wide array of clients. A broker may specialize in one industry, such as mining, and serve several firms within that industry. They may also have no specialization whatsoever, handling a wide array of cargo. Although rare, some customs brokers work exclusively for one large firm. As with many other industrial sectors, there are cases where existing customs brokerage arms of large firms have been spun off and now are forced to compete across a variety of industries.

4.2.3.2 Industry Associations, Licensing, and Uncertainty

The customs brokers also have an industry organization. TAFFA, the Tanzanian Freight Forwarders Association, interfaces with the Commissioner of Customs regarding issues such as duty prices and processing times. TAFFA, unlike the engineering industry organizations, is a rather weak organization. It meets only once per year and when major issues arise. The weakness of the organization may be the result of industry structure, in that customs brokers seldom rely on one another for work. It may also be due to the turbulent history of the sector.

Despite a long-term history in the profession itself, Tanzanian customs brokers have faced many changes in the past several years. Customs brokers in Tanzania are licensed by the customs authority and act as agents of the government who collect taxes on goods. Previously, there were roughly 400 customs brokers. This number was unmanageable for the customs authority allowing for only loose oversight of the customs brokers and resulting in excessive tax evasion. In response to aid donors’ requests to tighten up the duty collection process, the Tanzanian government has significantly cut back on the number of licenses issued to customs brokers. The number has been cut back by 50% with roughly 200 licensed customs brokers now in operation. The result is a very competitive market for customs brokerage licenses. For example, the number of containers cleared at the port does not exceed 200 containers per day and with 200 customs brokers that is roughly one container per day.\(^\text{76}\) This amount of work is barely enough to keep a firm operating. In reality, however, there are firms who handle several containers a day while others may clear as few as one per year. One firm reported having a project that required clearing and forwarding 500 containers in a 4-month period, and the cargo in one of the containers alone was worth over $1 million. It was for the construction of an electric power plant. This is, however, an anomaly and thus firms are forced to diversify into other lines of business.

For those firms that do operate legally and that do have a fair amount of business, they carefully guard their licensed status and are constantly under threat of losing it as they must renew their license annually. The licensing process includes an interview to insure familiarity with customs procedures. It also requires a pre-payment of 50% of expected income taxes. The cost of the license was reported by one source to be Tsh 100,000 ($125) per year. Although officially required, operating without a license is possible. Firms may operate illegally if they have clients but have had their license revoked. This is only possible however

\(^{76}\) In 1996 the Terminal handled 98,906 TEUs. A TEU is a twenty feet equivalent unit, equal to a 20 ft. long container, which is a standard measure of cargo traffic volumes.
if the illegal firm can find a licensed firm who is willing to allow the use of the license, usually in exchange for a commission on the transaction. In this way an unlicensed broker can stay in business and avoid paying business taxes.

Customs brokerage firms may offer services beyond customs clearance. These additional services often require the broker to incur greater risk. Taking on these risks is an accepted business practice and some people see it as an essential role of the broker (as a risk-absorbing middleman). Risk increases significantly when the broker takes on tasks such as paying duties for a client. The client might be caught in a chicken-and-egg cycle whereby it needs to sell the goods to raise the money to pay the duty (along with the broker's fee). If it appears to be a profitable venture the broker may pay the duty (on loan) in order to eventually receive the fee. Similar levels of risk are incurred when an importer asks the broker to import goods on its behalf. This is done to protect the quality of the goods eventually received by the importer, or again the importer may simply not have the necessary money on hand for the actual goods or the duty.

The broker may also act a freight forwarder, incurring the risk that transit goods may be diverted and leave the broker responsible for the duties\textsuperscript{77}. When the duty is high, this risk is mitigated through the use of a bond. The bond is guaranteed through a bank and then an insurance company collects the fee. The bond can cost the broker as much as 3% of the value of the goods.

In addition to the uncertainty that license renewal and dependence on their transit partners provides, customs brokers also face uncertainty in the amount of duty charged to a particular good. When the duty on a good increases it may put the price of the good beyond what people are willing to pay. This can reduce the imports, resulting in a loss of business for brokers. The duties are usually set once per year but they have been known to change even within that period, making planning very difficult. Also, recently the Commissioner of Customs was given the power to set the minimum dutiable values on some goods. This power creates additional uncertainty.

Other changes in the customs administration include their transition to a more automated system. Presently it takes two to three days to clear goods through customs. The UNCTAD ASYCUDA system is being implemented, which should bring this time down to 6 hours\textsuperscript{78}. This should further help customs brokers automate. Currently, the requirement of presenting original documents in paper form makes computerization among brokers less beneficial. Of course part of customs' requirement for paper documents is based on legal constraints which are to be addressed.

Another benefit of the automation of customs is an expected reduction in corruption and fraud. Fraud in customs typically occurs in one of five ways: 1) under-declaration of the true value of goods; 2) misclassification of tariff category; 3) correct declaration of value and tariff classification but underpayment or import taxes based on a false assessment of liability.

\textsuperscript{77} Smuggling or the diversion of goods has been a regional problem since agreements on customs were established in the mid 60's. Kenya, Uganda and Tanzania are trying to establish a customs union that would allow customs for goods destined for other countries to be paid at the first port of entry. (see Leo Odera Omolo (1998) "East Africa: An East African customs union?" African Business; London; Oct 1998; Issue: 236; pp. 38-39)

\textsuperscript{78} See http://www.asycuda.org/aboutas.htm for more details about the ASYCUDA program.
(exemptions); 4) tax evasion where taxes are correctly assessed but never paid and the goods are released anyway; and 5) smuggling where goods are imported without the knowledge of customs officials (Stasavage & Daubree, 1998). Computerized systems for customs reduce fraud by allowing customs agents to enter the specific quantity, value and tariff classification and the system automatically computes all taxes to be paid. When the duty paid is less than the computer generated amount, questions are raised.

The power of the automated customs to reduce fraud is increased when the system is combined with a pre-shipment inspection requirement. With pre-shipment inspection the government approves one or more companies, Tanzania currently uses SGS, who inspect the value, quantity, and tariff classification of goods and seal them before shipment. With a computerized local customs process, the duties collected can easily be compared with the data from the pre-inspection company. In Tanzania, however, this level of checks and balances is still some ways off.

Despite the fact that the Tanzanian customs authority has been identified as one of the government sectors most ready for computerization, the implementation of the system is still in progress and is expected to take months, if not years, to be fully implemented. One must also note that the apparent corruption in the customs process and the expectation this will be reduced through automation creates a major disincentive for quick adoption. Furthermore, the lack of transparency and need to offer bribes increases the value of the customs brokerage services. If firms could clear their goods through customs as quickly as brokers do, they may chose to do it themselves. Clearly, in a completely overhauled system the value of the broker would be reduced.

The above has outlined the factors in the meso level institutional environment that might have implications for the use or potential for e-commerce. These institutions are specific to a particular industry and act as the rules of the game for the member firms. In the next section the micro level institutional environment will be examined. Micro level institutions may be dictated at the individual firm level, but as we will see the structure of many relationships within particular industries are the same, blurring the line between individual firm behavior and behavior that can be generalized and considered ‘industry level.’

4.3 Micro level Institutional Environment

In this section we examine the micro level institutional environment for firms in the engineering consulting and customs brokerage industries. The operationalization of the micro level institutional environment is the relations with key members of the firm's external environment. These key members are customers and suppliers, and to a lesser extent government and industry associations. The firm-client relationship consists of two parts: searching for clients and managing client relationships. The managing of client relationships includes a variety of activities such as negotiating terms, ongoing updates and negotiations, product delivery, and receiving payment. Suppliers are in the case of such knowledge intensive industries, employees and subcontractors. Thus, the firm-supplier relationship has been operationalized as searching for and managing employees and subcontractors. In

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79 Pre-shipment inspection is not cheap however. In their study of customs in Senegal, Stasavage and Daubree (1998, p. 16) found that "while SGS can, in theory, provide quite an effective check on a customs administration, hiring SGS is costly, as the Senegalese government's yearly payments to SGS are of the same order of magnitude as the entire budget for the customs administration."
examining these relations we found there were generally accepted processes within each industry. First we will describe the processes and then explain exceptions. Subsequently, evidence of Internet use in these processes is discussed.

4.3.1 Engineering Consulting Firms

The firms in the sample consisted of three Tanzanian owned firms, two multinationals run by European expatriates, and one multinational run by a Tanzanian. The average size was roughly 30 employees, with the largest being 50 and the smallest being 15. The average age was roughly 25 years, with the oldest being 60 years old and the youngest being 9 years old. In interviews the firms were asked a variety of questions relating to their business practices and about their use of the Internet.

4.3.1.1 Customers

Finding Customers

In engineering, the process of searching for clients or work happens in one of four ways. The first is where a company approaches the engineering firm and asks it to do a job. This is usually a result of having worked with the firm before or of hearing about them through personal contacts. It may also be the result of reputation made not through personal contact but by objective work history or membership in an industry organization. Family connections were a surprisingly unimportant source of work.

The second method of finding work also involves being approached by another engineering firm, but in this case the proposal is to act as a subcontractor. The initiating firm typically does most of the work in submitting the bid and usually the subcontractor submits a resume or briefly outlines a proposal for their share of the work. Again, being asked to be a subcontractor on a bid may come about as result of previous work with the bid applicant, having done previous work for the customer who made the tender, from a personal recommendation, or simply through membership in an industry or social organization.

The third method of finding work and business partners is through a formal bidding process. Projects in need of engineering expertise will advertise a tender and ask engineering firms to submit bids for the work. The necessary work is specified to some extent and the engineering firm must submit a proposal of their design including a budget. Often, if the work requires several different types of engineering, the firm submitting the bid must identify other firms with expertise to act as subcontractors. Thus, firms establish networks where sometimes they are the lead firm in the bidding process, in which case they are providing work to other firms, and other times they are a subcontractor, receiving work from other engineering firms. This establishes a history of work experiences among firms and can lead to informal obligations to repay work with work when possible.

In this manner of obtaining work, through tenders, the firm will have a particular understanding of the way in which the bid process works. Many tenders are for closed bids, meaning the identity of the bidder, and hence their reputation, play no role in the decision making process. Bids are submitted in sealed envelopes and the seals are broken only when all the firms come together for the bid-opening meeting. In this situation the emphasis is on the design and the proposed budget. In situations where the tender is very well specified with the design having been decided in advance, the project may be awarded to the firm with the
lowest bid. In these situations confidence in the bidding process is important. If firms believe information related to their bid is being shared with other firms it may result in what procedurally is a fair bidding process, the project going to the lowest bidder, but in reality is unfair due to asymmetrical information. In Dar es Salaam most of the engineering firms have confidence in the bidding process, although one did complain about a lack of transparency in the process.

The last manner in which an engineering firm may find work is by directly approaching firms that have a need for engineering services. This is different from the bid process because decisions about which engineering firm to use may be made purely on subjective factors. There are also issues of time and place (being in the right place at the right time) that have nothing to do with the relative objective qualities of the engineering firm.

There were some slight differences in how firms found work and they were mostly related to the age of the firm. In finding work the more established engineering firms tend to rely on reputation and networking more than their younger counterparts. Thus, the method of selecting business partners by going out and approaching firms is something younger, smaller firms tend to do. Younger firms were also more likely to get work from advertising. Older firms felt advertising in the local yellow pages brought them no work.

In looking for clients, younger firms are also more likely to take risks, for example by taking on a client they suspect will be late with their payment. The firms are willing to take such risks because in the service industry the costs of performing work are often in salaries, which must be paid whether or not there is work for employees. Therefore, it is better to take on clients who may not pay than to remain idle without work. Only when a firm has an established base of clients and work can it afford to select clients based on who is likely to pay.

In finding work, firms were also cognizant of the type of work they were likely to get. There was also a difference between small locally owned firms and the large multinationals. One manager from a multinational stated that work such as World Bank projects would most likely go to large multinational firms, which would then subcontract to the small, local firms. The work being done by new, small, local firms would thus not encroach on the work of the large multinational. However, the manager from this large multinational did feel that presently there was a shortage of work to go around.

Managing Customers

Once the business partner has been identified the terms of the contract or details of the work must be agreed upon. The way this comes about will certainly be affected by the way the partner was identified. In a highly specified bid many of the details are already worked out in advance. Also, the type of deal (dollar value, amount of time the job will take, who the partner is) will influence the risk associated with the job and hence affect the process of negotiations. One of the details that must be worked out is the amount of professional indemnity insurance (PII). The rate can be set equal to the engineering fees, or may be four to ten times the amount of the fees. Setting the amount will certainly be a function of the type of work involved but will also depend on the relationship between the two parties. For the multinationals, their headquarters might also be involved in these negotiations. ACET has recommended limits but they are not always followed.
The culture in engineering requires that written contracts be used in almost all cases. The
industry organizations, ACET and FIDIC, have standard contracts that were popular with the
firms interviewed. The reason for this high level of use of written contracts may be that in
many cases, particularly those where the government and multinational agencies are involved,
they are required. Only one example was given where an oral contract sufficed and this was
with a long-time client.

In managing the client relationship in Tanzania one of the most contentious issues is payment.
The specific terms for receiving payment are likely to be agreed upon before the work is
begun. Sometimes firms will require pre-payment or partial payment before work is
completed. In other circumstances firms cannot expect payment until long after the work is
complete. This is particularly the case when working with the government. When payment is
not received on time firms employ a variety of tactics to force delinquent firms to pay. Most
frequently firms try to apply pressure on their own, by talking in person, phoning, faxing and
sending emails. If these measures are ineffective they may use an intermediary, someone who
knows both parties. The engineering firms were unlikely to use family ties to pressure for
payment as most of their work is with larger firms. The final recourse is to send a letter from
their lawyer threatening legal action, and then finally going to court. However, only one of the
six firms had ever taken a client to court.

4.3.1.2 Suppliers

Firms must also manage relationships with their suppliers, in this case their employees and
sub-contractors. We will first consider employees. Due to the high risk involved of having an
under-qualified engineer on staff, firms recruit employees carefully. Many have internship
programs where students work for the employer during their study and then if they both like
the arrangement they extend it into a formal employer/employee relationship. In this way
firms have a long period of time over which to observe their design staff. Engineering firms
reduce the risks associated with their employees by carrying insurance to protect themselves
against the liability caused by design errors. In addition to internships and insurance, risk is
mitigated through the use of personal references when hiring staff. There appeared to be no
shortage of competent local personnel to fill engineering positions.

In addition to finding personnel, engineering firms must manage them as well. There were
few problems reported by the firms in terms of their employees. Few had experienced
problems with ethical issues and they were generally satisfied with their employees.

Finding subcontractors also relies heavily on recommendations, personal networks, and direct
previous experience. For larger jobs sometimes firms were found through tenders and then
evaluated. When possible, Tanzanian firms preferred to work with local firms as they are
typically less expensive than working with firms from abroad. However, if local expertise is
not available firms have no choice but to search internationally. At this point a firm may rely
on international industry association membership, such as FIDIC, as a source for potential
subs. The terms of the relationship between a firm and a sub was typically spelled out in a
written contract.

4.3.1.3 Internet Use

The adoption of electronic commerce occurs via two parallel paths. One is the adoption of
various technologies and the second is the integration of the Internet in the processes and
procedures of the firm. Table 4.3.1.3.1 lists the level of technological adoption of the various firms. Subsequently, the use of the Internet in customer and supplier relations is discussed.

<table>
<thead>
<tr>
<th>Firms</th>
<th>Website / Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>TanCountry</td>
<td><a href="http://tan-country.africaonline.co.tz/homepage2.htm">http://tan-country.africaonline.co.tz/homepage2.htm</a></td>
</tr>
<tr>
<td>EM Consultants</td>
<td><a href="http://www.africaonline.co.tz/em-consultants/">http://www.africaonline.co.tz/em-consultants/</a></td>
</tr>
<tr>
<td>COWI</td>
<td><a href="http://www.cowi.co.tz/">http://www.cowi.co.tz/</a></td>
</tr>
<tr>
<td>Howard Humphreys</td>
<td><a href="http://www.halliburton.com/BRS/BRSLOC/BRSLOC.asp">http://www.halliburton.com/BRS/BRSLOC/BRSLOC.asp</a></td>
</tr>
<tr>
<td>Inter-Consult</td>
<td><a href="mailto:interconsult@raha.com">interconsult@raha.com</a></td>
</tr>
</tbody>
</table>

Table 4.3.1.3.1: Internet Adoption

All firms in the sample had at least one email account. Thus the extent of technical adoption was indicated by whether or not they had a Web site and their access mode. The table shows that some firms had Websites. The two smallest and youngest firms had sites of their own. Howard Humphreys and Norplan did not have their own Website and were also not listed on their parent company’s Web site. COWI and Inter-Consult had no Website (the COWI site is new). Thus, the younger firms were the most proactive in using Web technology.

The motivations of firms to get online were rarely driven by external forces. One multinational manager did state that they were thrust onto their parent’s network but this seemed to refer more to the mode of access rather than the use of email itself. The adoption of the Internet is driven by an organic process where firms are getting online all at the same time. This may be a function of the sample and the state of Tanzanian development. With full Internet access becoming available only in 1996, there may have been unfilled demand that literally resulted in firms adopting the medium all at the same time: when it became available. Subtly, competitive forces are also driving adoption, giving firms the feeling of needing to ‘keep up.’ Reduced communication costs was the most frequently mentioned factor, given the high telephone tariffs. Next the use of the Internet in firms’ customer and supplier relations are examined.

Clients

The firms varied in the types of tasks they would perform using the Internet. In finding customers the younger firms were willing to use the Internet and it was these firms who were more enthusiastic about the prospects of their Web sites. The reasons firms had Web sites were typically to increase awareness with both local and foreign firms and to give the impression the firm was conversant with the latest technologies.

Managers were asked what type of information they would provide via their Website to help establish their validity. Most firms were or would be willing to put their licensed status and membership in industry organizations. Some were willing to list existing clients while others felt this would be too ‘showy.’ Social club memberships, which are an important part of the Tanzanian commercial environment, would definitely not be listed as this also appeared ‘showy’ and inappropriate. One firm, a branch of a multinational, also stated that to enhance its credibility they would make available their annual report online, which would demonstrate their level of transparency.

There were three instances in three separate firms where contact with a potential client was first made through email. In all three instances the Tanzania firm was solicited from abroad.
In one case the email address of the Tanzanian firm was found through unknown means, perhaps as a result of the firm being a multinational. The two other cases were Tanzanian owned firms in which the email address was found via the firm’s Web site. In the case where the multinational firm’s Tanzanian office was solicited, it received an email from a firm in Korea. The Korean firm needed engineering services in Tanzania. The Tanzanian firm did the work without an external check on the validity of the Korean firm. They relied on communication via email, fax, and phone to establish that in their words “the Korean firm knew what they were talking about so they were probably valid.” The Tanzanian firm also reported it was willing to take the risk because the value of the transaction was quite low.

In the other cases, one Tanzanian firm was contacted to be a potential sub-contractor to a German firm that was bidding on a contract in Tanzania. The German firm was eventually unsuccessful in its bid so no work resulted from the contact. In the second case, a French electronics equipment manufacturer contacted a Tanzanian firm. The French firm was interested in finding a distributor for its products in Tanzania and was interested in possibly establishing the engineering firm as such. They were still in negotiations at the time of the interview. The Tanzanian firm also relied on information such as the French firm’s Web site and communication to develop a sense of the validity of the French firm’s offer.

Although in all three cases the firms were excited about the potential of such transactions and hoped they would continue in the future, these were anomalies and could not compete with the value that networks of relations hold in terms of finding new clients. Two of the multinationals and one Tanzanian firm, the three oldest firms in the sample, seemed less willing to use the Internet than the newer firms. Managers, one from a multinational who was a European expatriate and another from the older Tanzanian firm, had definite opinions about the use of the Web for finding work. They saw engineering as a profession where firms are hired based on recommendations and reputation, not merely by finding one on the Internet. As one representative of a firm put it “I don’t think people look at Web pages to find engineers.” Furthermore, as another interviewee stated “The Internet is a tool to support relations made through personal connections.”

One potential way the Internet could help engineering firms find work is if the tenders and bidding process were all done online. There was no mention of finding tenders for local work online. Furthermore, when asked about the possibility of putting the bidding process online one interviewee mentioned the need to simulate everyone being in the same room and seeing that the seals on the envelopes were not tampered with prior to the opening. He felt it would be difficult to simulate this process online.

In managing relations with existing clients all firms used email. One firm reported using email primarily for communication with foreign clients, while the others used it for communicating with both local and foreign partners. Its benefits include reduced communication costs, its asynchronous nature (not having to get through via the telephone), and having a written record. One firm also felt that email was beneficial for making communications with clients less formal than communications via fax.

The specific tasks that occurred through this communication varied. Four of the six firms reported transferring engineering drawings via the Internet, which was seen as a significant improvement in their day to day operations. This was particularly so for those firms more involved with international organizations, although firms were using this to send files around
the city as well. Most firms felt comfortable negotiating the terms of contract via email, although one felt it was important to do this face to face. If the client was not local this also was a factor in whether or not email was used for contract negotiations. Although acceptance of contract negotiations online was high, none of the firms would conclude a formal written contract via email. The agreed upon document would be mailed or faxed for the appropriate signature. They continued this practice due to accepted practice in the industry, which may be based on the lack of recognition of digital signatures by the courts.

*Suppliers*

The importance of personal networks vis-à-vis the Internet in finding clients was also found in the search for subcontractors. As one interviewee stated “The Web tells little that is important for choosing a sub.” Firms mentioned that, particularly, when looking for a local subcontractor their personal networks were a far better tool than using the Internet. Even when finding subs abroad the firms relied on industry association membership rather than looking for firms via the Web. Similar to client relations, once a subcontractor was identified email is an important tool for communication, negotiating contracts, and transferring documents such as CVs.

Small firms rarely had fixed contracts with suppliers of goods, and several of them had used the Internet to purchase supplies for their firms. One interviewee also mentioned that the Web was useful for developing specifications for large pieces of equipment that were necessary for completing a job. One manager did purchase low value items from a Website based in the U.K. They were required to prepay in full by bank check. He felt the Website gave a strong indication of the validity of the firm and he felt no need to seek external modes of validation.

Similar to finding clients and subcontractors, the firms in the sample were reluctant to find engineering staff via the Internet. Since engineering students tend to be fairly computer literate, theoretically, the potential for firms to find engineering employees on the web exists. Some firms thought it might be possible while others were opposed. The opposition again stemmed from the idea of engineers as professionals and that they should be hired based on personal contacts or through reputation. It appears that this mode of finding employees has not been developed in Tanzania. Given the labor market in which jobs are scarce it may be considered foolish to give a job, a potential source of power and prestige in the community, to a stranger found over the Internet. Within the firms, there was a rather low level of employee desktop Internet access. This may simply be due to not having networks as yet, although in one firm the manager did mention that he thought there might be more “goofing off” if employees had desktop access.

One firm was concerned about security and mentioned Internet access and the possibility of hacking as a risk. When asked about risks no other firm mentioned computerization or the Internet.

*4.3.2 Customs Brokerage*

The customs brokerage firms in this sample included four small Tanzanian owned and operated firms, one multinational firm run by a Zambian, and a small firm owned by a British expatriate. The average size was roughly 25 employees, with the largest being 36 and the smallest being 10. The average age of the firm was roughly 12 years, with the oldest being 20 years old and the youngest being 4 years old.
4.3.2.1 Customers

Finding Customers

Finding clients in the customs brokerage field does not occur through as many mechanisms as in engineering. Firms find business partners through a variety of mechanisms that rely largely on contacts and reputation. First, if the firm is a multinational it may receive work through its corporate network or contacts. For example, a firm with offices in both South Africa and Tanzania may funnel work from South African clients to their Tanzanian office. Like engineering, many customers are gained through referrals from existing clients. Customs brokers also advertise in international directories and have obtained new clients, without references, from this source. They may also become aware that a firm is importing and contact them directly. Occasionally, a very large firm will post a tender to hire a customs brokerage firm and the broker must merely apply.

Customs brokers who are not part of multinationals may also employ agents in other countries. These agents are paid a commission when they bring in work to the local firm. In this case it is the network of the agent in the other country that is important to winning the work. For example, an American firm selling goods to a Zambian firm would request the Zambian firm for a reference to a reliable broker. The Tanzanian firm may handle the cargo and the customs clearance from Tanzania into Zambia, but the network and reputation of the agent in Zambia win the client.

Clients vary in terms of the importance of the import/export process to their business. For a manufacturing client, the import of raw material for the production process can be very time sensitive, making the customs broker a critical part of its operations. For a construction project where the import of goods is a one-time occurrence, the timely arrival may not be so vital. Thus, depending on the regularity and sensitivity of the firm’s business to the customs clearance process, a firm will put varying degrees of effort into finding and building a relationship with a broker. Some brokers report they have had clients pick their name out of a directory. Other brokers, typically those working with larger clients on a more long-term basis, rely heavily on reputation for finding new clients.

Among all the customs brokers the multinational firm certainly had an advantage over the others in terms of international contacts. This would be helpful for shipments where making the forwarding arrangements was the responsibility of a firm abroad. If a local firm were responsible for making the arrangements, the advantage would be to the local firms. The multinational in this case faced other issues not addressed by the locals. The firm formerly had been the import/export branch of a Zambian parastatal and was spun off in a privatization deal. As a formerly public entity, the broker was in the difficult process of cutting staff and reorganizing to provide efficient cost-effective service. The legacy of bureaucratic procedures and habits faced by this firm were not faced by the small, flexible, locally owned firms.

In terms of their international competitiveness for work in Tanzania, the brokers all agreed that they could respond to most tenders for jobs, but only up to a certain point. A large multi-million dollar project would be out of their grasp and the contract would most certainly go to a large multinational logistics firm. One firm pointed out, however, that these large multinationals do not have licenses to clear and forward goods in Tanzania and thus would be required to employ a licensed Tanzanian broker to bring in the goods.
In general, fewer differences in the ways they handled their business can be seen among the customs brokers compared with the engineers. One difference, however, was that one firm specialized in a particular industry (mining). This made a difference in how its work was obtained. This firm belonged to the mining industry organization and made many contacts for work through this membership. In the case of the other firms, there were no other industry organizations to which they could belong in order to meet new clients.

Managing Customers

Customs brokerage is a complicated business and there are many aspects of the service that require coordination. Issues to resolve include when, where, and how the freight will arrive and how the documents will be sent and received. Once the goods have been shipped the client requires updates on the status of the shipment. The process of clearing goods in Dar es Salaam still requires original hard copy documentation. As one broker described:

"There are around 15 to 20 places you have to pass your documents to clear cargo and the documents sometimes get lost. You can spend a whole day just trying to find your documents and where they are in the process."

When the broker also acts as a freight forwarder they must arrange for domestic shipment, which must be somewhat flexible as the amount of time needed to get the goods through customs can vary significantly.

Negotiations between brokers and their clients are mostly concerned with rates for the broker and whether or not the broker will offer credit to the client in order to pay duties and/or transport charges. Whether or not credit was offered or the broker required prepayment is a function of several factors. If the client is a very large firm offering a constant flow of work, the client may be in a position to require the broker to pay the duties. In other circumstances the paying of duties may be something offered only to long time clients. In other cases it may or may not be offered on an individual basis. One broker only gave credit to international clients, after having been burned by local clients. The exact opposite was true for a different broker. In either case, if the broker is willing to extend credit, steps must be taken to investigate the credit worthiness of the client.

After making these negotiations over payment there is also the issue of whether or not a contract is required. It is important to note here that the decision to use a contract was most often made independently of whether or not a customer would be required to prepay. If the broker did not know the client or did not trust it prepayment, not signing a contract, was the solution. This is not to imply that contracts were never used.

The use of contracts by brokers varied with the type of work brokers handled. Brokers who were diversified in other businesses, such as logistics, tended to clear goods on an ad-hoc basis. These brokers may or may not use contracts depending on the client and the broker’s own previous experience in not using contracts. One firm had had many negative experiences with receiving payment, and had recently set a policy to always require a contract. This is because prepayment only absorbs some of the risk. A broker is never certain what the port and transport charges will be. Therefore, in some cases prepayment will not cover the entire cost of the transaction. A broker may also be required to use a contract if the client is a government organization or a multinational firm. Some brokers, those who have a few large clients, would enter into a contractual arrangement only after having a trial period with a new
client. When it appeared, usually after six months, that both firms were satisfied with one another, a contract would be signed. As one broker described it: "In this industry a contract is a show of trust." The firms would sign a contract more to fix the price and as an agreement to work together, as opposed to using it to reduce uncertainty about payment.

Compared to some other industries, customs brokers are in a low risk position in terms of payment. Since the duty that must be paid on goods cleared through customs is often higher than the fees the broker charges, it is easy for the broker to see that the firm has money available to pay the fee. Most importantly, if the client cannot pay the broker's fee the broker can simply keep possession of the goods until the fee is paid. In this way the balance of power is in favor of the broker. Of course this balance of power changes if the forwarder extends credit to the client. Payment is received in several forms with some firms accepting wire transfers, others requiring checks, and some even requiring, particularly in the case of international clients, cash in U.S. dollars.

In terms of receiving payment, the customs brokers were for the most part in agreement that the court system should be avoided. When one was used, firms seldom went back to the contract once it was signed. If payment became an issue the customs brokers would attempt to talk it out. However, if talking didn't help they would call on friends or family members of the debtor to try to shame them into paying. One firm mentioned that in some cases a family member might pay the overdue bill just to save the family's reputation. Sending a letter from a lawyer was considered the least successful means of obtaining past due payments.

4.3.2.2 Suppliers

Brokers must also find and manage employees and subcontractors. Customs brokers' employees help manage accounts and interface with clients. They are often dispatched to the port to clear goods through customs and arrange the forwarding of goods to the hinterland. In searching for employees, customs brokers usually take on employees with only general skills and train them. Since employees have invested less time in their training to enter the customs brokerage business they may be more willing to risk their career for the immediate gratification of money gained from violating customs laws. The high level of corruption may also create the perception that is an acceptable behavior.

Employees are a great source of risk for customs brokers. The brokers handle large sums of money and are responsible for handling valuable goods. It is difficult for a broker to manage all of the actions of its employees. To help reduce the risk employees pose, customs brokers insure themselves, particularly covering the staff member responsible for transferring large amounts of cash. Additionally, the fierce competition for brokerage licenses increases the consequences of fraud by employees of customs brokerage firms.

One customs brokerage firm had a problem with an employee who colluded with a truck driver to have goods re-enter the country after they had crossed the border. The illegal action was eventually uncovered and the employee was fired. In order to safeguard the firm's reputation and ensure license renewal, the firm took out an ad in the local newspaper stating the employee had been let go and that any deals he negotiated in the future should not be associated with the firm. This is the extent to which firms must go to protect their reputation and ensure license renewal. It also highlights the importance of the newspaper in doing so.
Customs brokers must also choose and manage subcontractors who perform such tasks as storing and transporting goods. To choose these business counterparts customs brokers use similar methods as those who choose the customs brokers themselves: they rely on past experience, personal recommendations and reputation. In some cases recommendations are not available and firms must simply take risks. As one firm explained:

"In the shipping business there is blind trust. There has to be because without it nothing will get done. They have to let go and believe people will do a good job."

4.3.2.3 Internet Use

The level of Internet adoption is given in Table 4.3.2.3.1. All firms in the sample had at least one email account. The table shows that only one firm, the multinational, had a Website. The Website was actually that of its parent company, although the local office is listed there. The other firms were all talking about getting a Website soon. One firm without a Website, demonstrated a more sophisticated level of adoption in other ways. In this firm, employees use a local area network and have a dedicated wireless connection to their ISP. Their use of email and computerization within the firm was relatively high, even having the accounting processes automated. In the following paragraphs the use of the Internet by brokers in their relations with customers and suppliers will be discussed.

<table>
<thead>
<tr>
<th>Firms</th>
<th>Website / Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocean Link</td>
<td>No website</td>
</tr>
<tr>
<td>Ocean Freight</td>
<td>No website</td>
</tr>
<tr>
<td>ZamCargo</td>
<td><a href="http://home.global.co.za/~zamcargo/">http://home.global.co.za/~zamcargo/</a>; email sometimes</td>
</tr>
<tr>
<td>GNM</td>
<td><a href="mailto:Gnm@intafrica.com">Gnm@intafrica.com</a></td>
</tr>
<tr>
<td>Sangare Express</td>
<td><a href="mailto:sangare@twiga.com">sangare@twiga.com</a></td>
</tr>
<tr>
<td>SS International</td>
<td><a href="mailto:Ssinter@raha.com">Ssinter@raha.com</a></td>
</tr>
<tr>
<td>Regent</td>
<td>Web site</td>
</tr>
</tbody>
</table>

Table 4.3.2.3.1: Internet Adoption

Customers

The Tanzanian customs brokerage firms are embracing the Internet, particularly email. However, in searching for clients firms make little active use of the Internet. They rely mostly on inter-organizational networks for referrals to new clients. One interviewee did mention that it was listed in an online directory. One way email played a role in finding new clients was when brokers were solicited by clients via email, especially for transit cargo. This appears to be an easy and impersonal way for firms requiring brokerage services to get quotes and compare prices. Often the prospective client obtained the email address of the broker through some connection. As few firms listed themselves with sites on the Internet, email addresses were typically obtained through other means. When prospective clients contacted brokers via email they were usually willing to take them on as clients after using communication to establish the validity of the firm and requiring prepayment. Although several firms had obtained new clients from inquiries made initially via email, this did not represent a major source of new clients.

Although only one firm had a Website, the majority of firms were planning to create one and interviewees had opinions as to their value and the content they should contain. The one firm with a Website saw it as a promotional tool. A representative of one firm stated he would be
reluctant to put lists of clients on the site for fear that competitors would try to steal them. They would be willing to use a few testimonials, however. Firms were also reluctant to post their rates, as they used price differentiation strategies. One firm felt it was important to present a small portfolio of projects the firm has completed, to provide a sense of the broker's operating history. This same manager believed listing organizational memberships on the Website would not be useful, as the organizations do not help in finding new clients. This of course led to the possible notion of putting social club membership, which does provide contacts with new clients, on the site. The manager felt this would be quite odd and said he would not list a social club membership on the site. One manager stated that if a Website had a link to a large company, this afforded the firm some credibility.

The reasons firms mentioned for going online were competitive pressures and simply the pressure from within the industry. One interviewee set up an email account after being asked so many times for his email address. One manager also mentioned that "In this part of the world having email gives you credibility," although this perspective was not shared by managers in all firms. One of the earlier adopters, who has had email since 1996, explained he had to push his British clients to get online. Until they did, he used email to fax gateways for his correspondence with them.

The main benefits of Internet use were said to be reduced costs, increased speed, having a written record, and ease of use-- which led to increased frequency of communication. One manager attributed to email an $800 per month reduction in his phone bill, from $1000 to $200. Firms used email with both local and international clients.

Brokers were able to accomplish many tasks with their customers through the use of email and the web. Email was most frequently used to provide customer updates on the status of their goods. Being able to simply forward emails was an important benefit. One broker mentioned they previously had to book international calls to provide updates. Firms also used email to transfer computer generated documents (Word and Excel files). At times firms used email to document terms agreed upon via telephone. Firms also used the web to check shipping schedules.

There were limits to Internet use, however. Although firms might negotiate contract terms online, when it was complete it was sent off by courier or fax. Also even when accounting and billing systems were automated invoices were sent in the mail or by fax. Typically, clients required that invoices carry the company letterhead as an indication of the validity of the bill. The most innovative firm got around this by emailing invoices using Acrobat files, which clients could then print out.

 Suppliers

 Internet use in supplier relations was much less than with clients. Although agents typically have email other sub-contractors such as transport companies or individual drivers required telephone communication. In terms of searching for employees, brokers rarely used the Internet. Given high rates of unemployment and the low level of formal training of many employees there is little incentive to bypass personal networks to use the Internet.

One area where two firms did mention using the Internet was for supplies. In one situation a firm needed legal services in the UK and hired an attorney he found on the web. Although the manager would have inquired about a local attorney's reputation before giving him work, he
made no attempt to externally validate the one found on the web. Other supplies purchased on the web were limited to books.

In this section the micro level institutional environment of engineering consulting and customs brokerage firms has been presented. Additionally, their use of the Internet was examined. In the following sections the relationship between macro, meso, and micro institutional structures and adoption and potential of electronic commerce will be explored.

4.4 Analysis

In this section we explore the relationship between institutions and electronic commerce. The effects of institutions on e-commerce will be described according to the institutional level, mode of effect, and mechanism of effect. The levels are macro, meso, micro, while the mode of effect is either direct or indirect. Also, from the case it can be seen that institutions affect e-commerce by creating or reducing uncertainty, increasing or decreasing the cost of access or service, and by affecting adopters’ perceived benefits of Internet use. Thus, uncertainty, cost, and perceived benefits are the mechanisms of effect. After describing the effects of institutions on e-commerce, conclusions will be drawn about the relative importance of the various effects. The effects will be judged for their influence on both the current adoption of e-commerce and the potential for e-commerce. We begin the analysis by examining the institutional effects at all three levels. In examining the significance of the various effects issues of concern are: what will it take to increase / dampen this effect, and how stable is this effect over time? Overall the analysis concludes with answers to questions such as: which effects have the greatest impact on adoption, on potential for B2B e-commerce, on potential overall? And finally, how do the different levels compare?

The analysis thus examines similarities and differences across the customs brokerage and engineering consulting industries. The differences will highlight institutional effects that are industry specific. Similarities may point to sector-wide institutional characteristics. Finally, a comparison of industry and sector-specific effects is made with the macro level effects.

4.4.1 Institutional Effects and E-commerce

4.4.1.1 Macro

To explore the macro level institutions and their implications for e-commerce we return to the sections describing the commercial environment in Tanzania. The sections are the commercial legal system, payments and banking, registration and taxation, commercial organizations and the press, telecommunications and computing, and labor. We first examine the impact of the commercial legal system, which in Tanzania has conflicting effects on the functioning of small firms.

Commercial Legal System

The role of courts, contracts, and signatures can be summarized as follows. Although the existence of commercial law facilitated, to some degree, the use of contracts, firms rarely entered the legal system to enforce these contracts. Firms reported they frequently negotiated contracts online but continued to finalize them offline, as wet signatures are legally required. Firms continued these practices despite their infrequent reliance on contracts as a means for settling disputes. Thus, the contract was more a bilateral agreement to be enforced through
informal means, rather than a legally binding document in which disputes are resolved in court. Legislation that recognizes documentation in digital form and digital signatures is needed.

The infrequent use of the courts and the role played by the contract in inter-firm relations resolves some potential problems for B2B e-commerce. In terms of the potential for e-commerce, firms can feel free to continue to use contracts as a means of establishing bilateral agreements without having to be concerned about the jurisdiction or the existence or the efficacy of an international legal framework.

The next aspect of the commercial legal system affects the potential for e-commerce by creating uncertainty in the commercial environment as a whole. The Tanzanian government is threatening to require foreign owned firms to sell at least part of their firms to Tanzanian nationals. The potential of such a change creates uncertainty for foreign owned firms in Tanzania and could reduce their interest in investing further in their own enterprises, including investments for e-commerce.

The third aspect of the commercial legal system is the protection of Intellectual Property Rights, which in Tanzania is quite poor. This certainly affects the potential for e-commerce in Tanzania as firms will be unwilling to invest in developing content that can easily be copied, without consequence, by another firm.

Payments, Banking, Registration, and Taxation

The next general category of the macro level institutional environment is payments and banking, and we will discuss the former first. The issue of payment has several implications for both the adoption and potential of e-commerce. First, the cultural norms around payment, namely being patient, could create problems for firms entering cross-cultural transactions via e-commerce. On the other hand, Tanzania's experience with non-payment should prepare them well for a world of transacting with people with whom legal recourse is not an option. In e-commerce, Tanzanian firms can continue requiring pre-payment.

Tanzania is essentially a cash based society. This will create many more problems for business-to-consumer e-commerce, but B2B will be affected as well. Some businesses interviewed for this research concluded certain transactions, whether with international clients or small firms, in cash. The cash based nature of the commercial environment raises two related issues: a lack of diversity in payment mechanisms and a lack of credit. Although checks are sometimes used, they are not widely accepted. Credit cards, the payment mechanism used most frequently in consumer-oriented e-commerce are not available through local banks in Tanzania. Thus, for Tanzanian firms wanting to engage in e-commerce arranging payment will be an additional hurdle. Credit cards not only serve as a payment mechanism for e-commerce; they also provide credit for small firms wanting to invest in e-commerce technologies such as computers, servers, etc.

The commercial environment is also characterized by registration and taxation. Like many African countries, Tanzania has a large informal commercial sector. The typically small firms in this sector tend to be entrepreneurial in spirit and may be the ones, in other circumstances, most likely to try e-commerce. An unregistered firm is unlikely to make itself known to the authorities through a web site.
Taxation in Tanzania has been described as rather arbitrary. Firms must deal with a myriad of different taxes and their enforcement is inconsistent. This creates uncertainty in the commercial environment in general, which creates further hurdles for e-commerce. In addition to this, the bureaucratic processes associated with customs duties makes automation and e-commerce in international trade difficult.

*Commercial Organizations, Trust, and the Press*

Commercial organizations are a potential source of innovative activity and a push for e-commerce could come from this sector. In Tanzania, however, the business organizations such as the Chamber of Commerce are rather weak. This creates a void in business-government relations that could be pushing for legal and procedural reforms that will facilitate the use of e-commerce. This weakness of the general business organizations is offset by the industry specific organizations. Although these organizations are active and have the potential for leadership in terms of e-commerce, the real developments in e-commerce at the industry level are in the international organizations. The international industry organizations have a strong web presence with online listings of members.

Although the general business organizations such as the Chamber of Commerce have little influence among firms, they are attempting to make greater use of the Internet and to encourage their members to use it. They do feel the Internet could be used to develop services for their members that would increase the value of membership.

The importance of social clubs in the Tanzanian commercial environment could be detrimental to the development of e-commerce. Social clubs, through exclusion, affect the transparency of business and build barriers to entry for new firms. The information exchanged in social clubs is informal and occurs through closed networks. There is absolutely no desire to codify the shared information and distribute it through computer networks. For all of these reasons the importance of social clubs in the commercial environment create hurdles for e-commerce.

The lack of trust among various members of the commercial environment creates barriers for further development of e-commerce. Although e-commerce can emerge through grass roots developments taken at the firm level, it is easier to overcome barriers through cooperation. This is especially important where there are very limited resources, which limit the feasibility of individual firms creating solutions to general problems.

The significance of the newspapers in the Dar es Salaam commercial environment could serve as a base for e-commerce as computerization expands in the economy. The press act as a central source of information. The credibility and information gathering capabilities of some newspapers could be leveraged to provide other services such as credit rating agencies that would help e-commerce. Of course, the online news itself is one avenue into electronic commerce and it has already begun.

*Telecommunications, Computing, and Labor*

In terms of telecommunications and computing Tanzania is far behind other nations. The telecommunications infrastructure in the capital has improved, although leased line rates are still far above those of western countries. This will limit the potential and adoption of e-commerce. At the time of this investigation the capacity of the trunk connecting the country to the Internet was only 2MB. Interestingly, the high international calling tariffs have been a
great boost to Internet use. Many of the firms interviewed had an email connection in hopes of reducing their phone bills. It is interesting that the costs of access in Tanzania are much higher than other parts of the world yet none of the firms interviewed complained. In discussing having a Website, they had reservations about the value for their firm given their objectives, but prohibitive cost was never mentioned.

Tanzania’s comparative lack of experience with computers, due to previous restrictions on imports, may affect the adoption of computers. Although there has been a rapid increase in the skills of the labor force, the lost years of experience with network administration will slow the speed of adoption.

The competitive market for Internet services is a positive aspect of the Tanzanian commercial environment. Marketing efforts, including door-to-door sales calls, have improved awareness and are helping adoption. The rates that Tanzanian ISPs charge, often a result of many factors including duties on equipment, telephone charges, etc. are higher than those in Western countries and this will make it difficult for Tanzanian firms to compete in e-commerce. It will also hinder the development of a critical mass of local users. Certainly the market for Internet services and is not helped by the regulatory uncertainty that has existed in recent years.

Hurdles created by ISP licensing include limitations on the types of services offered. Services such as Internet radio, email-to-fax gateways, Internet video conferencing, and Voice over IP are officially prohibited, although it must be noted that enforcement of these provisions has not been pursued.

In the above both direct and indirect effects of the macro institutional environment have been discussed. Table 4.4.1.1.1 shows them categorized as having a direct or indirect influence on e-commerce, the classification of that influence, whether it be through perceived benefits, costs, or uncertainty, and whether or not the influence of the institution was positive or negative.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Institutions</th>
<th>Mechanism</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Wet signatures on contracts</td>
<td>Perceived benefit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Lack of credit cards (payment)</td>
<td>Perceived benefit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Experience with prepayment</td>
<td>Perceived benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>High phone tariffs</td>
<td>Perceived benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Social clubs</td>
<td>Perceived benefit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Competitive ISP market</td>
<td>Cost</td>
<td>+</td>
</tr>
<tr>
<td>Indirect</td>
<td>Ownership of foreign-owned firms</td>
<td>Uncertainty</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Taxation</td>
<td>Uncertainty</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Independence from legal system</td>
<td>Perceived benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Weak IPR protection</td>
<td>Perceived benefit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Cash based payments</td>
<td>Perceived benefit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Limited credit</td>
<td>Cost</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Informal sector</td>
<td>Perceived benefit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Press</td>
<td>Perceived benefit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Unskilled Work Force</td>
<td>Uncertainty</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>High phone tariffs</td>
<td>Cost</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 4.4.1.1.1: Macro Level Institutional Effects on E-commerce
4.4.1.2 Meso

In this section we examine the impact of the meso level institutional environment on the use of e-commerce. This will be addressed by examining each industry separately. First engineering consulting will be examined.

Engineering Consulting

The first characteristic of the institutional environment for engineering consulting is the lack of specialization in the sector. This lack of specialization reduces the need for firms in the sector to look beyond the local environment for work. This makes them less likely to pursue Internet use for market expansion.

The institutional environment is also characterized by different treatment for locally owned and foreign-owned firms. The requirement that in some cases engineering projects managed by foreign firms must seek local partners provides an impetus for local firms to have web sites to be known by foreign firms. Foreign-owned firms have less of an incentive to establish themselves in this way.

Although industry association membership is an important point for networking and they do help the functioning of the industry through communication with the government, standardizing procedures, and maintaining an ethical environment, they do not help with e-commerce adoption. The industry associations do not have Webster themselves and play no role in firms’ adoption decisions.

The licensing of engineering firms does little to enhance their use of e-commerce. The licensing process itself makes no use of the Internet. Being licensed does not provide firms with instant credibility that could be used to communicate this via the web. Licensing is taken for granted and currently plays no role in the ability to find work. Firms did mention they would include their licensed status on a web site but that it is only a very basic requirement and they would not get work because of it. The inconsistent enforcement of engineering licensing does affect e-commerce by creating greater uncertainty in the market.

The use of the Internet to find work was quite low. This is due to the institutional environment consisting of two elements. The first is engineering as a professional service. In finding professional services people generally rely more on recommendations by known others. This in turn creates a second aspect of the institutional environment, which is that networks are extremely important in finding new clients. The reliance on professional and inter-organizational networks decreases the potential that e-commerce presents to this aspect of industry. A Website could create awareness of the firm among potential clients but they would typically only approach the firm once a recommendation by a known source was provided.

The one source of work that relies less on networks is finding work through tenders and bidding. In Tanzania this process rarely involves use of the Internet. Tenders are posted in newspapers and the bidding process is done through mail and face to face interaction. This process has enormous potential for being transferred to an online environment but it is unlikely to be undertaken in the near future.
Firms also made little use of the Internet in finding subcontractors. Again the use of networks dominated. There was also a geographical factor in that most subcontractors would be local firms and particularly in this environment personal networks were considered much more effective. The search for employees was the same.

Engineers also made use of standardized contracts, although the amount of PII varied and required negotiations. The inability to establish a standard formula for insurance may be an idiosyncrasy of the engineer sector. It reduces the potential benefit of using the Internet to establish contracts.

Customs Brokers

The first effect of the institutional environment on e-commerce in customs brokerage is the role of risk in typical transactions. When a customs broker does not pay the duties of clients the risk in the transaction is with the client. The client must trust the broker will clear their goods quickly. The structure of risk in the transaction allows customs brokers to take on clients they do not know thus making use of Websites for finding clients a feasible undertaking. The brokers will simply continue requiring prepayment.

The second institutional characteristic affecting e-commerce in customs brokerage is the use of networks. Customs brokers rely heavily on inter-organizational networks for finding work. This limits the usefulness of the Internet for this aspect of their business. There are, however, in-roads being made. Firms have in the past used international directories and these can be mimicked on the web. Brokers are willing to take on new clients in this way because it is acceptable to require prepayment for services thus mitigating the risk of working with unknown foreign firms. Although brokers made little use of the Internet, there is certainly potential for this type of activity.

The issue of licensing in the brokerage industry generates uncertainty that creates challenges for e-commerce adoption. From one year to the next firms cannot be sure they will be able to operate legally in the sector. On the other hand, licensing protects the brokers from competition from abroad. Overall, however, the uncertainty in the licensing process creates hurdles for e-commerce.

Further uncertainty is created by changes in the level of duties. Changes in duties affect the profitability of importing certain goods, which can, in turn, create turbulence in the brokerage industry.

E-commerce in customs brokerage is also affected by the level of automation in the customs clearing process. The slow adoption of the ASYCUDA system is holding back the sector as a whole. Requirements to present original forms create barriers to adoption of Internet based processes and procedures within the firm. Furthermore, brokers can not communicate with customers via email. By integrating email into processes with clients brokers can only go so far. The real key to efficiency gains in the sector would be Internet access to the customs process.

Brokers rarely used the Internet in interactions with suppliers, whether they are potential employees or subcontractors.
The customs brokers association TAFFA is very weak and will likely have little impact on e-commerce in the sector.

Firms reported they could handle jobs up to a certain size but after that typically a large multinational logistics firm would be given the contract. So ownership in this sector does matter.

4.4.1.3 Micro

We now examine then micro institutional environment for e-commerce in both engineering consulting and customs brokerage. Here we focus on firms' use of the Internet in their relationships with their customers and suppliers.

Engineering Consulting

In the engineering consulting sector the newer, younger firms were the ones making the greatest use of the Internet. They were using web sites to find work. This is a result of the reliance on networks, with younger firms having to be creative in terms of making new connections. Younger firms were also more willing to take risks, by taking on clients they were not sure would pay. This could make them more willing to take on risks via the Internet.

It also became apparent that firms have two methods for validating other firms, who are potential clients or subcontractors. There are external validation mechanisms that rely on reputation and references by others. Membership in an international industry association also helps. However, when these external means of validation are not possible, or too costly in terms of search costs, firms tend to communicate about the details of the proposed work or terms and then slowly validate the partner within the relationship. This internal validation, particularly for complex projects, can help when the Internet is used for market expansion, particularly when reputation and networks are not available for external validation.

In their day-to-day tasks, engineering firms made good use of the Internet for transmitting drawings, communicating, and negotiating terms. Thresholds to use existed for contracts, as when a signature was required the fax or courier was used.

Resolving payment issues was typically idiosyncratic to the relationship between the two firms. Typically firms tried face-to-face negotiations first. However, when this failed whatever mechanism was available, whether an appeal to a mutual inter-organizational network member or even a family member, was tried. Some firms even made use of threatening letters from lawyers. All these different means of resolving payment issues create barriers for Internet use. As long as various procedures and appeals to such a wide variety of persons are seen as appropriate, the benefits of using the Internet to resolve payment disputes, say through online mediation, will remain low.

One use of the Internet the engineers did find useful was purchasing supplies. In the few cases where firms did purchase goods online, they did not try to validate the supplier. The engineers also found the web useful for gathering information, particularly specifications for equipment.

Engineering firms have confidence in their employees and few managers reported troubles. They are careful in hiring procedures preferring internships and referrals to simply finding someone via the Internet. The trust the firms have in their employees bodes well for further
use of the Internet as firms will allow employees the autonomy needed to make effective use of the Internet.

*Customs Brokerage*

Brokers reported going online to reduce their communication costs but also due to pressure within the industry. The micro level institutions, or the norms in their relationships with clients, allowed the firms to perform the following tasks online. Updates on the status of shipments, negotiating terms and/or giving quotes, transferring documents, and searching for information were all accomplished through email or the web. Micro level institutions surrounding invoicing prevented firms from using email for sending invoices. Also norms surrounding the need for signatures and original documentation prevented firms from using the Internet to conclude contracts.

Micro level institutions influenced whether or not brokers extended credit to their clients. The criteria for who would receive credit and who would not varied, as did the mechanisms for evaluation. Some firms simply relied on time. Other firms would ask around and yet others requested bank statements. The variety of methods of evaluation makes it difficult to identify an e-commerce solution.

Brokers rarely seemed to need the Internet with suppliers, either subcontractors or for finding employees. They occasionally used the Internet to purchase supplies from abroad that were not locally available. In terms of Internet use and employees, few firms allowed their employees direct access to the Internet. The problems brokers have with their employees seem to reduce trust and is likely to make the rollout of desktop Internet access challenging.

The results of the above two sections, the meso and micro institutional effects on e-commerce are summarized in Table 4.4.1.4.1. In the following section, we will use this table as a basis for examining similarities and differences between the two industries. Subsequently, the results are compared with those from Table 4.4.1.1.1.
<table>
<thead>
<tr>
<th>Mode</th>
<th>Engineering Consultants</th>
<th>Customs Brokers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Institution: Lack of</td>
<td>Institution: Low risk</td>
</tr>
<tr>
<td>Meso</td>
<td>specialization</td>
<td>Perceived benefit</td>
</tr>
<tr>
<td></td>
<td>Perceived benefit -/+</td>
<td>Automation</td>
</tr>
<tr>
<td></td>
<td>Perceived benefit -</td>
<td>Networks</td>
</tr>
<tr>
<td></td>
<td>Perceived benefit -</td>
<td>Ownership</td>
</tr>
<tr>
<td>Bid process</td>
<td>Perceived benefit -</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>contracts</td>
<td>Perceived benefit +</td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>Industry Associations:</td>
<td>Industry</td>
</tr>
<tr>
<td>Meso</td>
<td>Perceived benefit -</td>
<td>Associations</td>
</tr>
<tr>
<td></td>
<td>Uncertainty -</td>
<td>Licensing</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Uncertainty</td>
</tr>
<tr>
<td></td>
<td>Tenders</td>
<td>Perceived benefit +</td>
</tr>
<tr>
<td>Direct</td>
<td>Younger</td>
<td>Credit</td>
</tr>
<tr>
<td>Micro</td>
<td>Perceived benefit +</td>
<td>evaluation</td>
</tr>
<tr>
<td></td>
<td>Internal validation:</td>
<td>Invoicing</td>
</tr>
<tr>
<td></td>
<td>Perceived benefit +</td>
<td></td>
</tr>
<tr>
<td></td>
<td>External validation:</td>
<td>Supplies</td>
</tr>
<tr>
<td></td>
<td>Perceived benefit -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wet signatures</td>
<td>Updates</td>
</tr>
<tr>
<td></td>
<td>Perceived benefit -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resolving payment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived benefit -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Info gather</td>
<td>Perceived benefit +</td>
</tr>
<tr>
<td></td>
<td>Supplies</td>
<td>Perceived benefit +</td>
</tr>
<tr>
<td></td>
<td>Transferring drawings</td>
<td>Perceived benefit +</td>
</tr>
<tr>
<td>Indirect</td>
<td>Trust Employees</td>
<td>Uncertainty /</td>
</tr>
<tr>
<td>Micro</td>
<td></td>
<td>Perceived benefit +</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack trust</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Uncertainty /</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perceived benefit -</td>
</tr>
</tbody>
</table>

Table 4.4.1.4.1: Mechanism of Effects (Meso & Micro)

4.4.2 Meso and Micro Comparisons

The similarities and differences between customs brokerage and engineering consultancies will provide some indication as to the extent the findings from this research are generalizable to the service sector as a whole. Sometimes similarities and differences are more a matter of degree, rather than merely absolute. In such cases, a characteristic that is on the surface similar will be stated as such. However, in its particularities it may be discussed in terms of its differences. In what follows the similarities and differences in demographics (shown in Table 4.4.2.1), which include ownership, size and age, are explored. Following that we examine first the similarities and then the differences in institutions.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Ownership</th>
<th>Average Size (of office)</th>
<th>Average Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>3 TZ; 3 MNC</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>Customs brokerage</td>
<td>4 TZ; 1 MNC; 1 Expat</td>
<td>25</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 4.4.2.1: Demographic Characteristics

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The greatest difference between the firms in both samples is in their ages. This difference likely reflects a difference in the industries in general. Engineering has a long history in Tanzania and the recent changes in the economy have opened up the market for customs brokerage, allowing new entrants. There is a possibility that the difference in ages of the firms could confound results that are attributed to industry culture. It will be impossible to separate out completely whether certain behaviors are attributable to engineering culture or age of the firms as engineering is an old profession and perhaps its age has seeped into its culture.

Age has the following implications for e-commerce. Although within the engineering sector we saw the younger firms making greater use of the Internet, this does not appear to generalize across industries. First, the younger customs brokers were no more active than the older firms were. Second, the average age of the customs brokers overall was much less than the engineers, and yet their Internet use was no greater. Size of the office and ownership on their own made little, if any, difference to apparent Internet use. However, when the firm was large and a multinational this did make a difference, as we will explain in the next section.

4.4.2.1 Meso and Micro Similarities

In both engineering and customs brokerage there seemed to be a bias toward using large international firms for work funded by large international organizations. One multinational engineering firm stated that organizations such as the World Bank would prefer to have an international consultancy lead a project and sub-contract to local firms. The customs brokers described a similar situation. This of course led to differences in the scope of work local versus multinational-owned firms were aiming to undertake. Thus, large firms, already known in the industry, appeared to find less advantage in the Internet.

In both the engineering consulting and customs brokerage samples there were foreign owned firms. In each industry there was one British owned firm. In both fields the British firms considered their national identity to offer a competitive advantage that helped them to attract new clients. These kinds of competitive advantages, whether cultural similarity or national identity (Tanzanian firms also have such advantages), cannot be overcome by e-commerce.

There was also a similarity in the way social networks influenced work. In both customs brokerage and engineering many people mentioned social clubs as a way to gain business. Also, in both industries the prominence and use of professional and inter-organizational networks in finding new clients, subcontractors, and employees limited the perceived benefits of the Internet for these tasks. One of the expected benefits of the Internet is reduced search costs. This is clearly mediated by the importance of the source and, in this case, firms strongly prefer to rely on someone they know. Furthermore, information on reputation is difficult to codify making the transfer of this function of these relations to an electronic realm difficult.

4.4.2.2 Meso and Micro Differences

The first difference between the industries is concerned with industry associations. In engineering, professional networks are more important than in customs brokerage because professional networks can provide engineers with work through subcontracting. Therefore, the professional industry organization can also be a place to find work. The customs brokers association provides members with little opportunity for finding new clients. This difference in industry structure has had little impact on the use of e-commerce to date. As this research shows, however, some of the barriers to greater use of e-commerce are simply the time-tested procedures used within an industry. The strength and cohesiveness of engineering industry

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associations could provide a forum for devising agreed-upon solutions. In the diffuse environment of customs brokerage it will be more challenging to come to such agreements.

A distinct industry difference also existed between engineering and customs brokerage in relation to the use of contracts. In engineering use of written contracts is the norm. All firms used them in almost all circumstances whether or not they wanted to (there may have been external requirements such as the parent company). In customs brokerage the meaning of a contract and its use varied. The use of a contract as an accepted norm was not nearly as strong. In some cases clients were reluctant to sign a written contract, and so brokers merely rely on prepayment to ensure their terms are met. It is assumed here that standardized practices within an industry will help facilitate the use of e-commerce in that sector, with uniform expectations and the use of similar procedures issues such as culture and national origin should matter less. Furthermore, standardized, efficient processes are more amenable to automation. In engineering, firms expect to work out a written contract and it may become feasible to do this completely online. In customs brokerage, however, whether or not a written contract is used is subject to many factors.

Variations in contract use between industries may reflect industry structure such as the value of a typical transaction. This could have implications for e-commerce, as low-value transactions are more amenable to the e-commerce environment. This is also affected by the risks involved. The brokers' transactions were lower in value but also their firms did not incur the risk in the transaction.

There were also differences in requiring prepayment. The engineering firms were rarely in the position to require full pre-payment for a job. Their 'jobs' are typically of higher value than the brokers, whose business was more concerned with low value but high volume (as much as possible). Requiring prepayment is also not part of the culture of the engineering industry. When partial pre-payment is requested it is usually a matter of a need for resources to get the job started. The customs brokers, on the other hand, see pre-payment as an acceptable means of reducing risk.

Finally, the licensing process and the effects it had on its licensees differed significantly in the two industries. The engineering firms were fairly confident of license renewal and it was unlikely that their license would be revoked. In customs brokerage, on the other hand, there was uncertainty surrounding the status of their license. Additionally, there were many unlicensed firms waiting to take the place of those firms that lost their licenses. This created pressure on customs brokers to keep their official records as well as their reputations clean to avoid any problems in the licensing process.

Licensing has several potentially conflicting effects on e-commerce. First, as implied above it can create uncertainty in an industry and hinder investment. Furthermore, at the outset of this research, it was believed that licensing provided an objective form of validation that would help firms establish credibility online, particularly for market expansion. In reality licensing provides only a bare minimum indication of a firm's capabilities. Certainly, internationally recognized licensing procedures could help developing country firms compete in a global market, but for many licensed firms the market is not global, it's local. None of the firms in the sample was trying to bid on or find work in other countries. Doing so would require having a license to operate in that country. In the same way, these firms' local territory was protected by the need to have a local license. Thus, larger multinationals must either establish
a local office or partner with a local firm. Local firms looking for such partnerships may find the web an effective tool.

The customs brokers have difficulty in finding and keeping honest, hardworking employees. The engineering firms seemed to have fewer problems in this area. Both engineering firms and customs brokers are at risk due to the actions of their employees, however, it appears to be easier for engineering firms to monitor the activities of their employees and there are fewer opportunities for personal gain through illegal activities in the engineering profession. Although this has yet to impact on adoption by firms, it may affect further adoption within the firm.

Despite the lack of trained local labor, neither engineering nor brokerage firms looked for employees on the Internet. Of course one major factor could be the lack of development in this activity. Another reason could be that near-local markets such as Nairobi are equally sparsely endowed with skilled people. Local firms may also be unable or unwilling to pay the higher wages of attracting someone from a distant market.

4.4.2.3 Macro, Meso and Micro
In institutional analyses often only macro level institutional factors are considered. In this research we have considered the macro, meso, and micro levels. By comparing the significance of the effects of the various levels on e-commerce, a more differentiated view of the potential for e-commerce can be developed. This more differentiated view will also produce more specific recommendations as to how the potential for electronic commerce can be increased. Based on the differences and similarities in institutional structures presented above, we will first examine micro versus meso level effects. Subsequently, a comparison with macro level effects will be made.

Before we begin a direct comparison of the micro and meso levels we will first consider the more objective characteristics of the engineering consulting and customs brokerage industries. Using the typology of the services industry developed by Cook et al. (1999) produces the following results, as shown in Table 4.4.2.3.1. Using this typology of marketing and operations variables shows that the two industries are fairly distinct. Engineering consulting provides a more tangible, more differentiated product, with lower levels of long term customer commitment. In the operations variables, engineering firms have greater levels of customer involvement and greater employee discretion. In terms of production both industries can be considered knowledge-intensive business services (KIS). The industries differ, however, in that engineering services are a primary source of information or knowledge, while customs brokerage is a key intermediate input in the production process of other businesses. The delivery of KIS products requires a high degree of client interaction, and thus the success of product production relies, to some extent, on the characteristics of the clients. This is seen in both industries as the firms explain their use of the Internet as being strongly influenced by the client.
<table>
<thead>
<tr>
<th>Marketing variables</th>
<th>Engineering Consulting</th>
<th>Customs Brokerage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangibility</td>
<td>Higher</td>
<td>Lower</td>
</tr>
<tr>
<td>Differentiation</td>
<td>Higher</td>
<td>Lower</td>
</tr>
<tr>
<td>Object of service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-People</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Goods</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Type of Customer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Individual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Institutional</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Commitment</td>
<td>Lower</td>
<td>Higher</td>
</tr>
<tr>
<td>Operations variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Contact</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Capital Intensity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-People-based</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>-Equipment-based</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Involvement</td>
<td>Higher</td>
<td>Lower</td>
</tr>
<tr>
<td>Production Process</td>
<td>KIS</td>
<td>KIS</td>
</tr>
<tr>
<td>Employee Discretion</td>
<td>Higher</td>
<td>Lower</td>
</tr>
</tbody>
</table>

Table 4.4.2.3.1: Application of Cook et al.(1999) Typology

Examining the meso and micro institutional similarities and differences, it is clear that there are a greater number of differences between the two industries. This indicates that at the industry level, as well as the sectoral level, institutions have implications for e-commerce as well. However, mere numbers of differences are not the only criteria and the strength of the influence is also important. One institutional characteristic that has far-reaching implications in both industries is the reliance on inter-organizational and professional networks. One recognized attribute of services and service firms, is that the intangibility of services results in increased importance of personal recommendations when choosing a service. For the firms in this sample, and for firms engaged in business-to-business service transactions, these recommendations naturally come through networks.

It is expected, however, that the challenge to e-commerce posed by the use of networks would be offset by intangibility, a characteristic facilitating the sale of services online. From this case it appears that for both industries the micro level processes combined with meso level traditions of network use, result in lower levels of e-commerce use than would be expected from a consideration of product attributes alone. Thus, for some knowledge-intensive business services, e-commerce may be useful in some stages of service production, but unless changes occur socially or technically, it is unlikely the Internet will become the primary tool for searching for these services.

Although not strictly the case, macro level institutional effects have greater implications for the potential of electronic commerce. Meso and micro level institutional effects, on the other hand, have greater implications for adoption. This is logical given that meso and micro level institutions are more directly concerned with the operating environment of firms. Although the general commercial environment is shaped by macro level institutional structures, there is less of a direct effect that has implications for electronic commerce adoption by firms. This is not to say that macro level institutions do not affect firms, but merely that firms infrequently attribute their motivations for adoption to this level.
Having said this, the following implications for each level were found. At the Dar es Salaam macro institutional level most of the effects created disincentives for e-commerce adoption and potential. The underdeveloped payment system, lack of credit and instability in taxes, all create hurdles for e-commerce potential. One positive incentive, comes from the high cost of international telecommunications. Hopefully, prices will decline and this effect was from the use of inter-organizational and professional networks. The functions of these 'social' networks are difficult to replicate online and hence create barriers to e-commerce use. At the micro level, firms were, however, making use of the Internet on a day-to-day basis. Norms influencing processes are slowly being changed to take advantage of the Internet.

4.5 Conclusions

In this chapter we have explored the implications of the Dar es Salaam institutional structure for electronic commerce. Despite the country's poverty, adoption of electronic commerce is occurring. The objectives of this case were to answer the following questions:

- How do the macro, meso, and micro - level institutional structures affect the use of the Internet by firms?
- How do firms use the Internet in their relations with customers, suppliers, and the government?
- How do the effects of macro level institutions compare with those of meso and micro level institutions for Internet use?

Through interviews with the government and corporate personnel, the macro institutional environment was assessed. The investigation found that although some positive aspects exist, the majority of the macro institutional effects were negative. Thus, the general commercial environment is not conducive to electronic commerce. Of course, there are hopes that the situation will change. Improving the environment for electronic commerce will require changes to the macro institutional structure.

Firstly, examining what were found to be institutional structures that create disincentives we can examine their durability. For example, it is hoped the lack of diversity in payment mechanisms will be resolved. It is expected as well that the uncertainty surrounding taxation will diminish. As the Revenue Authority gains experience, a more stable tax environment should result. The high telephone tariffs produced both positive and negative effects for e-commerce. The direct effect is that the Internet is viewed positively as a way to reduce phone bills. The indirect effect is that Tanzanian firms pay higher rates for Internet access, making it difficult to compete globally. Also, the higher rates may not be seen as a problem because users are still at a relatively unsophisticated level. This, of course, will change over time and is an artifact of the level of Internet adoption in Tanzania in general. It is hoped that the privatization of TTCL and increased competition from the mobile sector will reduce these rates.

Although some of the characteristics of the macro institutional environment can be changed through policy initiatives, others such as IPR protection, require more stringent enforcement. Others, such as the importance of social clubs, require cultural change. Both more stringent enforcement and cultural change will be difficult to bring about. Fortunately, the positive aspects of the macro institutional structure, which include experience with prepayment, a competitive ISP market, and independence from the legal system, are unlikely to change.
In examining the meso and micro institutional environment, it was found that the use of inter-organizational networks has a significant effect on e-commerce. The use of these networks is unlikely to change soon. This effect was demonstrated in both the engineering consulting and customs brokerage industries. Although more research across a greater number of service industries is required, it is likely this is a sectoral phenomenon. This suggests that the possibilities for trading KI services online will be limited to certain aspects of the transaction. For example, search is likely to play a less significant role than say production and distribution.

Despite this strong effect of a sectoral factor, industry level differences were also shown to affect the use of e-commerce. A large number of industry level institutional differences were shown to have implications for Internet use. Although there were similarities in the reasons firms gave for adopting the Internet, such has reduced phone bills, there were a large number of differences in the processes and procedures of the industries that create different levels of potential for e-commerce. For example, the engineers can decide fairly autonomously in which parts of their business to implement e-commerce. The customs brokers, on the other hand, can only go so far before they reach the limitations that customs authorities impose.

This research found that firms in Dar es Salaam wanting to engage in electronic commerce could do so. Adequate telecommunications facilities are in place in the city and there exists a competitive ISP market. Of course, there are limitations. Payments are likely to be handled by traditional means. Contracts will also continue to be settled in traditional ways. Firms in e-commerce, as all firms, will have to deal with the high level of uncertainties in the environment.

Specific recommendations resulting from this investigation for improving the environment for electronic Commerce in Tanzania include the following. First, further liberalization of the telecommunications sector is likely to improve competition and drive down prices. Second, the Tanzanian government should continue making progress toward implementing legislative changes for e-commerce, such as those concerning digital signatures. The government, through the Bank of Tanzania, should encourage greater cooperation in the banking sector with an aim toward increasing credit and the diversity of payment mechanisms. To make this possible, adequate mechanisms of enforcement such as credit reporting agencies need to exist.

At the industry level the Tanzanian government should assess which departments have the greatest level of interaction with firms. At these critical interfaces between government and industry increased efforts toward automation should be made. For the customs brokers this would result in an accelerated automation of the customs clearance process. For the engineering consultants this would result in automation of the government procurement process. In both industries firms would benefit from automation of the licensing process. Once the government takes a lead in the process of automation firms are likely to follow. Greater automation in the processes and procedures of firms increase the overall perceived benefits of electronic commerce.

In this research the use of the Internet for market expansion was also observed. One of the greatest advantages of the Internet is expected to be the ability to trade in a larger geographical area. This research showed services that require licensing are often geographically bound. The firms in the sample were interested in attracting clients from abroad, but only those clients
wanting services within Tanzania. Licensing restricts the market expansion capabilities of the firms, but at the same time protects them from direct competition from abroad. The internationalization of licensing processes would allow for greater market expansion in the provision of licensed services. For Tanzanian firms such an occurrence would be a double-edged sword. The firms would face competition from abroad, but could also use advantages such as low cost labor to compete in foreign markets.

Since global changes in licensing practices are unlikely to occur soon, the greatest advantages for e-commerce in Tanzanian engineering consulting and customs brokerage firms are to use the Internet among themselves and with clients. Although marketing to and communication with foreign firms via the Internet has its advantages, productivity increases are likely to be greater if firms adopt Internet use in domestic processes as well. By using the Internet to communicate domestically Tanzanian firms can develop applications that suit their own needs. The experience will increase computer skills so that if changes in the global market for the services do occur Tanzanian firms will be able to effectively compete.

In this way growth in e-commerce might be difficult to observe. Instead of exaggerated expectations and the resultant letdowns, e-commerce will grow slowly, quietly. Small firms will slowly automate a greater percentage of processes, they will increase the role of clients in those electronic processes, and many of them will migrate to the Internet. These processes, inherently internal to the firm, may not be easily observed by the outside world, but to the firms and their clients (where it really matters) increases in efficiency and productivity are likely to occur.

As the above discussion demonstrates, this research views e-commerce from a broad perspective. The definition considers e-commerce to occur when any part of a commercial transaction takes place on the Internet. This case demonstrates that this broad perspective is highly appropriate when studying electronic commerce in developing countries. This claim is based on the fact that several firms in the sample had web sites although internal firm functions were as yet overwhelmingly manual. The opposite was also true; some firms use the Internet for communication and transferring documents frequently, while not having a web site. Thus studying e-commerce as Internet use as opposed to web use provides a more realistic view when small firms and developing countries are involved.

Overall, this research has demonstrated three main points. First, the Tanzanian government can, through policy changes, improve the potential for electronic commerce in its country. Second, sectoral and industry level institutional changes can also facilitate the use of e-commerce. Changes should be made while keeping in mind that the potential for electronic commerce in the customs brokerage and engineering consulting industries in Dar es Salaam is greatest in the production and distribution stages. This conclusion is derived from the following factors: 1) the industries make extensive use of networks, 2) the products of these industries can be transferred electronically, and 3) a domestic orientation for electronic commerce in Dar es Salaam is needed to overcome years of inexperience with computers in general.
Chapter 5:

Prospects for E-commerce in San Diego, U.S.A.

Institutions at the macro, meso, and micro levels are expected to shape the potential for e-commerce for small-to-medium sized enterprises. To examine how these various institutional levels work to enhance or hinder the potential and use of e-commerce we use case studies representing different institutional environments. In this chapter we examine the institutional environment and its effects for e-commerce in the U.S., particularly in the city of San Diego, California. San Diego, shown in Figure 5.0.1, is located on the west coast of the United States, just north of the Mexican border.

In this research our aim is to compare institutional environments in a developed and a developing country. The United States is one of the most developed countries in the world, ranking 3rd out of 174 countries based on the UNDP Human Development index. Table 5.0.1 illustrates that the U.S. per capita GDP, $29,683 per year, is among the highest in the world. Similarly, its teledensity, the number of telephones per 100 inhabitants, a measure of the basic infrastructure for commerce, is 64.37.

![Figure 5.0.1: Location of San Diego, U.S.A](http://www.m-w.com and Large http://gocalif.ca.gov/maps/SD/)

Although the Internet has become a global phenomenon, its roots are in the U.S. Due to this history, North Americans have a great deal of experience with the medium. Table 5.0.1 also demonstrates the U.S. has one of the highest densities of Internet hosts per capita, which is a rough measure of Internet use. The acceptance of the Internet will serve as a base for the growth of U.S. electronic commerce. The extent to which this acceptance of technology shapes the potential for electronic commerce is, however, expected to be mediated by the commercial institutional environment.

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80 Among developed countries as the U.S. was chosen partly due to its reputation as a haven for e-commerce. It was also chosen due to the author’s familiarity with its institutional environment.
<table>
<thead>
<tr>
<th>HDI Rank</th>
<th>Country</th>
<th>1998 GDP per capita ($ 1995 U.S.)</th>
<th>Teledensities (per 100 inhabitants) 1997</th>
<th>Internet Hosts (per 1,000 inhabitants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Canada</td>
<td>20,458</td>
<td>62.11</td>
<td>111.1</td>
</tr>
<tr>
<td>2</td>
<td>Norway</td>
<td>36,806</td>
<td>62.11</td>
<td>120.3</td>
</tr>
<tr>
<td>3</td>
<td>United States</td>
<td>29,683</td>
<td>64.37</td>
<td>141.5</td>
</tr>
<tr>
<td>4</td>
<td>Australia</td>
<td>21,881</td>
<td>50.45</td>
<td>77.3</td>
</tr>
<tr>
<td>5</td>
<td>Iceland</td>
<td>29,448</td>
<td>61.42</td>
<td>137.0</td>
</tr>
<tr>
<td>6</td>
<td>Sweden</td>
<td>27,705</td>
<td>67.93</td>
<td>114.8</td>
</tr>
<tr>
<td>7</td>
<td>Belgium</td>
<td>28,790</td>
<td>48.73</td>
<td>49.2</td>
</tr>
<tr>
<td>8</td>
<td>Netherlands</td>
<td>28,154</td>
<td>56.64</td>
<td>84.8</td>
</tr>
<tr>
<td>9</td>
<td>Japan</td>
<td>42,081</td>
<td>50.31</td>
<td>25.8</td>
</tr>
<tr>
<td>10</td>
<td>United Kingdom</td>
<td>20,237</td>
<td>54.49</td>
<td>60.3</td>
</tr>
</tbody>
</table>

Table 5.0.1: United State’s Relative Development Status: HDI Rank, GDP, Teledensities, and Hosts


The implications of the macro, meso, and micro level institutional structures of the commercial environment for electronic commerce, is the topic of this case study. The case study focuses on the city of San Diego. San Diego is not representative of the commercial environment in all U.S. cities. Its economy, which has grown into one based on ICTs, makes it a better than average place to engage in e-commerce. Thus, in terms of examining the potential for e-commerce in the country as a whole, San Diego represents an above-average scenario.

The general objective of this case is to provide evidence for answering the overall research questions addressed by this investigation. To this end more specific questions considered here are:

- How do the macro, meso, and micro-level institutions affect the use of the Internet by firms?
- How do firms use the Internet in their relations with customers, suppliers, and the government?
- How do the effects of macro level institutions compare with those of meso (industry) level institutions for Internet use?

The general commercial environment will reflect the macro level institutional environment. We do, however, limit ourselves to those issues likely to affect e-commerce. Issues such as taxation, the commercial legal environment, and the role of organizations such as the Chamber of Commerce are considered. Focusing specifically on e-commerce, we examine the telecom market, the market for Internet access services, and the labor market. The meso level is reflected in the commercial environment specific to the two industries examined: engineering consulting and customs brokerage. Of particular interest are the licensing process, the role of government, and the role of industry associations in the commercial environment of the firm.

81 For the OECD paper see www.olis.oecd.org/olis/2000doc.nsf/linkto/dsticccp-tisp/200001-final The statistics are based on country code top level domain names (ccTLD) combined with a distribution of generic top level domain names (gTLD) such as .com, .org, and .net.
The micro level institutional environment is reflected in the relationships the firm has with customers, suppliers, and the government. The implications of all three institutional levels for e-commerce will be assessed by examining both the potential and actual use of the Internet in the firms' relationships, along with the potential for e-commerce in the San Diego commercial environment in general.

In what follows we first discuss the commercial environment in San Diego, examining both the environments for electronic and traditional commerce. Following this the meso and micro-level institutional structures for engineering consulting and customs brokerage are described. The case concludes with an analysis of the implications of the various institutions on the use of the Internet for inter-firm electronic commerce.

5.1 Macro-Level Institutional Environment

Examining the macro-level institutional environment is accomplished in two parts. First we examine the general commercial environment, consisting of the commercial legal system, banking and payments, registration and taxation, and commercial organizations, trust and the press. Following that we consider the commercial environment for e-commerce, which consists of telecommunications and computing, as well as ISPs, legal structure and labor. We now turn to the general commercial environment.

5.1.1 General Commercial Environment

One of the strongest factors defining the commercial environment in San Diego is the state of the economy. The strength of this factor stems from the large fluctuations in the economy during the past decade. San Diego has traditionally been a military town with its economy deeply tied to military spending. During the early 1990's, with the end of the Cold War leading to cuts in the defense budget and fluctuations in the world economy, San Diego was plunged into a recession, which reached its bottom in 1993. From 1990 to 1993 the region experienced 'real' inflation-adjusted decline, which was the worst recession since the Great Depression of the 1930's. The recession, which some call an actual depression, had a profound effect on San Diegans. The recession signaled the need to overhaul the structure of their whole economy.

Fortunately military operations in San Diego left a highly trained workforce. This made it possible for the economy to transform itself into one that includes telecommunications, electronics, computers, software and biotechnology. The San Diego economy's strongest industries are now manufacturing, military and tourism. The economy also benefited from the North American Free Trade Agreement (NAFTA). With the passage of NAFTA exports rose from 3.5% of the region's 1987 economy to nearly 10% in 1998. NAFTA helped the San Diego manufacturing sector by attracting Asian manufacturing operations to the border. Manufacturing is the region's largest economic sector for local dollars generated. Electronics and electrical equipment are now San Diego's top export commodities. The benefits of NAFTA are not only from increased trade. The nearby economy of Tijuana has grown significantly and this has further aided the San Diego economy.

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The commercial environment in San Diego is characterized by an unusually high concentration of small businesses. In the region 87 percent of companies employ fewer than 20 people. There are approximately 60,000 small businesses and they account for roughly half of job growth between 1991 and 2000.

The result of the diversification of the San Diego economy has been economic and employment growth that are higher than the U.S. average. The gross regional product (GRP) is expected to reach $100 billion in 2000 on a 6.4% growth rate. This growth is somewhat less compared to recent years in which growth was reported at 6.7 and 7.2 percent. In the year 2000 San Diego's economy is expected to represent 8.14% of the California gross state product (GSP) and 1.04% of the U.S. GDP. These rankings place San Diego as the 16th largest metropolitan economy in the U.S. and 37th largest in the world.

5.1.1.1 Commercial Legal System

One characteristic of the commercial legal environment is firms' access to courts as a means for resolving disputes. San Diego offers firms a variety of mechanisms for resolving disputes. The choice of courts for filing claims is determined by the amount of money involved and whether or not attorneys are present. For disputes involving sums less than $5,000 and where parties wish to represent themselves, the case is entered in Small Claims Court. For amounts that are less than $25,000 and where attorneys may be used the action is filed in Limited Civil court. For disputes for sums over $25,000 the action is filed as a General Civil claim.

Examining only the initial entry costs, the differences between these forums can be seen in Table 5.1.1.1.1. Although the firms interviewed in this research claim the court system is seldom used, southern California has a reputation of being a very litigious area.

<table>
<thead>
<tr>
<th>Type of Court</th>
<th>Court Fee for Initial Filing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Claims</td>
<td>$20</td>
</tr>
<tr>
<td>Limited Civil (&lt;$10,000)</td>
<td>$89</td>
</tr>
<tr>
<td>Limited Civil (&gt;=$10,000)</td>
<td>$96</td>
</tr>
<tr>
<td>General Civil</td>
<td>$191</td>
</tr>
</tbody>
</table>

Table 5.1.1.1.1: Court Filing Fees in San Diego

In addition to these court options mediation is also available. In some cases mediation may actually be required. As of March 2000 San Diego became one of four counties in California to participate in a mediation experiment that tests the results of voluntary versus forced mediation. The experiment will last two years and during that time 75% of civil cases filed in San Diego superior court will be required to go to mediation before the case will be heard. Previously, judges could require mediation for cases concerning less than $50,000. It has been speculated that small firms are less enthusiastic about mediation, and one reason may be they confuse it with arbitration. Beyond speculation, however, San Diegan mediators have been

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84 Arbitration involves a third party where the third party makes the decision. In binding arbitration the third party's solution is final. In mediation the third party's participation is limited to helping the two parties reach a settlement themselves. If no settlement can be reached the parties are free to go to court. See Carrier, Lynn (2000) Speaking the Language of the New Millennium: Taking mediation in a business dispute can save time, money, and sometimes a relationship San Diego Metropolitan, March 2000 see http://www.sandiegometro.com/2000/mar/mediation.htm (viewed July 7, 2000)
unable to explain why large firms have adopted mediation more enthusiastically than small firms have.

A second characteristic of the commercial legal environment is the protection of intellectual property rights (IPR). The U.S. economy is built on the presumption of intellectual property rights protection and as such expends great efforts to protect these rights at home and abroad. In fiscal year 1998, the U.S. Customs Service seized almost $76 million worth of counterfeit and pirated merchandise entering the country. They also conducted 484 criminal IPR investigations. The situation is worsening as statistics for just the first half of fiscal year 1999 demonstrate. During this period over 73 million dollars of pirated merchandise was seized and 505 criminal IPR investigations were conducted\textsuperscript{85}. Products suffering from IPR violations are most often motion pictures, computer software, and music. Although IPR violations occur within the U.S., the greater problem appears at the borders.

5.1.1.2 Banking and Payments

The commercial environment in San Diego can also be characterized by its banking sector and frequently used payment mechanisms. In what follows the stability of the banking sector in the U.S. and San Diego will be discussed, as well as plans that help firms access financing. Subsequently, the discussion will examine frequently used payment mechanisms in the U.S. economy.

The U.S. banking system is rare in that its regulation occurs simultaneously at both the state and federal levels. Entities overseeing banking activities include the Federal Reserve, the Comptroller of the Currency, the Federal Deposit Insurance Corporation (FDIC), state banking agencies, the House and Senate Banking Committees, and various other federal agencies that affect banking operations such as the Securities and Exchange Commission and the Department of Justice. Although banks can be chartered at either the state or federal level, all banks must carry FDIC coverage, which typically covers deposits up to $100,000 (Macey, 1999).

The FDIC was formed in the 1930s to re-establish the confidence in the banking system that was destroyed during the Depression. The FDIC is just one element of the banking system designed to foster confidence. Other factors identified as fostering confidence include 1) ready access to cash and other funds, typically secured by the Federal Reserve Bank, 2) secure bank records, 3) competent government supervision of the sector and 4) deposit insurance that is in place and inviolate\textsuperscript{86}. These mechanisms appear to be working, as confidence in the banking sector, despite its turbulence, remains high. Regarding the recent Y2K changes that were required of all banks, a survey of 1,800 U.S. bank customers showed that 90% expressed confidence in their bank’s readiness for the change\textsuperscript{87}.

This level of confidence is somewhat remarkable given the fluctuations in the industry during the past two decades. Since 1980 the U.S. experienced 7,000 mergers of financial institutions,


\textsuperscript{86} Edward W. Kelley Jr., Member, Board of Governors Federal Reserve System, Fedgazette, The Federal Reserve Bank of Minneapolis, Volume 11, No. 2, April 1999, \url{http://minneapolisfed.org/pubs/fedgaz/99-04/opinion.html}

\textsuperscript{87} \url{http://www.fdic.gov/news/news/press/1999/pr9986.html}
which by 1998 resulted in 9,064 individual banks as compared to the 14,400 that existed in 1980. Although this decline in the number of individual banks may be a cause for alarm, the number of bank offices has increased by nearly 40%. This has also increased the number of bank branches per capita. In addition to the mergers, 3,600 new banks were formed between 1980 and 1998. These new banks are reported to be growing quickly and providing competition in the financial services sector.\(^{88}\)

The turbulence in the sector is also reflected by bank failures. In the U.S. during the 1980's, more than a thousand commercial banks, almost a thousand thrifts, and at least one thousand credit unions failed.\(^{89}\) Of course the 1980s and early 1990s represent some of the most turbulent years since the 1930s. Although the number of failures in the late 90's declined significantly, there were a few failures that combined cost the FDIC over a billion dollars. These most recent failures have led to proposed legislation that would increase the reporting requirements of banks and provide greater powers of the FDIC.\(^{90}\)

In the State of California banking regulation is handled by the Department of Financial Institutions, which is part of the Business, Transportation and Housing Agency. The Department advises individual institutions who protect depositors and serve the needs of communities. Banks licensed by the Department are examined periodically in order to ensure their safety, soundness, and compliance with accepted practices.\(^{91}\)

California did not escape the banking industry turbulence of the 80s and 90s. As figure 5.1.1.2.1 demonstrates, California bank failures, of both state and national banks, increased in the mid 80s and reached their highest level in 1995. Although San Diego was not immune to these failures, it was not alone among large California cities experiencing failures. But along with the upturn in the economy the majority of San Diego banks have recovered and even the weakest among them appear to be doing well in the late 90s.

\(^{88}\) Chairman Leach, U.S. House of Representatives, Committee on Banking and Financial Services, Washington, DC, Wednesday, April 29, 1998 Statement to the Committee given as testimony on Bank Mergers. see http://commdocs.house.gov/committees/bank/hba48312.000/hba48312_0.HTM


\(^{91}\) http://www.dfi.ca.gov/Press&Pub.htm
Figure 5.1.1.2.1: California and San Diego Bank Failures

As with most American cities, the city of San Diego tries to attract businesses to the region and one way of doing so is to be active in making financing available. To address the financial needs of local businesses the city issues industrial development bonds and makes loans. Through a private non-profit organization partially supported with city funds, the ACCION program makes available direct loans from $300 to $25,000 for micro and small enterprises. The city also acts as a coordinator to address access to capital gaps impeding economic development. They also work with banks to provide expanded credit and banking services access for low-income communities and small and minority owned businesses\(^2\).

San Diego firms and consumers have access to a wide variety of payment mechanisms. Cash is still the most favored payment mechanism of American consumers. Table 5.2.1.2 shows this preference for cash, although the value of cash payments accounts for less than 20% of the value of total consumer transactions on a monthly basis. The Congressional Budget Office has estimated that cash payments account for approximately $1 trillion of net consumer expenditures of about $5 trillion. Consumers use cash because 1) it is convenient for small, inexpensive purchases, 2) forces of habit, and 3) the recipient preferred or only accepted cash. This last reason for using cash is supported by a recent survey that showed 58% of retailers had preference for cash transactions\(^3\).

\(^{2}\) http://www.sanet.gov/economic-development/business-assistance/finance/

Preferred Forms of Payment by Consumers

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>54.2%*</td>
</tr>
<tr>
<td>3rd Party Credit Cards (i.e., VISA)</td>
<td>38.5%</td>
</tr>
<tr>
<td>Check</td>
<td>23.4%</td>
</tr>
<tr>
<td>Store Credit Cards</td>
<td>6.5%</td>
</tr>
<tr>
<td>Debit Cards</td>
<td>1.0%</td>
</tr>
<tr>
<td>Other</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

Table 5.1.2.1: Consumer Payment Mechanisms

*Percentages do not add up due to the format of the questions.

In addition to cash, Americans also pay using credit cards and checks. The use of credit cards by Americans is well known, with 66.5% of American households having a credit card by 1995. Despite their love of the credit card, Americans still make a relatively large percentage of payments with checks. This is certainly the case with bill payment. In Europe bill payment is made through a system of bank transfers. The U.S. lags in the use of bank transfers, although programs are being implemented to encourage their use. One of the most far-reaching programs is the federal government’s ‘Electronic Commerce for Buyers and Sellers’ initiative. Through this initiative the government plans to use e-commerce payment techniques, including bank transfers, with people who interact with the government. It has long been recognized that such a high-level well-coordinated program would be necessary to break the habit of check-use. Perhaps one of the reasons Americans have remained faithful to checks is it is a relatively inexpensive means of payment. In business-to-business commerce payment is often made by check. Small firms also make use of credit cards to supplement credit for smoothing cash flow. One firm also reported that credit cards were especially useful when first starting up business. The owner explained:

"We really depended a lot on [our] credit card and COD and as much as possible to set up lines of credit."

5.1.1.3 Registration and Taxation

The commercial environment in San Diego can also be characterized by its registration and taxation processes. In the following these processes are described, as well as the incentives firms have for adhering to them.

In the San Diego region firms must have a business license in the locale in which they operate, and the licensing process is handled locally. Firms may operate in a variety of forms such as corporations, individual proprietorships, partnerships, joint ventures, etc. Business tax certificates (formerly called licenses) in the city of San Diego are priced based on the number of employees (a firm with less than 12 employees pays $48) and takes about 2 weeks to process. If a corporation is formed the firm must also file with the State, which costs $100 and takes approximately one week for processing. In addition to serving as a record of

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97 http://commerce.ca.gov/business/small/management/pub/license/sec73.html#cd (viewed July 6, 2000)
having paid business taxes, the license is required in order to get a corporate bank account. Thus, a mechanism of checks and balances exists within the system.

In San Diego and the U.S. as a whole, there are many programs to benefit small and minority owned firms. These programs can serve as one incentive to becoming a legal, licensed firm. At the federal level there is a special certification, commonly known as 8(a), that can be obtained by socially and economically disadvantaged firms. Although this status can be used for the granting of federal contracts, it is no longer permissible in California, in the granting of state and local contracts, to consider issues of gender and ethnicity. In November of 1996 the State of California passed a constitutional amendment known as Proposition 209 that made it illegal to discriminate, positively or negatively, based on gender or ethnicity. The wording of the proposition is "The state shall not discriminate against, or grant preferential treatment to, any individual or group on the basis of race, sex, color, ethnicity, or national origin in the operation of public employment, public education, or public contracting." Thus California (along with Washington state) is different from other states in that municipalities are prohibited from establishing official quotas.

State agencies and municipalities can create special programs targeting firms based on size. These programs also exist at the federal level. At the federal level there is the Small Business Administration (SBA), and at the California state level there are two programs. One is the Department of General Services program for Small Business Certification and Resources and the second is the Office of Small Business in the California Trade and Commerce Agency. It is possible to gain the status of a licensed small business in the state of California, which gives some preference for bidding on state contracts. For federal contracts the designation of a small or medium size business is based on revenue limits by industry. For federal work small firms may fall under a 'protected' status, that serves as a kind of incubator. As a firm grows they lose this protection and are expected to compete with the larger firms. In addition to preferences on contracts the small businesses services also help with financing, business counseling, planning, marketing and training programs. The city of San Diego also boasts of being the only California municipality to have an Office of Small Business.

Of course all of these services come at a cost which is collected in the form of taxes. The California State government asserts: "California is very conscious of the need to maintain a stable, predictable tax structure, one that enhances the competitiveness of our state's major industries." Businesses in San Diego pay their business tax in the form of the licensing fee (as previously discussed). If a business is incorporated it is also subject to the state corporation income tax, which is 8.84%. San Diego businesses may also be subject to property taxes as well.

98 See http://www.fss.gsa.gov/vendorguide/section-e.cfm#section-e3 (viewed July 6, 2000) for an overview of federal procurement preference programs. The programs aim to help not only socially and economically disadvantaged firms [8(a)s] but also small firms and women owned firms and firms owned by Vietnam veterans.
100 http://commerce.ca.gov/business/small/management/pub/license/sec51.html#osb (viewed July 6, 2000)
102 http://commerce.ca.gov/business/investgnd/investgnd10.html
103 The four major revenue sources for the city of San Diego are property tax, sales tax, transient occupancy tax (hotel/motel), and motor vehicle license fees.
A second form of tax that affects San Diego firms is customs duties. The U.S. generally favors free trade with most imports entering the country duty free or subject to very low tariffs. Zero tariffs apply to nearly one third of national tariff lines and the simple average tariff rate for Most Favored Nations (MFN) declined from 6.4% in 1996 to 5.7% in 1999. Tariffs have also been reduced due to NAFTA and the General System of Preferences available to most developing country imports.

5.1.1.4 Commercial Organizations, Trust, and the Press

As a relatively large American city, San Diego is home to a wide variety of business organizations. The city hosts a regional Chamber of Commerce, as well as smaller local chambers. There is also a World Trade Center, with roughly 1,000 members, that works in cooperation with the Chamber. Other more general business organizations such as the Rotary Club and the Lion's Club are also present. The San Diego Rotary Club was founded in 1911 and the San Diego Lion's Club was founded in 1921 and has roughly 200 members. The oldest business organization is the Chamber of Commerce, which was started in the late 1800s. With nearly 100 years of history in all of these organizations, they have been able to make significant contributions to the business community and the community as a whole.

The success of the Chamber of Commerce is representative of the overall participation of San Diegans in such groups. The Chamber is well supported with between 3,500 and 3,700 members. Ninety percent of the members are small firms, although there are large members as well. The Chamber has many subcommittees, including one focused on public policy. Members also use the Chamber to make connections at its variety of functions. Chamber membership costs a minimum of $350 per year, with a sliding scale based on number of the employees. The Chamber is embracing electronic commerce and is planning to launch a web-based application for members to ‘attend’ functions after the fact. The Chamber has also hosted various workshops to educate its members about the Internet and e-commerce. The variety of commercial organizations in the San Diego area requires the groups to work together. Organizations such as the World Trade Center, the Economic Development Council, and the Chamber collaborate and try to carve out activities that each can claim exclusively as their value-added for their members.

This cooperation between the various groups indicates the high level of cooperation found in the city. This cooperation can be seen as an indicator of trust. The organizations mentioned above, in addition to industry specific organizations, have ethical codes that help to maintain a level of honesty in commercial deals. These codes help establish expectations of behavior, which in turn facilitate trust.

Another organization that helps develop positive expectations for behavior is the Better Business Bureau. The Bureau exists to give consumers a place to lodge complaints against firms, check the operating history of a firm, as well as provide a means of settling disputes without having to go to court. The San Diego Bureau has 4,000 member firms and membership costs a minimum of $315 per year. In return for their dues, members receive the benefits of a trusted source of information.

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104 It should be noted that the lower tariffs on developing country imports are biased against processed goods as opposed to unprocessed commodities. Agricultural and food products as well as textiles, clothing and footwear face tariffs that are sometimes as much as three times the overall MFN average tariff. (WTO, 1999).
boost to their reputation in terms of honesty that Bureau membership provides. The Bureau maintains strict membership qualifications, where firms are required to respond to every consumer complaint recorded by the Bureau. The Bureau also works with industry organizations to help them develop codes of ethics. This cooperation is sometimes extended when ethical problems, in false advertising for example, are industry-wide. In such a case the Bureau will work with the industry organization to improve the ethical climate in the industry as a whole.

In San Diego, the Better Business Bureau and the other industry organizations serve as important sources of information. Firms also find industry information through the print media. As in most major U.S. cities, San Diego has several daily and weekly newspapers. The San Diego Press Club lists 63 print publications for the San Diego area\textsuperscript{106}. Also, the high level of specialization that exists in many business sectors has created niche markets for industry news such as industry-specific trade journals.

In this section the general commercial institutional environment of San Diego has been presented. San Diego's commercial environment is robust with courts, financing, and government assistance readily available. Taxation is comparable to other U.S. cities and the reductions in duties due to NAFTA have increased trade across the border. The rich history of business organizations helps to create a climate where commercial organizations are actively involved with the community. These groups also serve to encourage ethical behavior within the community, which in turn create positive expectations for trust. In looking specifically at e-commerce, there are additional elements of the macro institutional environment that must be considered. The telecommunications and Internet services markets, as well as the market for skilled labor, will play an important role in shaping the potential for e-commerce. These topics are discussed in the following sections.

5.1.2 Commercial Environment for E-commerce

The overall prospects for electronic commerce will be strongly affected by the cost and availability of telecommunications and Internet services. The costs of both are related to the market structure for these services. In addition to costs, the adoption of Internet technologies by firms will be shaped by the ability to find trained personnel to implement e-commerce applications. These issues and the context of San Diego are explored below.

5.1.2.1 Telecommunications and Computing

In terms of computing and telecommunications infrastructure San Diego has a strong foundation upon which e-commerce can develop. The city ranks among the top 10 cities in the U.S. in home computer ownership.\textsuperscript{107} San Diego is ranked second in California and ninth in the nation. The U.S. average home PC penetration rate is 59 percent of households and San Diego reported a penetration rate of 64 percent.

The market for telecommunications services in San Diego is competitive and continues to become even more so. The city recently granted a competitive license to a cable television provider offering further competition to Cox Communications and Time Warner Cable. The

\textsuperscript{106}http://www.sdpressclub.com/files/media.html
\textsuperscript{107}According to a study by Scarborough Research, a market research company, as communicated by the Public Information Officer of the City of San Diego.
new cable operator will compete for cable television as well as Internet and local and long
distance telephone service. The new entrant will face stiff competition against such rivals
as Pacific Bell, GTE, TCG, and Cox. It is estimated there are now between 10 and 12
companies offering local service. One ISP reported that the competition brought about by
the Telecom Act has decreased the costs for leased line services significantly. However, in
terms of local voice connections Pacific Bell continues to be the dominant player.

For Internet access a variety of technologies are possible including dial-up service, cable
modems, DSL, wireless DSL, ISDN, DS1, DS3, and ATM. Prices for these services are
difficult to compare, as they are often packages with a variety of services. Examining offers
from 4 different companies a service such as 384k/128k DSL service ranges from $50-$60 per
month if the customer signs a one year contract.

It should be noted that these are theoretical offerings. Firms near the border outside of the
metropolitan area reported it was impossible to get a DSL connection. The ISPs have also
complained that the roll out of the service has been slow. However an ISP did also note that if
DSL service was taken up in large numbers, the switching equipment of Pacific Bell could
exceed its capacity. He believes the capacity of fiber in the ground now is not excessive and
that the weak link in the system is the local switches. He describes the relationship between
the fiber cables and the switching equipment as “taking fire hoses and trying to put them
through the eye of a needle.”

5.1.2.2 ISPs and Legal Structure

There are as many as 100 ISPs that compete in the San Diego market. Global, national,
regional, and local firms serve the city’s market for Internet services. Firms that are not local
can provide service simply by offering a local access number and a toll free customer support
line. A physical presence is not required. Among the 100 or so ISPs that compete in San
Diego about 40 of them are locally owned firms. And of this 40, 4 firms have roughly 90% of
the market share. Dial-up accounts are available for as low as $10 per month but average
roughly $20 per month.

The market for bandwidth or Internet access by data communications providers is very
competitive. ISPs are faced with a barrage of companies selling bandwidth where nearly
everyone claims to own the fiber. To figure out who actually does own the fiber one must
examine complicated corporate structure charts that include subsidiaries, alliances, and agents.
Ownership of the fiber is seen an advantage because this theoretically reduces the time it takes
to allocate more bandwidth to the client. If a firm is strictly a reseller the added step of having
to go through the owner of the fiber can cause delays.

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109 Some California state statistics on development of local competition to compare it with other states are at
FCC has recently passed a ruling to collect better statistics on local competition as at this time market by market
comparisons are unavailable. Even Pacific Bell in their application to the Californian Public Utilities
Commission (CPUC) to enter the long distance market, which is based partly on the extent of local competition,
was unable to provide quantitative measures of local competition on a market by market basis. There are 248
alternate local service providers registered with the CPUC.
110 In the U.S. for years local and long distance services were separated. This has created a perception of them as
separate services. This is different from other countries where the majority of subscribers get their local and long
distance services from the same company.
In terms of Internet penetration, San Diego was in the top five most connected local markets with a 58% penetration rate. In terms of Internet audience size San Diego was ranked as the 17\textsuperscript{th} largest local Internet market, and had the highest national average of time spent online. The average San Diegan spent an average of 11 hours and 16 minutes online in February 1999\textsuperscript{111}.

Internet Service Providers in the U.S. and in San Diego face few regulatory hurdles to offering their services.\textsuperscript{112} The area in which attempts at regulation have been made is in content. To stem the flow of pornography, hate groups, and other unwanted content, there were proposals that ISPs be held responsible for the actions of their clients. These actions have failed, however, due to the policing burden this would represent to ISPs. The most recent endeavor for controlling content, the Children's Online Privacy Protection Act (COPPA), aims to limit collection of information from minors via web sites, and upholds the tradition of targeting web site operators, rather than ISPs.\textsuperscript{113}

Despite a stance of non-regulation, the Internet and particularly e-commerce have led to legislative changes. Recently digital signature legislation was passed and received mixed reactions. Supporters say the legislation is late and should be quickly adopted, while opponents claim it does not provide adequate protections for consumers. In addition to digital signatures, rules concerning encryption, particularly related to export, have been passed. Legal issues have also arisen concerning the use of unsolicited commercial email (SPAM). Furthermore, additional law enforcement efforts are being made to limit Internet fraud. One example is the Cyber Enforcement group at U.S. Customs.

5.1.2.3 Labor
San Diego has a relatively skilled labor force, even in the high technology areas. Telecommunications, computing and biotechnology are listed as growth areas in the region's economy. San Diego has five four-year universities, with 30 percent of the County's workforce having a college degree, the highest rate among any major city in the United States\textsuperscript{114}. San Diego also tops all other U.S. cities in the number of Ph.Ds per capita.

In Table 5.1.2.3.1 we examine labor statistics for key fields related to electronic commerce (computer programmers, data base administrators, multimedia specialists, and systems analysts). There one can see perceptions of the market for skilled technical employees are similar from both the employers' and employees' perspective. These technical occupations also account for a comparatively large amount of employment in San Diego County, compared with other occupations. Thus, although there is a shortage of hi-tech workers in the U.S. as a whole and employers may find this challenging, there are skilled workers in the San Diego labor market and employers who want to attract them are forced to be creative.

\textsuperscript{111}Nielsen//NetRatings for February 2000. See http://63.140.238.20/press_releases/pr_000412.htm
\textsuperscript{112}See the FCC's Advanced Telecommunication Report for a reference to the FCC's attitude toward 'unregulation' of the Internet (p. 52 of FCC 99-5; download http://www.fcc.gov/Bureaus/Common_Carrier/News_Releases/1999/nrcc9004.html) (viewed July 6, 2000)
\textsuperscript{113}For more information on the Children's Online Privacy Protection Act (COPPA), which went into affect in April 2000, see http://coppa.org/ftc_how_to.htm (viewed July 6, 2000)
\textsuperscript{114}http://www.sanet.gov (viewed July 6, 2000)
<table>
<thead>
<tr>
<th>Occupations</th>
<th>Employers' level of difficulty for finding experienced applicants</th>
<th>Experienced employees' perception of market</th>
<th>Expected employment trend (OES Expected Growth Rate thru 2004)</th>
<th>Size of occupation employment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Engineers</td>
<td>Somewhat difficult</td>
<td>Somewhat competitive</td>
<td>Grow (66.1%)</td>
<td>Large</td>
</tr>
<tr>
<td>Computer programmers</td>
<td>Somewhat difficult</td>
<td>Somewhat competitive</td>
<td>Grow (13.5%)</td>
<td>Large</td>
</tr>
<tr>
<td>Data base administrators</td>
<td>Very difficult</td>
<td>No competition</td>
<td>Remain stable (46.5%)</td>
<td>Small</td>
</tr>
<tr>
<td>Multimedia specialists</td>
<td>Somewhat difficult</td>
<td>Somewhat competitive</td>
<td>Remain stable (NA)</td>
<td>NA</td>
</tr>
<tr>
<td>Systems analysts</td>
<td>Somewhat difficult</td>
<td>Somewhat competitive</td>
<td>Grow (64.8%)</td>
<td>Large</td>
</tr>
</tbody>
</table>

Table 5.1.2.3.1: Characteristics of Employment in Various High-Tech Sectors
Source: San Diego Workforce Partnership, 2000 Occupational Outlook January 2000

*Size of employment in the occupation compared to total employment in the county

One reason creativity is required is the extremely low overall unemployment rate (2.9% in October 1999) makes it difficult to find workers in general, never mind the highly skilled ones needed for electronic commerce. One strategy is to lure people from other regions of the country, which is made easier by San Diego’s mild climate. However, potential movers must also consider the high cost of living and this continues to deter people from relocating to the area.

5.2 Meso Level Institutional Environment

In the above the macro institutional environment of San Diego was described. We now turn our attention to the meso, or sectoral, institutional structure. The focus is on the services sector, and more specifically engineering consulting and customs brokerage.

5.2.1 The Services Sector

The importance of the service sector to the San Diego economy is demonstrated in Figure 5.2.1.1, which shows that services account for the largest percentage, 34%, of employment in the San Diego economy. The next two largest employers were retail trade and the government (combined local and federal) with 18% each. This strong showing in employment statistics reflects the fact that most new jobs in 90s were in the service industry. The services industry is affected most by the area’s low unemployment rate, with keeping employees a major focus of some employers.

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115 See http://www.workforce.org/employer/index.htm
116 The median price of a single family home in San Diego is estimated at $220,000 in 1999.
Across the U.S. the growth in both employment and revenue contributions of services sectors can be seen. Here we focus on a special section of the sector, namely knowledge-intensive services. Service, and particularly KIS, are expected to find great advantages in the Internet. In the following section we examine how the meso institutional structure affects Internet use in the engineering consulting and customs brokerage industries. For each industry we first explore the general meso-level environment. We then explore the roles of industry associations licensing and uncertainty.

5.2.2 Engineering Consulting Firms

5.2.2.1 General

Engineering consulting in San Diego, and the U.S. in general, is experiencing two conflicting trends. First there is the trend toward specialization, which some would argue has been achieved. These specialized firms are typically small, and may even have specialized units within them. Although some firms work locally, particularly with local governments, many of these small firms target regional markets.

The countervailing trend to specialization through small firms is consolidation. In the engineering consulting field there are a few large firms that have been buying up small firms in attempts to build highly diversified conglomerates. These firms typically compete on an international scale. One manager observed:
The market is changing now because there seem to be a lot of mergers going on so these mega firms are being formed. On the other hand you have the niche firms. So you're either a small niche or mega sized firm. The guys in the middle are suffering.

For firms that go after government work, one of the strongest institutional structures is the selection process for public works projects. The institutional structure shapes the scope and nature of competition for these jobs and is defined by the Brooks Act. The Brooks Act, enacted in 1972, laid down the procurement strategy for the federal government and established qualifications based selection (QBS). In this process federal government contracts are awarded to architects and engineers based primarily on qualifications. This is opposed to strictly cost based qualifications. The law does allow for flexibility in terms of a combination of qualifications and price. Although state practices can supercede the Brooks Act, it has become the de facto standard for awarding engineering work at all levels of public works projects. This means that the closed bid, cost-based selection processes are no longer used for engineering contracts. Construction services are however still awarded on cost-based selection.\footnote{The Brooks Act, Federal Government Selection of Architects and Engineers, Public Law 92-582, 92nd Congress, H.R. 12807, October 27, 1972. See http://www.acec.org/programs/brooks.htm (viewed July 6, 2000)} Despite the somewhat subjective nature of this selection system engineering firms have a high level of faith in it. Their faith is partially based on formal mechanisms that create checks on nepotism and cronyism. One such mechanism is a system in which points are given to firms who have not had a contract with the government entity in the past five years, thus increasing their chances for getting work. Firms reported both getting and missing important bids, but that, overall the system is fair.

The market for engineering services in San Diego has been described as competitive. As the economy booms large firms anticipate construction and open new offices. Also as the city tries to maintain a balanced budget the strong economy results in projects being built in boom years, further driving demand. Although this creates challenges for local firms, there are benefits. The competitive environment has been credited with helping to maintain an ethical environment. As one owner explained:

> You know, the conduct of a firm gets taken care of just through competition, it just gets kind of weeded out. The bad ones just fall off the tree, so they just go away.

The general environment of the engineering consulting industry can also be described by its culture. One would assume that engineers, who are technically minded, would be ahead of other groups in terms of Internet adoption. However, time and again during interviews, managers described the very conservative nature of the industry. An interview with one industry organization confirmed this impression. The president of the organization described their membership as very conservative in terms of technology adoption. The organization itself does not have a web site and the president himself does not have one for his own company as he has not been convinced of their worth. The association has recently established an email list but still relies heavily on traditional mailings and fax. The president commented that not all of their members have fax machines, never mind Internet connections. Managers of engineering firms further support this perception of engineers as laggards. One manager described their transition to a new system as follows:
We've had the system for a year and half and we still haven't replaced our hard copy files. You know, we're engineers and it's kind of hard for us to take that leap.

And another

I tell you, engineers are not people that like to do new things.

5.2.2.2 Industry Associations, Licensing, and Uncertainty

In the U.S. in general, and in San Diego in particular, there are a wide variety of industry associations. They can be broken into two categories: engineering field specific and industry specific. The engineering field groups tend to be specialty academic groups for engineering disciplines as well as sub groups, which represent very specialized interests. These organizations include the Institute for Electronic and Electrical Engineers (IEEE) and the American Society for Civil Engineers (ASCE), among others. Membership in these organizations allows engineers to keep up to date on the latest technical and scientific trends, as well as professional development. These organizations also provide opportunities for networking among peers.

There are also industry specific groups such as the Association of Military Engineers, American Society for Foundation Engineers, American Public Works Association, American Water Works Association, and Consulting Engineers and Land Surveyors of California (CELSOC). In addition to an industry focus, the organizations may have a geographical focus as well. One example is the San Diego Water Works Association. Compared to the professional organizations, some of these groups focus more on project level issues that might span several fields. Also, due to the greater industry-level orientation of these groups, they offer greater possibilities for networking. Of course engineering firms also belong to general business organizations such as the Chamber of Commerce or the Rotary Club. For engineering firms these organizations hold less value, although firms do feel that they should belong.

In addition to their role in facilitating networking, the industry associations were important sources of non-codified information or gossip. When asked if information regarding reputations was discussed at association meetings one manager observed

Not at the meeting so much but at the cocktail lounge before or after the meeting. That's where you get that. That's where a lot of the comradery is built. At the meeting they're just discussing items on the agenda.

Licensing of engineering firms in California is handled through the department of consumer affairs and in particular by the State of California Board for Professional Engineers and Land Surveyors. The board manages the internationally recognized Professional Engineer license program. Recent legislation requires licensed firms to notify customers of their licensed status. Licenses are valid for four years and cost $150 to renew. Civil, Electrical, and

119 http://www.dca.ca.gov/pels/ (viewed July 6, 2000)
120 Effective March 10, 2000, Title 16, California Code of Regulations section 463.5 will require all individuals licensed by the Board to provide notice to their clients that they are licensed. Failure to provide notice to clients could result in the Board taking action against the licensee. The Board for Professional Engineers and Land Surveyors has provided several options for its licensees to help them meet this requirement. For example, licensees may display their wall certificates in a public area of their office. Another option is to post a notice listing the licensees. This notice must be in at least 48-point type, which will make it large enough to reasonably be noticed.
Mechanical engineers are required by law to include the expiration date of their registration when they sign, seal or stamp documents.

The Board actively regulates the sector, taking complaints from dissatisfied clients, making investigations, and holding hearings. There are three mechanisms the Board uses to sanction firms: citation, suspension, and revocation. Citations are issued to licensed engineers and land surveyors when the severity of a violation may not warrant suspension or revocation of the licensee's right to practice. The board can handle citations, while suspensions and revocations involve the District Attorney's office. Between 1992 and 2000 the board opened an average of 240 cases per year. In 1999/2000 there were 46 complaints against unlicensed professional engineers and 80 complaints against licensed civil engineers.\(^{121}\)

The uncertainties and risks associated with engineering consulting in San Diego were of two types: those related and unrelated to technology. Risks unrelated to technology usually stem from business relationships. Engineers face a certain amount of risk in the liability they incur when taking on big projects. Large firms are often reluctant to take on the client's level of desired liability, making contract negotiations difficult. This is not usually the case for the small firms, however. The small firms are usually willing to take on the liability. This is due to a combination of ignorance and disparate bargaining power between a small firm and the client. Small firms may also knowingly accept the risk because they need a particular job to survive.

One way of managing these risks is to have a good relationship before taking on any work with a particular client. If a client appears to be difficult in determining the terms of the work, the engineering firm may pass on the work to remove the risk of a difficult (and costly) relationship.

Another non-technical source of risk is losing employees. Particularly in the cases of software engineering and military engineering, the residual knowledge and contacts of employees who leave a firm can cause damage. These risks were partly controlled through employment contracts and offering benefit packages that encourage employees to stay.

In such a growing economy there were also the risks associated with rapid growth. For small firms a real challenge can sometimes be having too much work. If one attempts to complete the work quality and hence reputation may suffer.

Technical sources of risk are related to copyright and patent infringement, transmutability of documents, and the threat Internet access poses to all networks. Patent infringement is a particular issue for software engineering. Firms were able to mitigate this risk simply by having the product be so specialized it would be of little value in other application.

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Licensees also have the option of providing a statement to their clients, which must be signed and dated by the clients. This will ensure that the client has been notified that the licensee is licensed. The licensee also has the option of including the statement on either letterhead or on a contract for services. If the statement is made on a contract, it must be in at least 12-point type immediately above the signature line of the client. Source: http://www.dca.ca.gov/pets/

\(^{121}\) California Board for Professional Engineers and Land Surveyors, Enforcement Division Annual Report 1999/2000
Transmutability was an issue for several firms, particularly those operating as Professional Engineers, where electronic delivery of designs exposed them to the potential that clients could easily alter documents. One firm noted: 'I don't mind being liable for what I did, but I don't want to be liable for something I didn't do.' The issue has gained in significance as more clients request final products be delivered as CAD files. Most engineering firms mitigate the risk by noting that electronic copies are not official. The official copy is a hard copy with a 'wet' signature, sent along with the electronic file. One manager described further protections:

When we send electronic files to clients there's always the risk that the client modifies the electronic file and there's no paper trail to indicate what you actually sent. So we do have a policy that any electronic media sent to the client is followed up by a hard copy that goes into the file, into the archived file system. We have had instances where our electronic documents have been changed and so we are concerned about misuse of the information we send. So we now always follow it up.

There is clearly a need in the professional engineering community to develop a standard method for electronic delivery to clients. This includes resolving issues related to altering files and particularly to the acceptance of electronic forms of the Professional Engineer's stamp required for official documents.

The last technical source of risk is the threat Internet access poses to corporate networks. Most engineering consulting firms rely heavily on their computer networks. Firms felt that if their systems were infected through a general attack (such as the 'love virus') it would be very difficult to recover. The more automated the firm, the larger was the sense of risk. Firms were also being proactive in terms of limiting employee's access to the Internet in order to prevent these vulnerabilities.

5.2.3 Customs Brokers

5.2.3.1 General

Market Trends
In San Diego there are presently several trends affecting the market for customs brokerage services. First, intense competition has driven down profit margins such that firms can no longer compete on price. One firm reported that fees they charge now are lower than 15 years ago, while the brokers' costs are now higher. Fortunately higher volumes have offset the higher costs. The result is that high quality service is now considered the most effective competitive advantage. This orientation toward service and the characteristics unique to each port has helped small firms fend off competition from large logistics providers.

Not all small firms, however, remain small. The overall trend in the sector is toward consolidation, which has ushered in an era of 'super logistics providers,' formed by takeovers of smaller companies up and down the logistics value chain. These large firms provide factory-to-customer service and are attractive to large companies looking to outsource their logistics services. Because of the range of services they offer, everything from packaging, to order consolidation and shipping, these large firms may provide customs brokerage services at no additional charge. These large firms, however, have high overhead and small manufacturers can not afford to use them. Thus, the small firms turn to the small customs
brokers. The result is an industry where the relationships are typically between firms of similar size.

This trend toward large logistics providers may affect small firms’ relations with customs. The large logistics service providers are in a better position to influence Customs Service policy. The logistics providers can pressure customs to adopt processes, procedures, and technologies that meet their needs. These changes may, however, be unduly burdensome to small firms.

With the small customs brokers specialization along lines of goods for import/export is rare. Firms choose not to specialize to protect themselves from fluctuations in demand for a particular good. There are some niche brokerage markets but they tend to be for products with higher liability, fresh fish for example. As one broker observed, "Other people don’t want to do it because if you mess up with fresh fish, you really mess up." Another potential niche market is for extremely complicated filings. One example is clearing a ship (not the goods) through customs. In San Diego one firm with expertise in this area handled the majority of this kind of work.

The impact of ICTs on small brokers is mixed. Some firms see use of ICTs as a competitive advantage. Others however believe that service, with or without the use of ICTs, is the most important factor. Some firms believe they would not lose a client due to inadequate use of technology but only due to a lack of service. Other firms, however, think it is possible a client who is satisfied with their service would walk away because another firm offered good service and better use of technology.

*Ports & the U.S. Customs Service*

The environment of the customs brokers is very much influenced by the port at which they operate. Customs brokers in the San Diego region can be separated into two distinct geographical areas related to the ports they serve: Downtown and Otay Mesa. Downtown brokers tend to deal with the ocean port and the airport. In San Diego the brokers are more concerned with clearing in bond cargo coming in from Long Beach, clearing at the airport, and servicing vessels at the port of San Diego. The port of San Diego is primarily a cruise ship terminal. The brokers at Otay Mesa service almost exclusively the border crossing into Mexico. The brokers in Otay Mesa are in somewhat of a special situation due to the presence of the free trade zone at the border, which includes 850 factories in Tijuana, Tecate, and Ensenada. Because many of the factories are located close to the border, a truck can leave the factory and be waiting at the border for clearance before the broker even knows about it. Brokers servicing ocean and airports typically have several hours, if not days, of lead-time. Being close to the factories puts an added time pressure, which can make ICTs more valuable, on these brokers. One broker felt that being at a land border created more pressure to automate their services and that brokers who did not automate had fallen behind.

The downtown and Otay Mesa brokers also differ in the structure of their markets. The competition at the border is more fierce than that downtown. Estimates of the current number of brokers in Otay Mesa range from 60 to 100, a number much larger than the 8 that existed in the 1980s. The reason for this increase is the growth of border trade due to NAFTA. The

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difference between the two ports is also partially due to changes in the role of San Diego’s harbor over the past decade.

In general, the ocean transport industry has experienced a trend toward containerization. In the U.S. this has led to increased concentration in the operation of ports. In California, the port at Long Beach has established itself as a globally competitive container port. The port authority in San Diego decided, instead of trying to compete with Long Beach, it would be better off making the port a tourist center. Thus, much of the land in the San Diego port has been used for cruise ship terminals and hotels. The result is that trucks entering the U.S. at Otay Mesa with ocean bound cargo typically drive up the coast to Long Beach instead of putting the goods aboard a ship in San Diego. For customs brokers the outcome is a small market for brokerage services at San Diego’s ocean port.

Differences also occur among the border ports in the different states. One would expect operations at all ports, which are overseen by the U.S. Customs Service, would be uniform. However, great diversity in processes and the adoption of technology among the ports can be found. An example of both process and technology differences are seen when comparing Otay Mesa with the port of El Paso. One Otay Mesa broker reported that the El Paso border uses what is known as a 'Super Booth.' The booth allows an account-based declaration process that integrates preliminary export and preliminary import information. Thus, when trucks from Mexico approach the entry gate into the U.S., their documents have already been forwarded from the Mexican customs agency to the U.S. side, making a stop at the booth unnecessary. The result is shorter lines of trucks at the border and faster throughput. Such a system is not available at the Otay Mesa border crossing.

Differences among borders also exist in terms of applying Customs regulations, as the following anecdote provided by a broker with experience at another border demonstrates.

"There’s a provision in the customs regulations that allows you to import anything worth $200 or less without filing an entry. We don’t even have to declare it to customs. The provision has been around for years and we’ve been doing it [not filing] for years. It used to $100 but then in 1996 they raised it to $200. When I moved out here we saw a lot of customers who were importing things for $200 or less. We asked them why bother having us do this [make filings]? You could do it yourself and save a lot of money. So they tried it themselves and customs rejected them. ... They [customs] really didn’t want to follow this regulation because the goods coming in wouldn’t have an entry number and they said without an entry number they couldn’t control it. ... They said we could not write and tell them this is an import under $200 therefore we don’t need an entry, but instead we must request it. We had made a stamp 'released under section so-and-so' and now we have to write in with pen next to the stamp 'requesting item be' so it reads 'requesting item be released under section number...."

Such policies, the brokers hypothesized, may be the result of particular pressures faced by the California ports. The political climate in California is sensitive to issues of drug and immigrant smuggling. This may make automation, which typically requires streamlining, difficult as streamlining may result in a loss of control. For example, one way to streamline the customs process is to enforce compliance through sampling. A sampling rate is chosen and only that percentage of shipments are inspected. If smugglers (of products or illegal immigrants) are lucky they can get by. If they are later caught and their port of entry is determined, it creates negative publicity for the port administration. Thus, streamlining and automation of customs clearance may not be a priority for California ports.
Several of the customs brokers described San Diego customs, and the U.S. Customs Service in general, as being far behind industry in the adoption of communication technologies. Although currently critical of the Customs Service handling of technology adoption, the brokers were complimentary of efforts in the past. The brokers recognize the Customs Service implementation of the EDI system in the 1980s was a huge undertaking. At the time many of the brokers strongly opposed the system. The head of Customs ignored the controversy and ploughed ahead telling the brokers, "I'm going to drag you kicking and screaming into the 20th century." The system was implemented and rather quickly most brokers climbed on board.

The problem since then has been a matter of changing with the times. As trade continued to grow, particularly with the introduction of NAFTA, it was all the Customs Service could do to keep the existing system running. This left little time or resources to plan for a new Internet-based system. The brokers speculated, however, that if the leadership within the Customs Service had been stronger, particularly in the area of technology, ways around these problems could have been found. The Service is now developing an Internet-based system but has only launched prototypes to date.¹²³

There are other trends affecting the performance of the Customs Service. Brokers reported the customs services staff has been significantly reduced over the last twenty years. This has coincided with an increase in complexity in import and export regulations. As a result, the brokers perceive the customs service personnel as lacking expertise. In addition to staff reductions, the Customs Service has seen increased traffic due to NAFTA.

One way that NAFTA increased traffic is through reduced tariffs. To demonstrate the difference NAFTA has made to tariffs we can consider tomatoes. Pre-NAFTA, tomatoes carried a duty of 5 cents per kilo, whereas under NAFTA the duty is 1.3 cents per kilo. This is a benefit to customs brokers as their fee for cleaning goods is independent of the duty price, while the reduced duty means the amount of money they must handle for clients has been reduced.

Customs brokers serve as intermediaries in the field of international trade. They are actually only a small segment of the import/export value chain. As the Internet has developed and information related to import and export becomes easier to reach, speculations have been made that customs brokers would be squeezed out of the industry. Although this information has in fact become more readily available, customs brokers, like tax accountants, continue to provide a service some firms are unwilling to do themselves.

Firms are unwilling to handle customs clearance themselves because it remains a complicated task. For example, in theory the product codes for customs in the U.S. and Mexico are supposed to be harmonized up to 6 digits, but in some cases they are not. Also, due to different sourcing practices for components, two final products that are nearly identical may have a different status under NAFTA. Understanding the intricacies of the rules in their most current form is really the value of the broker. Another broker pointed out that the service is not purely informational, that there are physical inspections and when things don't match up

¹²³ For a description of the current state of the Automated Commercial Environment (ACE) of the Customs Modernization Program see http://www.customs.gov/
someone has to be there physically. And for the small firm the broker is like an insurance policy and they can blame the broker.

One broker said he would like to see customers be able to access clearance status information directly from customs. Presently, he described, clients can establish a 'mailbox' with both Customs and the Food and Drug Administration (FDA) and they are notified through their mailbox when goods have been cleared. Clients would, however, like to know exactly where in the process their goods are, not only when the process is complete.

When asked whether or not such direct access to information would diminish the value of customs brokerage, the broker responded that this function is mostly clerical and that brokers would gladly see the issue of updates transferred to the client. This would allow the brokers to spend less time on updates and more time making sure goods are correctly classified.

Some customers may now see the value of the broker as the information gained through updates. However, the brokers are confident that if clients try to take over the function of a broker on their own as a result of being able to make these update inquiries themselves, they will find the customs clearance process is sufficiently complicated and they will want to keep their broker. One firm, who did lose a client through the client attempting the process itself, has kept the broker on retainer and calls him frequently.

5.2.3.2 Industry Associations, Licensing, and Uncertainty

Associations
The customs brokers in San Diego have a variety of industry associations to which they belong. Similar to engineering, they can be broken down into professional, value chain, and general business organizations. The professional organizations are the local and national brokers' associations. The local brokers association has been in existence for nearly 20 years and has a fairly large membership. It interfaces with customs and attempts to provide group services to the customs broker community both in Otay Mesa and in San Diego.

Brokers had both praise and criticism for the organization. They praised the regularity of general and committee meetings. They also praised the organization for its role in interfacing with customs. These activities typically benefit all firms equally.

There was, however, a general perception that the association lacked vision and did not encourage cooperation among the brokers. Issues such as pooling demand for health insurance and employee benefits to provide improved packages throughout the sector are examples of the types of activities possible yet not undertaken by the organization. The lack of cooperative efforts within the organization may be a result of the fierce competition in the sector and an industry structure that does not require firms to pass work to one another. Hence, the level of cooperation between brokers is low.

The organization was also criticized for not acting as a leader in the adoption of new technologies. During the 1980s when Customs was implementing its EDI system, the San Diego Brokers Association opposed it. Until recently the organization barely used email. This was a reflection of the leadership's own use, as one of the officers did not have email access at work.
The National Brokers Association was mentioned more favorably. The National Association interfaces with the U.S. Customs Service. They also help standardization by providing firms with standard forms for their Power of Attorney agreements (POA). The POA is required by customs so brokers can legally act on behalf of clients. These forms are updated regularly. The most recent revision includes a statement of liability for the broker. The National Association also served as important arena for comparing practices at different ports. From these meetings the San Diego brokers developed a sense of how differently their port (and every port) operates.

Value chain oriented organizations were discussed more favorably. A popular group for the Otay brokers is the Western Maquiladora Trade Association\textsuperscript{124}. This association strives to keep Maquiladora industry firms updated on Mexican and U.S. policies and represents the concerns of the Maquiladora industry to appropriate government agencies. For the customs brokers who belong to this group, the WMTA serves as a source of information and a source for potential clients. Due to the vertical nature of the organization, customs brokers meet Maquiladora operators with export needs, as well as other professionals such as lawyers and accountants who represent new clients and can serve as a reference. Other popular organizations include the San Diego Transportation Club, the World Trade Center, and the Tijuana and San Diego Economic Development Corporations.

Customs brokers were also members of local business organizations such as the Chamber of Commerce. There were a variety of reactions concerning the usefulness of such organizations. Some mentioned them as a potential source of employees, and occasionally clients. Others felt the Otay Mesa Chamber did not represent their needs.

\textbf{Licensing}

Licensing of customs brokers is handled by the federal government. Each firm has several licensed brokers and the firm itself is also required to hold a license. The broker's exam has become more difficult over the years. The basic requirements for a license are that an applicant must be a United States citizen, of good moral character, and at least 21 years of age. The applicant must pass a written exam, which has a fee of $200. Once the exam is passed the applicant applies to the Port Director at the port where the applicant wishes to conduct business. The application costs another $200. Firm level licenses are obtained without an exam, due to the requirement that each organization has a licensed member. To maintain a license each broker is required to submit a status report and pay a $100 fee every 3 years. If a broker wishes to operate in more than one port they must pay a $100 permit application fee and a $125 annual user fee for each port permit issued\textsuperscript{125}.

Licensed firms undergo compliance examinations, which are random reviews of a broker's records and warehouses. Brokers are required to post their licenses in their offices. Brokers do not fear losing their licenses as they see the San Diego region as fairly honest, thus having little pressure to act illegally in order to compete. One firm reported that perhaps one broker in the San Diego region in the past 20 years has had their license revoked. Customs rarely revokes licenses but they do issue penalties that can cost as much as $30,000, which is a lot of money to a small firm. If a broker received such a penalty it is likely the financial burden

\textsuperscript{124} \url{http://www.wmtasd.org/} (viewed July 5, 2000)

\textsuperscript{125} \url{http://www.customs.gov/imp-exp2/broker/newb.htm} (viewed July 7, 2000)
could result in bankruptcy. Thus, the prospect of losing one's license was not a big source of uncertainty for the firms.

**Uncertainty**

Customs brokers varied in their perceptions of the risk in their business. The amount of money they handled and the terms of their relationships largely influenced the risks their clients represent. If the broker pays the duties for the clients they have 10 days from when the goods are presented at customs to pay. In order to insure good service and to get the clients goods through customs as quickly as possible there is a temptation to pay the duties for the client. However, most firms will wait until payment is received in those 10 days and then transfer the money to customs. There is an automatic payment system (ACH) where a client has an account with customs and payment is made directly. This system is used mostly by larger firms, leaving smaller firms with money handling as one source of risk.

Firms demonstrated varying means of limiting this risk. Typically firms asked new client for commercial and bank references. Several firms mentioned using Dun & Bradstreet reports. One firm mentioned letterhead or an invoice as a measure for establishing a firm's validity. They may also request IRS numbers and can check with customs as to whether the firm has a negative record with the agency. Brokers also mentioned that at the beginning of a relationship they might require that firms pay up front or pay COD. There were also limits to the amount of duties a broker would pay. One broker mentioned that if the duties were higher than $10,000 they would require the client to pre-pay. One firm also mentioned meeting face to face with the client and visiting them at their business as a way of assessing the firm's credibility.

In addition to limiting the risk of non-payment, these face to face visits also help to safeguard the broker from taking on a client involved in illicit activities. Ensuring importers and exporters are who they say they are and are shipping what they say they're shipping is partially the responsibility of the broker. Having a 'bad' client could also damage the broker's reputation.

In discussing their use of commercial and bank reports several firms mentioned the lack of a credit reference culture in Mexico. One firm reported that Mexican banks would not provide commercial references for clients, as account information is considered private. This differs from the U.S. where banks regularly provide reports about their clients. Because of this inability to obtain reliable credit checks several firms had blanket policies against giving credit to Mexican clients. One broker stated

"In Mexico if you gave someone credit they'd think you were stupid. And they won't pay you just for being stupid. You know, they're not going to pay you, big or small. The economy in Mexico has always been a cash economy. There's been a lot of trade going on with Letters of Credit. And with the last presidential election, with the devaluation where they froze all these dollar accounts, the banks weren't even honoring the letters of credit. So you know, there's a risk that companies are taking when they're doing trade with Mexico."

One broker pointed out the static nature of initial credit checks. The credit checks, he noted, only indicate the status of clients' finances at the beginning of the relationship. He said even with long term clients, 'No one calls you and warns you they may be filing for bankruptcy in the coming months.' Brokers extend credit to clients on a completely unsecured basis. Not
only do they not require collateral, they rarely use contracts and therefore have no written
documentation to fall back on.

One broker perceived it was part of their function to absorb risk, particularly the risk
associated with filing errors. When a client imports goods into the U.S. they must be correctly
classified. The intricate nature of the customs classification process makes firms unwilling to
accept this risk, and hence they use a broker. Several brokers mentioned that making errors
was their biggest source of risk. This is in spite of the fact that the client, not the broker, is the
importer of record and therefore is responsible for paying fines on filing errors. Despite this
loophole through which brokers could significantly reduce their risks, most brokers paid the
fine when it was determined the error was their fault. Making mistakes is a source of risk
because the brokers trust much of the work of filing entries to their staff. The willingness of
brokers to pay fines they are responsible for is one way they increase their credibility and trust
with the client. The brokers carry errors and omissions insurance but typically the cost of the
fine is not large enough to file a claim.

The last source of risk, similar to that mentioned by engineering firms, was the possibility of
computer system failure, due either to an external attack or other reasons. As the firms
become more and more automated this risk increases, especially for small companies with
very fragile computer operations. Few firms had staffs large enough to include a computer
specialist and their systems were often a mishmash of components. One broker felt providing
good service, which possibly included implementing computer systems, required taking risks.

5.3 **Micro Level Institutional Environment**

In this section we examine the micro-level institutional environment. At this level we are
mostly concerned with the firms’ relationships with key members of their business
environment. First we examine customer relations, followed by those with suppliers.
Subsequently, firms’ Internet use is discussed.

5.3.1 Engineering Consulting Firms

The group of engineering consulting firms in the sample was fairly diverse in terms of their
areas of concentration, reflecting a range of engineering consulting disciplines. Of the 10, 6
are small locally owned firms, 1 is a branch office of a small firm, and 3, although small
offices themselves, were branch offices of large firms. Even in the case where the branch
office was part of a small firm, the behavior of the office was similar to those branch offices
of larger firms. One of the locally owned firms had recently purchased another firm and was
establishing operations in another state.

Comparisons between the firms in the sample may be complicated by the fact that the branch
offices were in most cases much larger than the locally owned firms. The average size of the
branch office was 55 employees, whereas the locally owned firms had on average 13
employees. The size of all offices, branches and locally- owned, were on average 30
employees. There was less of a difference between the offices in terms of age. The oldest
office was 26 years old. Size was not necessarily determined by age as two of the smaller and
older firms mentioned a deliberate strategy to stay small. Among the locally owned firms,
there was one that is woman owned and operated.
5.3.1.1 Customers

The importance of personal networks in finding new clients cannot be overemphasized. The firms in the study listed their two main sources of work to be repeat clients and those obtained through references. Firms relying heavily on repeat clients were often working with large municipalities or the federal government. Firms acting as 'prime' on one contract might be a 'sub' on a future contract. Size and level of specialization often dictate these relations between these firms.

Firms working with government contracts are subject to the Quality Based Selection process. Local adjustments to this process will often include a point system where firms who worked with the agency recently will receive fewer points.

It should also be mentioned that methods of obtaining work do vary slightly between different engineering sectors. In all cases personal networks are important. However, for work in the private sector, where selection criteria are unconstrained, personal relationships are even more important.

For the four firms that were branch offices of larger firms, very little work came from the parent company. In most cases the firms were responsible for developing their own relations and getting their own work. Although in certain specializations engineering firms can work regionally, there is typically a local element to the services. Thus, there is limited potential for parent firms to pass on work to their subsidiaries. The benefits of being a branch office were more related to having additional engineering resources for knowledge sharing and joint computer operations.

Firms varied in their use of written contracts with differences mainly attributed to size. The two firms not using contracts were microenterprises who emphasized the importance of personal relationships in the success of their firms. One of them stated that if a client required a contract he would not want to take on that client. However, this same firm recently obtained insurance and the insurance company is pressuring him to use written contracts. The other firm that seldom uses contracts reasoned that his work tended to be small firm to small firm and neither party felt the need to use them. Occasionally the firm is involved with long term projects with greater complexity and a larger of number of factors, thus creating greater risks. Only in such cases is a written contract used.

For those firms using contracts, the risks were fairly uniform across projects, which allowed them to use standard contracts. The forms of these contracts were often obtained from the specific industry association. In the civil engineering sector the contract is usually broken into three parts: indemnification over negligent acts, errors & omissions insurance requirements, and payment provisions. Insurance requirements and payment provisions are relatively standard, with the contentious part being the indemnification. Several firms reported that although the State of California has standard guidelines for municipal contracts, including recommended limits for liability, the municipalities typically want firms to accept a greater level of liability. Small firms are often willing to go along with these terms. The branch offices of the large firms, however, are usually limited in the level of liability they can accept by their parent organization. In addition to disagreements over liability, settling contracts has been made more contentious by the requirements of some municipalities for notarized signatures. In discussing the efforts required for negotiating the indemnification clause, one manager observed:
Yeah, in our 40-year history we've had to refer to it [indemnification clause] less than 2 or 3 times, while in this office we have to negotiate this maybe 20 or 30 times a year. It's kind of a waste of time, in a sense, in terms of what productive work you could do toward the project versus what you do to protect yourself from a potential liability. The transaction costs are very high these days, and it goes into our overhead. So the people we actually bill end up paying for it.

The use of written contracts can play various roles in a relationship. One indication of their importance is whether or not a firm will begin work on a contract before the contract is actually signed. This is a practice that must be carefully managed. In an industry where repeat clients are an important part of work it is easy to become overly focused on pleasing the customer as opposed to protecting the interests of your own firm. One firm mentioned losses on a federal contract where they went ahead and did extra work without a contract. In work with the federal government payment cannot be made without a contract.\(^{126}\)

In discussing their contracts firms said they seldom returned to the contract for clarifying or reiteration of the terms. The relationship with the customer is as congenial as possible. Several firms mentioned up front honesty as extremely important especially in the case of slipped schedules or cost over-runs. These kinds of communication are more likely to warrant a phone call or face to face meeting.

One manager, considering the impact of contract law, observed:

> People mainly try to work things out because of their reputation, more so than because its in the contract. ... In terms of contract law, it's important in terms of catastrophic situations like a flood or unforeseen circumstances like years down the road a site is judged to be improperly cleaned, more from the indemnity perspective. But from where I'm sitting just doing work on a daily basis, we often find it's not the contract but the reputation and getting work in the future that's important.

Receiving payment was rarely an issue for the engineers. The rare case was usually with the smaller firms. When trouble arose it was only necessary to continue calling the client and eventually they received payment. Sometimes the delay was due to a delay in payment further up the line. Firms working with the federal government reported that a new Internet based system had been developed and that they were able to receive payment within five days. One firm reported the federal government was their fastest paying client.\(^{127}\)

5.3.1.2 Suppliers

Firms also have relationships with suppliers, which in this knowledge-based service are subcontractors and their employees. Similar to clients, firms must find and manage these vital supplies.

With a fast growing economy and low unemployment rates all firms reported difficulties in finding employees. Once employees were found it was also difficult to keep them as firms competed by offering higher salaries and better benefits. Firms preferred to find employees

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\(^{126}\) The federal government does have a process for working out these unbilled receivables but again there is a trade-off between getting paid and straining the relationship. Pushing to get paid highlights that perhaps the contracting officer did not do his job well.

\(^{127}\) See http://policyworks.gov/epic/opendocs.htm (viewed July 6, 2000) for a report on the progress of federal government agencies in using electronic commerce in procurement and payment. All agencies were required by the Debt Collection Improvement Act to adopt electronic funds transfer (EFT) by 1999.
through personal networks. They believe a reference from someone they know and trust is the best security in hiring someone. There were differences however in how entry-level and management people were found. It was expected that personal networks would be even more effective for finding experienced individuals, as they would have already entered the industry network. New people who have yet to enter the network can be found through recruiters or other third party means. Although firms had trouble keeping employees, their relations were positive. Firms reported few instances of unethical behavior. Some firms used employment contracts, usually the larger firms.

Firms also rely on networks and experience in finding subcontractors. Many firms maintain a list of firms they’ve used over the years. These lists are periodically reviewed with some firms being dropped and new ones added. When the firm has work to sub-out they typically send out an RFP to the firms on the list. Smaller firms may use industry association lists for this purpose. Sometimes the decision of which subcontractor to use is not the sole discretion of the firm. The client may give the firm a choice of a few firms to choose a sub contractor from.

The web of relations between firms that shapes the possibilities for subbing for or subbing to another firm are complicated. Some larger firms like to work closely with smaller, younger firms to develop their skills. The training efforts are typically repaid in loyalty and through the prime/sub relationship.

We look around to build relationships with subs that we can build an exclusive relationship with and we can mentor them and try to develop their skills to complement ours so when the time comes for them to lead they’ll sub to us.

Unfortunately, the delicate balance in these relationships sometimes can be disturbed by incentive programs, as the reflections by an 8(a) firm show:

The other way we get used is because now those firms that used to compete for the work that’s now set aside for 8(a) firms are looking for an angle. So they come to me all the time. Hey, we want to be your sub. Well fine we can’t win a job unless we have a relationship because the Navy won’t select us unless we’ve worked together on other stuff. So they’ll give you some work that’s worth maybe $3,000 and then expect you to turn around and have them be your major sub on a contract worth millions. So you’re being used and it’s pretty crappy. [And to those firms just now wanting to work with us I’d say] …we’re going to stay focused and not try to spread out and not try to submit on a bunch stuff and not try to form relationships with a bunch of your companies cause I don’t trust ya.
5.3.1.3 Internet Use

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Table 5.3.1.3.1: Engineering Consulting Firms and Websites

All of the firms in the sample used e-mail and eight of the ten had Websites. The firms without Websites were the two smallest firms. The firms that were branch offices of larger firms were all on networks with all employees having desktop access. The sophistication of the computer systems of the locally owned firms varied. The two smallest firms, with only two employees each, used dial-up access. Three of the remaining four had dedicated access.

The firms seldom used the Internet to find work. Although government projects might be listed on web sites, if the firm really stood a chance of getting the work they probably knew about the project before it hit the web. The same is true for the use of 'lead services.' These services were around before the Internet and used to rely on phone and fax. Now they send out weekly bulletins via email. But their role has not changed, in the sense that 90% of the work firms get they know about the demand before reading it from the lead service. Again relying on personal networks was most important. Only one firm reported getting work from their web site. This was a highly specialized engineering firm who used the web as a marketing tool and linked their site to a portal for a specific type of engineering services. One other firm, a small firm with 8a status, mentioned getting requests to do work from their web site. These requests were often too far afield to make them worthwhile, but she said she was hopeful that some of these inquiries would soon turn into actual jobs.

The 8(a) status played a big role in bringing this one firm into Internet use. This is due to the Small Business Administrations emphasis on web-based information and databases for firms to register their Websites. This may also be a function of moving from the municipal realm to the federal realm. There are disparities in Internet use between federal/state governments and local government.

One firm, with very positive experience with the federal government, described the difference in Internet use between different levels of government.

It is disappointing the way locally, in a municipal market, the Internet is not used. They rely very much on personal relationships and seeing somebody face to face and that’s the way you do business.
Those firms with Websites saw them less as marketing tools but more as a way of communicating with existing clients, or a way for someone met through a network can find additional information. Firms want to provide as much information as possible such as contact and project information but realize they need to be careful. Some firms are concerned that listing employees and contact information would make them susceptible to headhunters. Others were more concerned with information provided to competitors. As one manager reported:

We don't list our employees. But for us it's more about our clients. Because we present our projects and our competitors could call and ask the client if they're ready to change service providers we take care as to which projects we put up. We would only put up project info that is already over or that is so well known anyway it's not an issue. They already have this information. So this is our defensive strategy.

Although engineering firms might not look for work on the Internet, they do use the Internet as a sales tool, as well as for managing client relationships. The most important application was for communication. Group emails that enabled engineers to update several people at one time were considered extremely valuable. Also, firms who were branch offices used Internet email for internal communication. In addition to email, firms used project management Websites and FTP for communication. One firm shared calendars with clients via FTP. Another firm set up a secure server and created password-protected Websites for each project. Both the client and the firm submitted updates. These tools can be extremely useful, particularly in large projects with many organizations involved. They can also, in some circumstances, serve as sales tools.

The Internet is also used to enhance productivity. The most common time saver was sending drawings to clients or architects via the Internet. Several firms have adopted Geographical Information Systems (GIS) and they also make use of maps available from different online sources. Performing research was also an important use of the Internet. Firms are able to access information from local municipalities such as assessor's reports on parcels of land, as well as information on state and federal regulations.

Discussing his use of the Internet, one engineer gave an example of taking designs from a manufacturer's site:

For example I needed a deck drain design and I found one on the Internet.

Why are people putting designs on the Internet?

Well it benefits their company because they are a manufacturer of equipment so on the design I'll write 'U.S. deck drain X or equivalent'. Then they'll usually use drain X.

Another firm in response to a question concerning sending drawings via email described their adoption and use of this process.

Yes the architects are using electronic drawings, so we have to provide them with the medium they wanted. That all started (doing drawings electronically) about 10 years ago when we had a large contract with the City of San Diego and they required everything to be submitted electronically. Our job costs have gone way up to produce them electronically. You could draw it by hand much more quickly than electronically, a number of hours less. Even the most proficient people. That's why the fax is still there.

In terms of using the Internet for finding supplies, there were mixed reactions. Typically subcontractors were found through networks of relations. Firms did however need supplies and would look for them on the Internet. As one manager explained:
'A lot of our vendors are just suppliers of goods -- pumps etc. and maybe the information is on the Internet. Some of our suppliers are for services and in that case we like to have a face to face meeting. It’s less common to find that kind of a supplier on the Internet.'

Most firms did use the Internet to find employees. Many mentioned that this was a fairly recent change partly brought on by the tight labor market. They mentioned posting jobs on Monster.com and other job sites. They also posted openings on their own web sites. Web sites were also valuable in the search for employees in that potential employees could easily access information about the firm thus reducing the amount of firm-level information to be communicated in an interview. The firms found that the Internet was good for finding entry-level candidates, while managers would be more likely to be found through a headhunter or personal networks. Managers did not feel differently about candidates found through the Internet versus those answering newspaper ads or coming in through university recruitment programs. There were no greater requirements in terms of references etc. put on those applicants from Internet versus those who were not. The medium of communication did, however, quickly switches from email to phone or face-to-face. When asked if he would interview via email one manager explained:

'No, I’ll call them because there's this instantaneous response. A person can spend a lot of time fashioning a response via email. So I don't go too far with email. Our process of finding employees has changed dramatically over the past two years. We still recruit locally. We would prefer to keep our recruiting locally but the economy is so hot we have to expand and the Internet is a great way to do that.'

The smallest firms were reluctant to use the Internet to search for employees. This is partially due to the close working environment and a desire to know the people they'd be working with or at least have a personal reference.

Many of the firms mentioned the very conservative nature of the engineering field and the slow rate of adoption and change. The need to overcome issues concerned with digital signatures and the professional engineering stamp were mentioned. Only one firm discussed potential new business models. The idea was to commoditize engineering designs and to sell them on the web. Municipalities typically have 'standard drawings' for often-used designs such as curbs and storm drains. If these could be standardized regionally they could be sold on the web. Of course opportunities for more niche designs could be possible as well. The manager was not pursuing this idea however. She felt engineers' need for control and cultural norms toward change would make such an online 'design library' infeasible.

5.3.2 Customs Brokerage

There were nine firms in the sample of customs brokers. Seven were located in the Otay Mesa area, and two were in the downtown area. The two San Diego firms have been around for

128 For an example see http://www.sanpet.gov/engineering-cip/drawings.shtml (viewed July 5, 2000) where the city of San Diego has drawings available for download. "The City of San Diego Engineering and Capital Projects Department is providing it's standard engineering drawings for consulting engineers to use when preparing and processing drawings for city capital improvement projects. These drawings are not intended for use by the general public. They are for use by qualified companies with Bentley's MicroStation95 computer drafting software." Although the drawings are not intended for the general public, having no password protections they are indeed available to the general public.
many years, one for 50 years, whereas the oldest Otay broker has 18 years of experience. There were also two very young brokers, each with less than 3 years of experience on the open market. The overall average age of the local offices is 18 years. Among the 9 nine firms in the sample 6 are locally owned. All of the firms and branch offices tend to be quite small, with the average number of employees at 32. Many have agents or full offices in Mexico as well. Three of the nine firms were local offices of larger firms. The implications of local/non-local ownership are discussed below.

The sample also included three firms that are owned and operated by women. There is a long history of women being active in the San Diego customs brokerage field. A woman operated one of the first brokerage firms, which opened at the turn of the century. Also, a woman founded the local Broker's Association. The women reported that the history of women in the sector meant their gender had few implications for their position in the industry.

5.3.2.1 Customers

The San Diego customs brokers use a variety of techniques to bring in new clients. Although these techniques vary they all rely to a greater or lesser extent on personal networks, building them, reaping the benefits from them, or maintaining them. For the three firms that are branch offices between 30 and 40% of their work comes from their parent company or other branches. One firm had entered into an MOU with other firms at the northern and southern borders, however as yet this was not a significant source of work.

In the customs brokerage business a client rarely uses a broker just once. Typically importers & exporters have regular shipments, although the frequency of these shipments vary by client and industry. Thus unlike engineering where the firms would consider a new job for existing client 'new work,' customs brokers expect continuous business from clients. Customs brokers see referrals by existing clients as their best source of new clients. Brokers also found new clients when employees from an old client switched firms. Their relationship with the export manager at one firm can be carried over to the new firm when that employee leaves.

A few of the larger firms had sales persons who would go out and call on clients. However, these salespersons rarely made cold calls. Calls were typically the result of a referral where a potential client called to make an inquiry and the sales person would go to establish a relationship.

Brokers who did engage in marketing emphasized that in customs brokerage marketing must be targeted. Brokers seldom specialize in a particular area of exports/imports, however the firms they reach must be interested in international trade on a regular basis. One firm felt that advertising helped very little. Other firms used targeted marketing, such as the use of brochures, advertising in industry journals, or participating in industry trade shows. Another important way to gain clients was through giving import/export seminars. When these seminars are targeted to a particular subject area where the broker has expertise, the position as instructor can be a great advantage. The brokers also mentioned their industry associations, particularly the value chain oriented ones, as important sources of new clients.

The customs brokers seldom had a few clients that represented the majority of their business. Thus they typically have a large number of clients and hence a large number of relationships to manage.
Managing these relationships through the use of contracts varied. Those brokers with larger clients did use contracts but the majority did not. One reason given for not using written contracts was the low level of liability, especially in cases where the clients paid their duties directly. In cases where brokers did extend credit and did not use a contract many felt the use of contract would not provide much additional protection. One broker noted that contracts are not worth the paper they are written on. This reflects the industry-wide opinion that going to court was a waste of time. One broker did however want to begin using contracts but was constrained by industry norms. As he explained:

'No, unfortunately. It's one of the unfortunate parts of our business. We understand some companies are starting to do that but it's normally with larger companies, with bigger commitments. A company that comes in that's very large and I need to dedicate a few personnel plus equipment, etc., then you really need a contract. But due to the competition and due to what's been grandfathered we don't use them. What's been grandfathered was what we did back when everyone kept their word. Now everyone is not true to their word. Before a handshake was a contract but now it has to be written and written properly because you can find loopholes. It's hard to bring someone in and have them commit for a year, especially if they're new and they might not be around in a year. And with the existing companies they're saying 'I don't want to commit to a year because I don't know how good you are.'

It should also be mentioned, however, that few brokers, despite the somewhat risky nature of their business, have problems. In many cases the customers pay within ten days and when the broker has to pay the duties the money is there.

In the case where problems do arise, however, it is most often concerned with payment. One firm mentioned requiring pre-payment by clients from a particular sector with whom they have continual problems. Brokers explained the terms of payment had to be very explicit. The best way in insure payment was to keep on top of clients. There was a definite perception that if a client had not paid after 90 days it would be difficult to get payment from them. Those firms who did go to court found that even when judgements were made in their favor they still did not receive payment. (This was different in Mexico where one firm reported it was easier to move through the legal system. She pointed out that in Mexico writing a check without funds is considered fraud. Also courts make judgements quickly and are much more willing to seize assets instead of using liens.) Two firms mentioned the use of collection agencies. One no longer used them and the one still using them felt they were not any more successful in getting paid.

One broker stated that although his firm gives credit to clients, he certainly doesn't understand why.

"When you go to a bank to get a loan, they want to know 'do you own a car, a home, where do you work,' so they can garnish your wages. Here it's like we just have you sign a power of attorney to work for you, and we just trust you."

The competitive nature of the industry drives firms to compete on service. Good brokerage service is accurate, efficient, fast, and reliable. One aspect of the service is that customers constantly request updates on their shipments. The requests are handled by staff and often come via phone or fax. This transfer of information is one part of the value of the customs broker. The other part is technical and consists of accumulate classification of goods.
The demands for 'good service' by clients do sometimes go too far. Clients see the competition and have taken to asking more and more of brokers. One broker reported a client asked to be taken golfing. Although such gifts as golf outings are not presently part of the industry culture, this may change. Recently, the competition has led some sales persons to pay 'commissions' (also known as kickbacks) to clients for their accounts.

The competitive environment makes it difficult when a client is lost, but not all clients are good clients. One manager described his experience dealing with bad clients:

"Well this isn't a scientific tracking or anything, but a few of those who have left us have been able to fix their problems and become good strong companies, and a few that have left have only become problems to other people. And problems take time, where you have to focus your energies. I mean there are always emergencies and we're prepared to handle those, but these kinds of problems take a lot of time to handle. And a few of those have just gone belly-up. And so there we can say we were smart, on those who become somebody else's problem we can say we made the right business decision and on those who become successful we say 'well we had them when they were bad.' And a few times we have hung in there with companies who have turned around, and a few times we've hung in there and they've gone bankrupt and we've lost. If I have the choice then it's ok, but it hurts when you don't have the choice and they go belly-up and you didn't have the time."

As the statement by this manager demonstrates, broker-client relationships can be quite complicated. Each entity is judging the other on issues such as trustworthiness, loyalty, and sometimes perseverance. Another broker described her relationships with her clients:

"Clients have to trust you. That's why we've been successful because our clients trust us and we've earned a good reputation in the industry. We don't lie to our customers. If it's our fault we tell them. We don't hide the facts."

Do you think this is more important in a service industry?

"Oh yes, because service is an intangible, you can't see it when you sell it, to it's a trusting relationship."

5.3.2.2 Suppliers

Like engineering consulting firms, the suppliers of customs brokers are their employees. The customs brokerage industry is one where formal education is not required and most employees require significant on-the-job training. Thus finding employees with experience is a great convenience. Once again personal networks were a very important part of this process. Several firms mentioned that the area was small and when vacancies occurred the word would spread. If a firm could find someone unhappy with their present employer who wanted to move this presents many benefits, mostly that the person is trained. However, care must be taken to not appear as actively 'stealing' employees.

Occasionally firms used newspaper ads and found these less successful than word of mouth. Some firms also mentioned using the unemployment commission's web site. Some firms also recruit interns from universities and these can become employees. There are also employment agencies. One place firms like to find employees is through seminars. Several brokers mentioned they give seminars at local universities and these students, already trained in at least the basics, were a good source of employees.

None of the brokers used contracts with truckers or freight forwarders. To qualify these people one firm mentioned they might ask to see a trucker's insurance. In the rare instance that the trucker did not come from a personal connection references are typically required.
One firm reported that in terms of using contracts with forwarders, that forwarders sometimes try to get a broker to commit to a shipper’s contract. This contract is a commitment to a minimum number of shipments per month. This broker avoided such agreements. In choosing a trucker, they are usually attached to a fleet. The choice of fleet is sometimes specified by the client and at other times is left up to the broker to decide.

5.3.2.3 Internet Use

<table>
<thead>
<tr>
<th>Firms</th>
<th>Website / Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanyo Customs Brokerage</td>
<td><a href="Http://www.sanyo.com/aboutsanyona/company_profile/s/customs_brokerage.html">Http://www.sanyo.com/aboutsanyona/company_profile/s/customs_brokerage.html</a></td>
</tr>
<tr>
<td>Miles &amp; Joffrey</td>
<td><a href="Http://www.milesgr.com/">Http://www.milesgr.com/</a></td>
</tr>
<tr>
<td>Western Overseas</td>
<td><a href="Http://www.westernoverseas.com/">Http://www.westernoverseas.com/</a></td>
</tr>
<tr>
<td>International Customs Brokers</td>
<td>--</td>
</tr>
<tr>
<td>Am-Mex International</td>
<td><a href="Http://www.am-mex.com/">Http://www.am-mex.com/</a></td>
</tr>
<tr>
<td>Paxton, Shreve &amp; Hays</td>
<td>--</td>
</tr>
<tr>
<td>Ferrer Brokers</td>
<td><a href="Http://www.ferrerbrokers.com/">Http://www.ferrerbrokers.com/</a></td>
</tr>
<tr>
<td>Casas International Brokerage</td>
<td><a href="Http://www.casasbroker.com/">Http://www.casasbroker.com/</a></td>
</tr>
</tbody>
</table>

Table 5.3.2.3.1: Customs Brokerage Firms and Websites

Of the nine brokers in the sample seven firms had Websites and eight of the nine firms had email. Surprisingly, the firm without email was a branch firm of a larger firm that had a Website. In general, the brokers at the border were more technology savvy than those operating in San Diego, one of whom did not have email. These differences may be related to the age of the firms or to differences in the competitiveness of the environment.

There was a conflict in terms of web sites and email addresses. One value of a web site is as a directory for a firm’s email address(es). Although wanting to capitalize on this use, firms were reluctant to publicize email addresses for fear of receiving too much junk mail and also because of a fear of having their employees approached by headhunters.

When discussing the use of the Internet one firm, the one without email, described the process as very paper intensive. Electric typewriters are still in use and bills of lading have kept the industry tied to the fax machine. In terms of clients getting online he described their hesitancy.

"There are some people in San Diego that just hold on to it [paper] so tightly because that’s the way they’ve set up their billing and invoicing to their clients. For example, when we make the truck bill, they can receive it, stamp it, and put it back in the mail to us as a bill. So we basically do their billing for them."

The customs brokers found that web sites were not very useful in helping them identify new clients. Occasionally, where the firm was web-based tools, the web site helped as a sales tool once the potential client had already been identified. None of the brokers had received queries from their web site. The web sites did bring queries about specific points of information, which the brokers were loath to provide for free. One firm is considering developing a web-based information service as a new business model.
In terms of managing their relationships, brokers were starting to see the web as a platform for offering new services. The most recent innovation is web-based track and trace systems that allow customers to get updates about their shipments from the web. These are often based on bar coded information scanned at the warehouse. Customers will also be able to obtain updates as to whether or not their goods have cleared customs.

Email had become an important medium of communication with their clients. Some clients received their updates via email and sometimes it was used as a means to remind clients of late payments. The web also served as a research tool in order to find information about import and export regulation. Brokers also used the web to find information on government agencies such as Customs, the FDA, the EPA, Fish & Wildlife, and information on shippers schedules. And if questions had to be posed these were often made by email. Finally, using the Internet serves as a competitive advantage for some firms.

One task firms seem to be trying to get online is invoicing. Invoices are often sent and received via fax. One firm is developing 'snapshot invoices' that could be sent out via email and not altered. A second firm has an EDI system for invoicing that now has a web interface. But as the previous comments demonstrate, not all clients are willing to cooperate.

The differences between firms who do and do not implement such systems may actually be differences in the perception of the firms' power. Some firms merely try to match the clients' technical capabilities or requirements, whereas others push the clients. One of the firms making greater use of the Internet stated that brokers who blame the client for the lack of use of technology are only making excuses. Their firm also faces clients who do not want to use the technology. In these cases, they go out and spend time with the client and personally help them get online. If this special treatment doesn't work they also offer the client reduced prices for using the Internet. A second firm also reported working with clients to get them online. She stated that even if the trained employee leaves her client, often times that employee would bring their new employer in as a new client, impressed by the efforts made by the broker.

Reasons for not being more fully automated are the customers and bills of lading. To get a sense of their level of dependency on the fax machine, the brokers were asked when they thought they might be rid of them. One broker proudly reported that they now only use three fax machines, down from the eight they used just a few years ago. Thus, the process is still very fax-intensive. When a truck leaves the factory the invoice for the goods, detailing what is in the shipment is sent to the broker via fax. Of course then the client phones to make sure the broker received the fax and knows the truck is on its way. Thus, there are many international (Mexico/US) faxes and phone calls being made. It is no wonder brokers save money with email.

Another point of blame for the paper-based nature of the industry is the Customs Service. Brokers are required to keep records of all transactions for five years. The default mode of storage is paper and those firms wanting to use an electronic storage medium must have the storage process approved by Customs. Firms who have obtained this approval pointed out that Customs does make recommendations about electronic storage, but that their recommendations are out of date.

Most of the brokers also offer warehousing services and many also make use of the technology for this service. One firm uses a digital camera to photograph goods when
circumstances require and send the pictures as email attachments to clients. Bar coding is also used, but usually only when the client uses it, which is typically only 10% of the time. One firm reported using an online inventory system that firms could check remotely.

Firms were split between communication and getting information as the most important uses of the Internet. For those whose clients did not have email (one broker mentioned that his clients who are ranchers in Mexico barely have a phone, never mind an email connection) the information components were more important.

Another firm felt the most important use of the Internet was communicating with customs. This is despite the fact that customs, as individuals, are hesitant to transmit information for fear of making a wrong decision or saying something wrong.

Only two of the firms mentioned using the Internet for finding employees. Most of the firms had rather nebulous requirements for applicants (such as attitude) that were easier to judge through interviews with local candidates. One firm did mention using Monster.com but also said that the lack of specialization of these sites made them less useful. He mentioned the need for an industry-specific job search site that would target international trade specialists. The result was that although the web was less expensive than the newspaper and gave them more exposure it did not produce a higher quality job candidate. One of the branch offices did use their parent organizations web site and placement service although this use was not required.

Finally, firms were asked about whether or not they felt endangered by the Internet. None of the brokers felt the industry was going to disappear. They also noted that advances in telecommunications over the last thirty years had occurred while the industry continued to grow. When asked about the potential of completely online brokers, one firm observed:

"When your product is a service, when product is how you treat people, and what you do for their business, you know you have to [have face to face contact]. You know it would be like an accountant being completely online."

5.4 Analysis

In the previous sections we examined the macro, meso and micro institutional environment for engineering consulting and customs brokerage firms in San Diego and their implications for electronic commerce. We will now examine these effects to compare their relative importance. This will provide insights into the incentives and disincentives for electronic commerce. From this, recommendations will be made for continued support of positive aspects of the institutional environment, which recommendations for change will be made in negative aspects of the institutional environment. In the following sections we first highlight the implications of the institutional environment for e-commerce. Each level of the institutional environment, macro, meso, and micro, are treated separately. Subsequently, comparisons between the meso and micro levels are made, ending with the addition of the macro level structure.
5.4.1 Institutional Effects and E-commerce

5.4.1.1 Macro
In this section we go back to the macro institutional environment and examine the institutional effects on e-commerce. The macro level institutional environment included both a general commercial environment and a commercial environment for e-commerce. The general commercial environment included the commercial legal system, banking and payments, registration and taxation, commercial organizations, trust and the press. The commercial environment for e-commerce included telecommunications and computing, ISPs and legal structure, and labor. In this section we will go back through all of these sub sections and examine which institutional factors affected electronic commerce. We also identify the mechanism by which the effect takes place, and whether the effect is positive or negative. We also consider the mode of the effect, whether it is indirect or direct. We begin by examining the general commercial environment.

General Commercial Environment
The macro institutional environment of San Diego is first characterized by the high technology economic orientation of the city’s growth. This high tech orientation creates an era of perceived benefits for firms in the San Diego area interested in engaging in electronic commerce. In terms of the commercial legal environment, one effect of the institutional structure is that related to IPR protection. The U.S. has strong enforcement of intellectual property rights, which gives firms confidence they will be able to reap profits from their investment in developing content for e-commerce.

The payment and banking sector provide confidence for firms wanting to engage in electronic commerce. First, the history of the FDIC has created an era of high levels of trust in the banking system in the U.S. Trust helps develop various payment mechanisms such as checks and bank transfers. In the city of San Diego, the city’s assistance and financing of small firms also affects the perceived benefits that firms have in investing in electronic commerce. The ability to find financing allows firms the freedom and flexibility they need to pursue new business models or develop new applications that are needed for e-commerce. Also among the payment and banking institutional characteristics, we see the variety of payment mechanisms available in the US as a positive factor for electronic commerce. With a variety of payment mechanisms firmly in place, firms can develop electronic commerce applications based on various payment schemes. Knowing that there exists stable payment mechanisms, by which firms can receive payment electronically, increases the benefits for investing in electronic commerce mechanisms and existing business relationships.

Looking to the registration and taxation components of the institutional structure, we find that the stable licensing history of firms in San Diego reduces uncertainty for firms. The stable environment allows for forward-looking planning and investment in e-commerce. Firms find benefits in registration due to the large number of small business programs that exist in the city, state and nation. Small businesses can find help in areas such as financing, management training, and technical advice.

Firms wanting to engage in electronic commerce also find low tariffs exist for goods imported into the country. Low tariffs allow firms to choose technologies, products and equipment that
meet their needs, without having to consider the national origin of these goods. The low tariffs reduce the overall costs of investing in technologies required for electronic commerce.

Examining the commercial organizations in the San Diego area, one finds they are supportive of firms’ adoption of electronic commerce. Organizations such as the Chamber of Commerce have held seminars to raise awareness of the benefits and costs of electronic commerce among their member firms. Through educating their members, business organizations reduce the uncertainty that firms entering electronic commerce will face. The uncertainties are reduced by knowing what benefits and problems they are likely to face in developing electronic commerce business models and applications.

These effects, of the general commercial environment, have been mostly indirect effects. We now turn to the commercial environment specifically for e-commerce to consider more direct implications for electronic commerce.

**Commercial environment for electronic commerce**

The first characteristic of the macro institutional environment, particularly related to electronic commerce, is the high level of PC penetration in the San Diego area. The large numbers of households with personal computers increases the perceived benefits for firms to invest in electronic commerce technologies. Although this measure focuses on households with PCs, it is easy to expect that people with personal computers in their homes also use them in their business.

In examining the environment of telecommunications in San Diego, we find both positive and negative effects for e-commerce. The slow rollout of DSL services is reducing the perceived benefits of firms in investing or beginning to engage in electronic commerce. DSL is a natural step for firms who now have dial-up connections to increase the bandwidth of their access to the Internet. The marketing of DSL service, which is exemplified by the ad “on line all the time with DSL,” highlights the benefits of DSL, particularly for small firms. Having an “always on” connection to the Internet means that the use of email and web-based technologies becomes much more convenient. Firms’ abilities to make this step toward increased reliance on their Internet connections are being hindered by the slow rollout of DSL services.

The positive effects of the telecom environment are its highly competitive market. The market for telecommunication services in San Diego is highly competitive, for both leased line and local service. The effect of leased line competition in the area has been reduced costs, particularly for ISPs. The reduced costs faced by the ISPs in turn allow for very competitive Internet access rates. Overall the competition in the market for telecom services reduces the costs that small firms face in adopting electronic commerce.

The macro institutional environment of San Diego also includes a high Internet penetration rate. This, along with high levels of PC penetration, increases the benefits that firms face in adopting electronic commerce. In addition to these benefits, San Diego is also fortunate to have a highly skilled labor force. Although highly skilled labor is hard to attract to a particular firm, firms in San Diego face better chances of attracting highly skilled workers than firms in other cities. The availability of highly skilled labor increases the perceived benefits for firms wanting to engage in electronic commerce.
<table>
<thead>
<tr>
<th>Mode</th>
<th>Institutions</th>
<th>Mechanism</th>
<th>Effect</th>
</tr>
</thead>
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<tr>
<td>Direct</td>
<td>PC penetration</td>
<td>Perceived Benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Slow DSL Rollout</td>
<td>Perceived Benefit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Telecom Competition</td>
<td>Cost</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>High Internet Penetration</td>
<td>Perceived Benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Labor</td>
<td>Perceived Benefit</td>
<td>+</td>
</tr>
<tr>
<td>Indirect</td>
<td>Growing Economy</td>
<td>PB /Uncertainty</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>High Tech Econ. Orientation</td>
<td>Perceived Benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>IPR Protection</td>
<td>Perceived Benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>History of FDIC</td>
<td>Uncertainty</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>City Assistance in Financing</td>
<td>Perceived Benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Payment Mechanisms</td>
<td>Perceived Benefit</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Stable Licensing</td>
<td>Uncertainty</td>
<td>+</td>
</tr>
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<td></td>
<td>Small Business Programs</td>
<td>Uncertainty</td>
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<td></td>
<td>Low Tariffs</td>
<td>Cost</td>
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</tr>
<tr>
<td></td>
<td>Business Organizations</td>
<td>Uncertainty</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 5.4.1.1.1: Mechanism of Effect (Macro)

5.4.1.2 Meso

The second level of the institutional structure has in this research been referred to as the meso level. The meso level includes both sectoral and industry level institutions. In this section we examine the impact of meso level institutional environment on the use of e-commerce in engineering consulting and customs brokerage. Each industry will be examined separately and we begin with engineering consulting.

**Engineering Consulting**

Engineering consulting has a variety of meso level institutional effects for e-commerce, both direct and indirect. One institutional effect on the use of e-commerce is the existence of standardized education in the engineering field. Due to the high degree of similarity in engineering curricula across the country, engineering firms were able to mitigate the effects of the tight labor market by using the Internet to search for employees. Knowing that, regardless of geographic location, potential employees receive the same general level of education increases the benefits of using the Internet to search for employees.

The second indirect institutional effect on e-commerce is the competitive nature of the engineering consulting industry. Being a competitive industry, firms were eager to meet the needs of their clients, particularly when those needs included use of the Internet or adopting Internet based technologies. After adopting a technology due to a client need, firms could subsequently use the technology as a competitive advantage in future bidding. Thus, the competitive nature of the industry allowed firms to experience benefits and the costs incurred in adoption of these technologies.

The anarchic institutional environment of the Internet itself results in increased risk for computer systems by firms adopting the Internet. Firms were concerned that further adoption of Internet based technologies would make them more vulnerable to viruses and attacks via the Internet. This naturally reduced the perceived benefits that firms got from Internet adoption.
The final institutional characteristic creating indirect effects for e-commerce, is that of engineering culture. The culture of engineering, as described by the engineers themselves, is a very conservative one. Many of the engineers felt that e-commerce would not be adopted quickly in the sector due to the conservative nature of engineers. Concern about the conservative nature of engineers results in firms being unwilling to take chances on new business models for e-commerce for fear that they will be rejected by a culture that disdains change.

In examining direct effects of the meso institutional environment on engineering consulting firms, we see the industry associations play a marginal role. Whereas general business organizations facilitated adoption of e-commerce and the Internet by their member firms, industry associations did little to support this adoption. By not addressing the issue in the industry association, firms may not perceive a general acceptance of technology within the industry.

The perceived benefits in electronic commerce were also reduced by the transmutability of documents transferred on the Internet. Industry norms are changing and transferring computer aided design drawings via the Internet is now widely accepted. Norms, and more importantly technologies, have not yet been developed to address the issue of the ability of the receiver to change such documents. The conservative nature of the engineers makes them very concerned about the potential liability they would incur by transferring documents online.

The importance of networks in engineering consulting represents another meso institutional characteristic that reduces the perceived benefits of Internet use. The importance of networks in activities such as finding new work, finding sub-contractors and finding employees reduced the benefits that the Internet presents to engineering consulting firms. It is as yet unclear whether the norm that makes networks so important will change due to the introduction of the Internet or if technologies that replicate the important characteristics of network interaction will be developed. Because of these uncertainties it is unclear how far into the processes and procedures of engineering consulting firms the Internet will be adopted.

Finally the last element of the meso institutional environment to affect engineering consulting firms, is the issue of signatures. Firms use the Internet to transfer documents up to a point where a signature is required. Organizational requirements for wet signatures reduce the usability of the Internet for such tasks.

**Customs Brokerage**

We now turn to the meso level institutional effects on e-commerce for customs brokerage. The first indirect institutional effect on e-commerce in customs brokerage is the competitive nature of the industry. To remain competitive and to better serve the customers, custom brokers have been adopting Internet based technology. Firms see appropriate use of the technology combined with customer service as a competitive advantage. Internet based technologies adopted in the industry include track and trace systems, on-line billing and payment, and simple use of email for customer updates. The competitive nature of the industry increases the perceived benefits of e-commerce.

The benefits that customs brokers perceive the Internet to have are greatly affected by the adoption of the Internet by the Port Authorities. For example, when the US Customs Service adopted its EDI system in the 1980s the customs brokers also adopted and perceived this
technology as improving their efficiency. The ease, availability of technical support, and availability of equipment that accompanies such a large-scale adoption enhances the benefits for customs brokers in adoption of the technology. Recently, the US Customs Service’s adoption of web based information provision increased the benefits of having an Internet connection for customs brokers. Brokers can now find detailed information and updated information on the US Customs Service Website. The ease with which brokers find this information makes an Internet connection a productivity enhancer.

However, the power that adoption of a technology by the US Customs Service has can also produce negative effects. A lack of uniformity in processes and procedures between ports creates uncertainty and reduces the perceived benefits to brokers of developing and adopting their own electronic commerce systems.

Customs also affects brokers indirectly through the level of duties. Reduction in duties results in customs brokers having to handle smaller amounts of money for clients. When a broker chooses to pay the duties for their client the reduction in duties means the firm has less cash at risk. This reduces overall uncertainties for the firm. Reduced duties and their enhanced positive effects merely counterbalance the uncertainty that exists in the institutional norm of brokers paying duties for their clients. This norm creates uncertainties for customs broker and ties up cash that could be used for other investments, such as investments for electronic commerce.

Meso level institutional arrangements have direct effects for customs brokers as well. The circumstance the main port in San Diego is a land border, increased the perceived benefits of the Internet for their work. The land border increases the time pressure that firms experience in processing entries, thus increasing the benefits that the Internet and automation in general represent. Another increase in the perceived benefits of the Internet resulted from efforts by value chain oriented industry associations to educate their members on the use of electronic commerce. Industry associations such as the Maquiladora Association have made use of the web and encourage their members to do the same. This is juxtaposed to the horizontal business associations who made little use of the Internet, thus creating few incentives for their member firms to do so.

Another meso level institutional characteristic affecting brokers is the licensing process. In San Diego firms were fairly confident of their ability to renew their licenses. The stability of the licensing regime decreased uncertainty for firms about their ability to operate in the future. Being confident of future operations, firms have a greater incentive to invest in Internet based technologies.

Similar to engineering consulting firms, customs brokers were greatly affected by the use of networks in finding clients and employees. This reliance on networks made the Internet ineffective for finding new clients. Brokers mostly rely on recommendations from existing clients. Although some firms may use of the Internet in searching for employees, they all felt that relying on networks was in more efficient and successful means of conducting a search.

Another direct meso level institutional effect on the use of e-commerce by customs brokers is the US Customs Service’s requirement for storage of documents by brokers. Until recently, original paper documents had to be stored. Brokers are now able to store these documents electronically by scanning. However, the lack of uniform recommendations on the nature of
this electronic storage creates bureaucratic hurdles to electronic storage. With each firm requiring individual clearance of their storage plan by Customs this reduces the perceived benefits in general of going towards more electronic delivery and production of documents.

5.4.1.3 Micro
We now turn to the micro level institutional effects for electronic commerce in the engineering consulting and customs brokerage industries. These effects are related to the relationships that firms have with both their customers and their suppliers.

In engineering consulting factors affecting the relationships and particularly Internet use of firms are as follows. First, firms perceived the Internet to be of great use when large projects were involved. The ability to use email to send updates to many people simultaneously was considered an important productivity enhancer. On large projects firms also used Websites for project management between the various members.

Firms also perceived the Internet as advantageous when dealing with the federal government. In general, the US federal government makes a great deal of information available through Websites. Engineering firms requiring knowledge about particular standards or government requirements find this information easily via the Internet. When the federal government acted as a client of an engineering firm, requirements by the federal government to move to a paperless environment increased the benefits of the Internet. The federal government also increased the perceived benefits of Internet use for engineering firms by creating web-based interfaces for submitting bills for payment. The result is that the federal government has become one of the fastest paying clients of the engineering consulting firms. The opposite was true when firms were dealing with municipal governments. Municipal governments were in general slow to adopt Internet based technologies. This reduced the relative advantages for firms using the Internet.

In terms of their relationships with their customers Internet use by engineering consulting firms varied with the technical knowledge of their customer. If the customer was Internet savvy and wanted to make use of the technology then the engineering consulting firm was willing to adopt. However, when clients were not using the Internet, engineering consulting firms were unwilling to invest in the technology.

We now turn to the micro level institutional effects for e-commerce in customs brokerage. For customs brokers benefits of the Internet increased when they entered into alliances with firms in distant geographical locations. The distance and differences in time zones increase the perceived benefits that brokers received from Internet based technologies.

Unlike engineering consulting firms, brokers’ relationships with clients tended to be over the long term. Some brokers would not push a client to adopt Internet based technologies, while other brokers perceived their relationships with their clients as more of a partnership. Those firms with this “partnership mentality” were willing to help train clients not conversant with Internet technologies on how to use email and the web. These firms were willing to make these investments so that they themselves could use the tools. However, similar to engineering consulting firms, some customs brokers blamed their lack of use of Internet-based technologies on the low level of technological sophistication of their clients.
Although the relationships between customs brokers and their clients tend to be long term relationships, there is still a degree of uncertainty in the relationship due to the lack of written contracts. Use of fixed term contracts could reduce the uncertainty that brokers face in their relationships with their clients and may encourage further training of clients by customs brokers.

In searching for employees, brokers found the Internet offered few advantages. Although the skills for customs brokers employees are fairly specific, requiring international trade experience and speaking both Spanish and English, the Internet has not yet developed appropriate employment search services for such specific work. Although firms commented that employment services such as monster.com were inexpensive, and provided wide visibility for their firms, the applicants they attracted were not suitably qualified.

<table>
<thead>
<tr>
<th>Mode</th>
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<th>Customs Brokers</th>
</tr>
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<tbody>
<tr>
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<td>Institution</td>
<td>Mechanism</td>
</tr>
<tr>
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<td>Industry Assoc.</td>
<td>Perceived Benefit</td>
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<td></td>
<td>Transmutability</td>
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<td>Signatures</td>
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<td></td>
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<td></td>
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<tr>
<td>Indirect Meso</td>
<td>Standardized Education</td>
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<td>Tech. Knowledge of Customer</td>
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</tbody>
</table>

Table 5.4.1.3.1: Mechanisms of Effect (Meso and Micro)

5.4.2 Comparisons

One of the goals of this research is to explore the various institutional levels and discover, within the context of each case, which level has the greatest impact of the potential for electronic commerce. In this section we come a step closer to realizing this goal. First, we examine the demographic characteristics of the firms in each industry. Following that,
comparisons of the institutional structures in the two industries are made. Finally, comparisons between the effects of macro level engineering and customs brokerage institutions and those at the meso and micro levels are made.

5.4.2.1 Meso and Micro Similarities

In this section we first examine the similarities and meso in micro institutional structures in the activities of engineering and customs brokerage firms. This comparison will focus on firm activities concerning their relationships with customers and suppliers, particularly as they relate to e-commerce. Subsequently, an explicit comparison of the firm’s Internet use will be made.

Firm Activities

One of the first similarities we see in firm activities is related to industry organizations. Value chain oriented industry associations are better sources of potential clients than horizontal, profession oriented associations. Industry associations, those that were profession specific, were important sources of standardized information such as standardized contracts (engineers) and Power of Attorney forms (customs brokers). However, these organizations did little to facilitate the use of electronic commerce. Although general business organizations did appear to facilitate Internet use, both customs brokers and engineers found limited usefulness in membership in these organizations.

Although the federal government licenses customs brokers and engineers are licensed by state licensing boards, there are similarities. The customs brokers take an exam and then pay a license fee for each port in which they operate. In terms of operating in several locations in different states the only requirement is a new port-level license. Engineers may or may not be able to waive the licensing exam in a state. If the exam was passed within a certain amount of time there may be a waiver, although applications to operate in a different state have been known to be rejected. Thus, in terms of their ability to operate in an inter-state manner and take advantage of the Internet’s market expansion capabilities, it is easier for customs brokers as there is no state-level examination requirement, however both groups are somewhat restricted.

Both customs brokers and engineering firms did not fear having their licenses revoked. Occurrences of license revocation are rare. Both licensing bodies do have revocation processes, although in both industries citations and fines are more likely. Both licensing bodies rely on financial measures to weed out unqualified firms, instead of relying on judgements by bureaucrats. Both the Customs Administration and the California State engineer’s licensing board posts lists of revoked licenses. Thus, there is little uncertainty in the licensing process to inhibit a firm's ability to invest in electronic commerce technologies.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Ownership</th>
<th>Age</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>Local</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Customs Brokerage</td>
<td>Local</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>National</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.4.2.1. Demographic Characteristics
A comparison of the demographics of the engineering and customs brokerage firms is shown in Table 5.5.2.1. The table shows that the ownership structure, age and size of the firms are nearly identical. Thus, differences between the sectors should be somewhat free of the effects of these variables.

Both groups faced a variety of risks. One of the greatest risks for both groups was professional liability. Of course the nature of these risks are different. Both groups also face the risk of losing trained employees. Although engineers receive some industry-specific training at university there is, similar to customs brokerage, much on-the-job training required. With a tight labor market firms face the risk of losing their investment in training their employees. Firms in both industries mentioned taking defensive measures toward protecting their employees, such as not listing names and positions on web sites, to make it harder for headhunters to reach them. This limitation however, reduces the effectiveness of Web pages to serve as an entry with for new and existing customers into the firm.

Both groups also faced risks in terms of their computer networks. Several firms from each group mentioned their dependence on their computer networks and how vulnerable they felt with that dependence. They seemed to feel their computer people (if they indeed had a ‘computer staff’) were doing a good job, but there was still a sense of vulnerability. These fears did not stop firms from adopting technology (one customs broker did have to get rid of an IT person who was holding back innovation due to very conservative attitudes concerning network security), and they continued to make investments despite these fears. Thus, the competitive nature of the business forced them to overcome their fears.

In both customs brokerage and engineering consulting finding new work relies heavily on referrals. The referrals come from a variety of sources but most often they are satisfied customers. Thus, inter-organizational and professional networks are important. Of course satisfied customers are the most valuable part of that network, but the network can involve a wide variety of people including acquaintances made at industry association meetings, former employees, and even sometimes competitors. The emphasis on the importance of networks in both sectors makes marketing fairly ineffective. Firms reported undertaking some marketing efforts, but most found them not worth the cost. Thus, the institutional norm of relying on networks to find work severely reduced the benefits the Internet presents for this aspect of the business.

In terms of negotiating and receiving payment, customs brokers and engineering consultants had similar traits. Both groups felt that if receiving payment was an issue, it was likely to be resolved in court. They reported that in the few cases firms did go to court the debtor was already in so much trouble that the payment was never received. Both groups felt staying on top of finances and reminding debtors was the most effective method of making sure payment was promptly received. This lack of reliance on the court system, particularly for resolving payment issues, eliminates one potential roadblock for market expansion. However, the mostly domestic orientation of both industries is an overriding factor in limiting the use of the Internet for market expansion activities.

In both the engineering consulting and customs brokerage industries the firms emphasized the need for constant communication and honesty to successfully manage customer relationships. In both cases firms said honestly admitting having made a mistake was important to maintaining a good relationship with the client. Timely information in terms of any mishaps
was also very important. E-mail was used to a certain extent for these purposes. However, with very sensitive issues face-to-face, or minimally phone contact, is required. In both industries the firms could not imagine operating in a completely online environment.

Internet Use

Despite the very different nature of the customs brokerage and engineering consulting industries, many similarities exist in the way firms use the Internet. Both industries felt the most important use of the Internet was email and particularly email for communicating with clients. The second most important use was as a research tool. Engineering firms could find a wide variety of information regarding design techniques as well as information necessary for specific projects such as aerial photos of a project site. The customs brokers used it to obtain information from government web sites about a variety of regulations and recent customs services rulings.

Also, both groups saw the use of communication and information technologies as a competitive advantage. Although service and quality were most important, the use of advanced technologies allowed them to differentiate themselves. In both industries web site applications were being developed to improve customer relations. In customs brokerage track and trace systems allow customers to find the status of their goods instantaneously. Similarly, engineering firms were implementing web-based project management functions that would allow a large variety of firms involved in a project to be updated by the web-based application.

A surprising similarity among the firms in the sample was a lack of discussion about new business models for e-commerce. In each industry only one firm mentioned new lines of business such as selling information or standard drawings online. Most firms were concerned with applying the technology to improve time-tested processes. In the two cases where potential new business models were discussed, there was some hesitancy and mention of the conservative nature of the industries. Neither firm was optimistic about the success of such a service.

5.4.2.2 Meso and Micro Differences

Firm Activities

The first difference between the two industries concerns industry associations. While profession-oriented associations provided engineering firms with the potential for meeting new clients, for customs brokers they did not. The ‘horizontal’ associations in engineering are more well-organized and have greater longevity than did the customs brokers association. Engineering firms, due to the greater diversity in skills and tasks they perform, are involved in a more diverse set of industry organizations.

Both groups felt the culture of their industry made it difficult to innovate. However, for the engineers this limitation seemed more focused on the personality types of engineers in general. Many firms noted that engineers are inherently resistant to change. For the customs brokers similar comments were made however the limitation in their field seems more dependent on customs and their clients. Conversely the government, when acting as a client, sometimes facilitates Internet adoption by firms. The customs brokers’ ability to innovate is limited by government technology and port practices.
Both groups face a variety of risks, the first of which is professional liability. Although both firms face professional liability the nature of the liabilities differ greatly. In engineering mistakes can be catastrophic and therefore must be dealt with differently than the customs brokers. In engineering the negotiations over liability can be extensive. The terms for handling liability are spelled out in a written contract. As a result of the level of liability, engineers are less likely to work with unfamiliar firms. The implications of these differences for e-commerce are that customs brokerage firms can more easily interact with firms on a casual basis.

One difference in the risks customs brokers and engineers face is in terms of getting paid. The engineers did not have as much trouble getting paid as did the customs brokers. In order to hedge against this risk customs brokers run credit checks on their customers before engaging in business. Thus, customs brokers could benefit from a web based authorization service. Such a service would be of little use to engineering firms.

The engineering firms faced a different sort of risk, however. The firms were in most cases delivering final drawings as electronic documents. The documents must be stamped with a PE stamp and thus become the documents from which construction is undertaken. The liability of the engineer lies in the documents. Thus, there is fear in the engineering community that these documents can be altered, potentially making them liable for a design that is not theirs. These risks were mitigated by putting labels on electronic copies that state the only legally binding design is the printed one.

There is also a difference in the groups based on the role of risk in the value of their services. To some extent each service is absorbing a certain amount of risk associated with import/export or designing a new building. But for the engineers this risk is very much secondary to the value of their design. For customs brokers, the basic information necessary to import or export is available. Despite this, trading firms continue to use brokers as a measure for absorbing risk. The implications of this difference between the two industries for electronic commerce is that theoretically customs brokers are more vulnerable to being replaced by strictly Internet-based services. This is because the lower level of risk associated with mistakes in customs brokerage would allow firms to operate with less knowledge of one another. This is less likely to occur in engineering. That stated however, customs brokers find that their customers are concerned about the risk and want assurances that their goods will be delivered on time.

A difference between the engineering firms and the customs brokers was that the engineering firms who were branch offices often had the amount of risk they could accept limited by their corporate headquarters. Although branch offices in customs brokerage were sometimes brought into corporate wide contracts, the day to day acceptance of risk was managed locally. Thus the terms with which customs brokers established new relationships was up to them. This was seldom the case for branch offices of engineering firms. The implications of these corporate structures in the two industries are more for the potential on electronic commerce rather than adoption. It appears that in the more tightly controlled branch offices of engineering firms branch level initiatives for innovation may face higher barriers. Conversely, however, the branch offices of engineering firms and customs brokers alike did enjoy technical support from their parent companies.
Parent companies also played differing roles in terms of providing work for their branch offices. For the customs brokers between 30% and 40% of their work comes from the parent company. For engineering firms little work comes from the parent. This is most likely due to the fact that projects are seldom repeated from one state to the next. Although similar projects may be performed the timing and sources of funding will vary. In terms of electronic commerce this may indicate a greater market expansion capability in the customs brokerage industry.

Internet Use

Although the two industries demonstrated many similarities in their usage of the Internet, there were also differences, which are related to inherent differences in the two industries. The first is that engineering firms were much more ambitious and successful in their use of the Internet to find employees. The second is concerned with the role of customers in firms' adoption of new technologies. Although firms in both industries were limited in their adoption to some extent by their clients, the affect was much stronger among the customs brokers. The customs brokers remain much more reliant on fax machines than do engineering firms. This is most likely due to the level of adoption of communication technologies of their clients. In customs brokerage the information being faxed back and forth could be turned into text files. However this may not be an easy task if such a change requires customer buy-in, or even worse changes in industry-wide practices. But the fact remains that the information is text based.

General Nature of the Business

A difference between engineering consulting and customs brokerage in general is in their interface with government agencies. Government agencies can be clients of engineering consulting firms. The agencies these firms tend to deal with are the military, federal, state and city governments. Typically when dealing with the military or federal government their use of the Internet is a high priority. Thus for engineering firms dealing with high levels of government, the government can be seen as a technology leader. The Navy's program for a paperless environment and the federal government's overall program to adopt electronic systems of payment for contractors are two examples of technology drivers for the firms in the sample.

For the brokers their interaction with the federal government involves various agencies such as the FDA, INS, and most important the Customs Service. The Customs Service has fallen behind in its use of communication technologies. Thus to the customs brokers the federal government is not seen as a driver in the use of communication technologies. These examples demonstrate how different branches of the same government can vary in the use of communication and information technologies. The examples also demonstrate the diversity in the roles played by the government in the private commercial sector. For the customs brokers they act as a licensor, information provider, and coordinator. For engineering consulting firms they act as information providers program directors, and clients. The implications of the government's adoption of the Internet for e-commerce will vary depending on their role.

Although both industries are involved with information intensive products the nature of these products differs greatly. The 'service' provided by engineering consulting firms is more clearly defined. The delivery of products via electronic means results in drawings being transmitted. There are certainly intermediate communications that also take place electronically but these do not seem as central to the definition of the product as is the final
design. The ‘service’ of the firm is the design. In customs brokerage, however, the service is, to some extent, this intermediate communication. Certainly the end product is customs clearance, but that has somewhat of a less tangible nature than the engineering design. It is as yet unclear how these product differences will affect the use of e-commerce in these industries.

5.4.2.3 Macro, Meso and Micro

Now that the similarities and differences between the micro and meso level institutional structures and their effects for electronic commerce have been discussed, we can now assess the relative strength of these effects vis-a-vis the macro level institutional effects.

For the engineering consulting and customs brokerage firms in San Diego the macro institutional structure creates a generally positive environment for the use of electronic commerce. This is not surprising as the US has one of the highest rates of the Internet adoption worldwide. It is interesting, however, to examine this environment and identify the key factors that create this positive environment. Some of the macro institutional factors, such as competitive Internet and telecommunications markets, have direct effects on e-commerce. Other institutional structures, such as financing for small firms, stability in licensing in these industries, and a stable banking system, have the indirect effects on the potential for e-commerce.

Although these macro institutional factors are partly responsible for a positive environment for electronic commerce to grow, meso and micro level institutional factors are also important. These factors bear greater responsibility for the actual adoption of Internet technologies by firms. Among the meso and micro level institutional effects, the use of networks in finding work, finding subcontractors, and finding employees was the most significant factor in explaining Internet use. The effect of networks on Internet use was mostly negative. In more clearly defined relationships, such as those between the firm and their client, great use of the Internet was made, particularly for communication. For tasks that required firms to go beyond this bilateral relationship networks were used. The loosely defined structure of networks, in addition to the content of the information communicated through networks, makes it difficult to replicate these functions via the Internet.

Thus, although the institutional norm of network use reduces the potential for business-to-business e-commerce for external tasks, business-to-business e-commerce appears to have great potential for processes and procedures related to the core work of firms. Certainly, tasks such as finding new work and finding new employees do not constitute the majority of the work done within a firm. Engineering consulting firms spend most of their efforts creating designs, while customs brokers spend the majority of their time clearing goods. These findings do, however, contradict the popular notion that ‘simple’ Internet to adoption such as Web sites makes use of the Internet greatest qualities.

These findings show there are both necessary and sufficient conditions for the use of electronic commerce. The proper macro institutional environment is certainly necessary. However, the correct meso and micro institutional structures are also regarded. In the case of San Diego, where the macro institutional environment or necessary conditions for electronic commerce are met, the sufficient conditions, or the meso and micro institutional environment, have greater implications for electronic commerce adoption. This can be seen in both the
positive and negative effects that customers' technological capabilities and use of networks have for e-commerce adoption among firms in the sample.

5.5 Conclusions

In this case we have explored the macro, meso, and micro institutional effects on the use of electronic commerce in a city in a developed country. For the overall research, San Diego represents a particular institutional environment, which has been described on three levels. First we examined the macro institutional environment created by national, state, and local institutions. We considered their effects for both the general commercial environment and the commercial environment for electronic commerce. Next, we examined the meso and micro institutional structures relevant for engineering consulting and customs brokerage firms in the San Diego area.

Through interviews with firms we learned the reasons for their use of the Internet in their business-to-business relations. The results show that, although the macro institutional environment shapes the conditions within which the decisions are made, the meso and micro level institutional factors were more relevant for firms' decisions. This of course demonstrates that if a positive macro institutional environment for e-commerce is in place, there is still work to be done.

This research shows the government has a multifaceted role in creating a positive environment for e-commerce. First, it has significant implications for the development of a stable macro institutional environment. This is accomplished by establishing programs for small businesses, and national level initiatives to create competition in telecommunications in Internet services markets. These results were, for the most part, expected. What was less expected was the significant role government played at the meso level. Meso level effects of government can be seen in their operations that directly affect a particular industry. This research shows that when government takes a leadership role in technology adoption, particularly where it interfaces with private firms, it has a significant impact on adoption. Conversely, where the government did not adopt technologies it hindered adoption by firms. Thus, firm-level decisions about the extent of use of business-to-business electronic commerce are strongly influenced by the meso and micro institutional environment.

For some, the findings of this case may be surprising. The reputation of the US in terms of its Internet use would lead one to believe that all firms are now making extensive use of this medium. Certainly, nearly all the firms use e-mail. However, beyond e-mail use their adoption of business-to-business e-commerce applications is low. The firms interviewed in San Diego were slow in adopting the web-based technologies that increase productivity. Firms' decisions on when to adopt and how to adopt were always made with an eye on the bottom line. Adoption for adoption sake, and even for creating a competitive advantage, were minimal.

Naturally, these findings are limited to two specific industries, and for small firms in those industries. The perception of the US as an 'Internet intensive' business environment, may be based on the actions of larger firms. Small firms have traditionally been slow to adopt information and communication technologies. Their limited budgets and life spans create challenges for adoption. Although the Internet requires less capital then say adopting EDI, making effective use of the Internet does require some investment. In these network -
dependent industries, where simple web sites have a limited value, making productivity-enhancing use of the Internet is a challenge.
Chapter 6:

Institutional Effects on E-commerce Adoption in SMEs

The Internet, and business-to-business electronic commerce in particular, present new opportunities and challenges for small firms. These opportunities and challenges are partially shaped by the institutional environment in which the firms operate. To investigate the specific mechanisms by which these institutional effects occur case studies in the US and Tanzania were performed. The case studies allow a comparison to be made of the institutional environments. In chapters four and five the macro, meso, and micro institutional environments in these two settings were described. In this chapter we begin by using these descriptions to compare the institutional environments across these two cities. Given the great disparity in economic development between the two countries, we expect to find many institutional differences. As we will see, however, many interesting similarities exist as well.

Beyond the comparison we aim to draw conclusions based on the comparison that will then provide the basis for both practical and policy orientated recommendations. The research questions addressed in this chapter are as follows:

- How do institutions impact on electronic commerce adoption by small firms?
- Which fundamental institutional elements and at what level have the greatest impact on electronic commerce adoption by small firms?
- To what extent do institutions influence the scope of opportunities electronic commerce represents to developing countries?
- How do developing/developed country institutional differences affect the prospects for electronic commerce being an equalizing force in global commerce?

Although the immediate concern of this chapter is these questions, the chapter also provides evidence which will help to identify key institutional foundations. The institutions discussed so far are intermediate institutions, i.e., observable manifestations of a limited set of key institutional foundations for well-functioning markets. The comparisons made in this chapter will help to identify the significant intermediate institutions, both at the national and industry levels, which then form a basis for analyzing, in a subsequent chapter, the implications of the key institutional foundations.

We begin with the comparison, focusing on differences at both the national and industry levels. Next we examine the similarities at the national and industry levels. Following these comparisons, we explore the potential effects these similarities and differences have on the potential and adoption of electronic commerce. We focus specifically on the implications for small firms, for service sector firms, and for business-to-business e-commerce. The chapter closes with a summary of the findings concerning the significant intermediate institutions, their levels and mode of effect. Finally, recommendations as to ways the adoption of and potential for electronic commerce can be increased are presented.

Furthermore, some institutional structures that were not considered in the analyses in Chapters 4 and 5, because they have little or no effect on electronic commerce, are addressed here. The reason for bringing them back into the analysis at this point is to consider their theoretical significance.
6.1 Institutional Comparisons

The following paragraphs examine similarities and differences found in the San Diego and Dar es Salaam cases.\textsuperscript{130} The relationships between the various factors are shown in Figure 6.1.1. There we see there are four different sets of relations: (1) between macro level institutions at the national level, (2) between both sets of industries at the meso level, and at the micro level, (3) between the customs brokers in both countries, and (4) between the engineering consultants in both countries. First the differences in all four sets of relations are examined, followed by the similarities. What may appear to be a similarity on the surface may, in terms of details and implications for e-commerce, turn out to be a difference.

![Figure 6.1.1: Relationships to be Analyzed](image)

Although Tanzania and the United States represent significantly different levels of economic development, the two cities in these countries studied here have similar general commercial institutional structures. Tanzania is an emerging capitalist economy and, as such, is in the process of strengthening its market institutions. The U.S. already has a strong network of commercial institutions. Some general similarities and differences established prior to the case study investigation are presented in Table 6.1.1.

<table>
<thead>
<tr>
<th>Similarities</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existence of contract law</td>
<td>Degree of functioning of commercial court system</td>
</tr>
<tr>
<td>Existence of commercial court system</td>
<td>Availability of services from the banking system</td>
</tr>
<tr>
<td>Existence of a banking system</td>
<td>Use of Internet services</td>
</tr>
<tr>
<td>Chamber of Commerce</td>
<td></td>
</tr>
<tr>
<td>Industry organizations</td>
<td></td>
</tr>
<tr>
<td>Private clubs</td>
<td></td>
</tr>
<tr>
<td>Licensing requirements for engineers and customs brokers</td>
<td></td>
</tr>
<tr>
<td>Business licensing requirements</td>
<td></td>
</tr>
<tr>
<td>Availability of Internet services</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.1.1: General Similarities and Differences in Tanzania and the U.S.

\textsuperscript{130} A table summarizing the similarities and differences and whether or not they had an effect on e-commerce is presented in Appendix IV.
6.1.1 National Differences: U.S. and Tanzania

Despite the similarities presented in Table 6.1.1, when it comes to the operation of institutions the cities of Dar es Salaam and San Diego have very different effective institutional environments. Here we examine these differences more closely. We begin by exploring the general commercial environment, including issues such as credit, payment, formalization of the economy, taxation, and labor. Subsequently, we examine macro institutional factors that are relevant for firms.

6.1.1.1 General Commercial Environment

The first category of national difference we explore is credit and payment mechanisms. In Dar es Salaam credit is very tight. Business loans are difficult to obtain and credit cards are not available. This lack of credit leads to reduced cash flows. This situation can partly be attributed to policies of the central bank and the local banks, as well as the poor loan repayment history of the Tanzanian people. In San Diego credit and financing are generally available.

There are great differences between the US and Tanzania in the number of payment mechanisms and their importance in the economy. For a range of reasons Tanzania has a cash-based economy. Despite attempts by the Bank of Tanzania to introduce new payment systems the primacy of cash remains. Although cash also dominates the US payment system, several other mechanisms such as credit cards and checks are frequently used.

The firm-level implications of the cash-based system in Dar es Salaam are that, even in business-to-business exchange, some payments are still made in cash, partly due to a lack of faith in the banking system. Thus, making payments in B2B e-commerce could be an issue. On a broader scale, the cash-based nature of the Tanzanian economy is even more entrenched in the consumer market, making business-to-consumer e-commerce an even bigger challenge. Americans have already demonstrated their willingness to use credit cards to make online payments.

In addition to credit and payment issues, laws such as those that protect trademarks may also be an issue for electronic commerce. Great differences exist in the protection of intellectual property rights (IPR) in the U.S. and Tanzania. The differences are the result of disparities in enforcement. Most countries have IPR protection laws, some, however, lack the means or the will to enforce them. For the firms in the sample trademark protections had few implications for their businesses. However, in broader terms the lack of trademark protections could slow down the development of e-commerce as firms with trademarked products may hesitate to make them available in the Tanzanian market, online or otherwise.

A common battle across the developing world is to reduce activity in the informal economy. In Tanzania, despite efforts to streamline the business registration process, a large number of firms remain in the informal economy. This creates problems in collecting tax revenues. Again, the differences between San Diego and Dar es Salaam are due to enforcement rather than policy. In terms of e-commerce, the overall number of firms likely to enter e-commerce is restricted to those with the legal status to do so. Thus, US firms, that are more likely to be registered, are, in turn, more likely to enter into e-commerce.
There were also differences between San Diego and Dar es Salaam in terms of the enforcement of commercial tax codes. Recent changes at the Tanzania Revenue Authority (TRA) have resulted in inconsistent enforcement of tax codes. Certainly the U.S. has also had its share of problems with enforcement, but the extent of variance in enforcement is much greater in Dar es Salaam. For firms the inconsistent enforcement of tax law creates uncertainty, which makes financial planning difficult and investment in information and communication technologies less feasible. On a broader scale, inconsistent enforcement of tax law may deter foreign investment that could help e-commerce take off.

Another form of taxation, import tariffs, raises costs and creates uncertainty that negatively affects e-commerce. In Tanzania, tariffs fluctuate with the financial needs of the government, which increases uncertainty. Furthermore, the high levels of tariffs lead to high costs for imported goods. The costs of computers, for example, are partly determined by import tariffs. In general, tariffs are much lower in the U.S. than in Tanzania. The overall effect is that in the U.S. there will be greater flows of goods because it is economical to export to the American market.

In the past few years, a global shortage of computer personnel has developed. Although managers from U.S. firms complain, Tanzanian firms face far greater scarcity. Thus, automation becomes a society-wide struggle. The skills existing in the labor market are the result of a wide variety of factors. Two of them are the lack of funds for the university and high tariffs on computers. These issues have been addressed by government policy but will not overcome the time lag in which skills reach the market.

The implications of these shortcomings are that both supply and demand-side barriers to e-commerce are created. At the firm level, a lack of computer skills reduces opportunities for bottom-up computer innovations. Innovations in ICT applications will require greater resources as firms compete for the small labor force. In addition to these firm-level, supply-side effects, demand side effects will be experienced in the lack of computer use even among the educated and wealthy segments of the population. Without a critical mass of users it will be difficult to justify both public and private investment in e-commerce. In the US this critical mass has already been formed.

Differences in the diffusion of the Internet in the U.S. and Tanzania will also be affected by differences in regulation. The market for Internet services in Tanzania is regulated while in the U.S. it is not. In Tanzania, regulation means licensing fees are added to the cost of Internet service. Furthermore, regulation influences the scope of the industry. For example, IP telephony is available in the U.S. but is prohibited in Tanzania. These differences create further cost advantages for U.S. firms. On a broader scale, the unregulated U.S. market means barriers to entry and exit are lower and result in a more competitive market.

Another advantage for U.S. e-commerce vis-a-vis Tanzania is the cost of Internet access. In the U.S. the costs of ISP and telecommunications services are significantly lower than in Tanzania. These higher costs can be partly attributed to protectionist telecommunication policies. Only in the past few years has TTCL (the dominant operator in Tanzania) faced competition, resulting in lower prices. The implications for firms and e-commerce are significant. At $50 per month, the need for justifications for having an Internet connection in Tanzania is higher. Also, high telecommunication costs will slow the transition from dial-up
to dedicated Internet access. On a society-wide scale, the formation of a critical mass that is hindered by education and computer tariffs, is further hampered by the cost of Internet access.

Rough estimates of the differences in the cost and availability of infrastructure for e-commerce are presented in Tables 6.1.1.1 and 6.1.1.2. The first table compares infrastructure at a national level and the second looks at Internet services in Dar es Salaam and San Diego. The two tables make clear that the infrastructure for e-commerce is more developed in San Diego and is also significantly cheaper.

<table>
<thead>
<tr>
<th>Country</th>
<th>Teledensity (lines per 100)</th>
<th>Internet hosts</th>
<th>Approx. monthly cost for dial-up account</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>0.33</td>
<td>536</td>
<td>$50</td>
</tr>
<tr>
<td>U.S.</td>
<td>64.37</td>
<td>141.5 (per 1,000 inhabitants)</td>
<td>$20</td>
</tr>
</tbody>
</table>

Table 6.1.1.1: E-commerce Infrastructure Tanzania versus U.S.

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
<th>Number of ISPs</th>
<th>Subscribers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dar es Salaam</td>
<td>1.50 million</td>
<td>8</td>
<td>5,000</td>
</tr>
<tr>
<td>San Diego</td>
<td>1.25 million</td>
<td>100+</td>
<td>58% of households</td>
</tr>
</tbody>
</table>

Table 6.1.1.2: E-commerce Infrastructure Dar es Salaam versus San Diego

6.1.1.2 Business Environment

The discussion now turns to issues more directly related to the business community. The first is concerned with information flows. Through interviews and observation, it was ascertained that Tanzanians rely on the daily newspaper as a source of commercial news, more so than their American counterparts. In the U.S. there is greater reliance on industry-specific news sources. Thus, information flows through the press are more centralized in Dar es Salaam than in San Diego.

A second characteristic of the commercial environment is the role of social organizations. In Dar es Salaam social clubs played a more important role in commercial life than in San Diego. Having social clubs play an important role in the commercial arena can create divisions among communities. Social clubs hinder market entry, and to some extent transparency. It is unlikely that this social aspect of business will be transferred into an electronic realm, which demonstrates the limitations of e-commerce in resolving some types of information asymmetries.

In addition to social clubs, the institutional environment also differed in terms of the roles of general business organizations, such as the Chamber of Commerce. This research shows there is much stronger support for general business organizations in San Diego versus that in Dar es Salaam. In San Diego these organizations educate members about the costs and benefits of e-commerce. Although the intention to have such programs exists in Dar es Salaam, the weak support of the organizations makes this a challenge.

Further evidence of national differences in business practices is provided by norms regarding payment. If timely payment is not received, Tanzanians are often patient and forgiving of
their debtors. Either that or they require pre-payment. For Tanzanians, these are reactions to the realities of their commercial environment. In the U.S. although both patience and pre-payment are found, the norm is billing and prompt payment. In terms of e-commerce firms must be ready to confront norms that differ from their own.

Race is not a topic often addressed when discussing e-commerce but for business-to-business e-commerce race, in some cases, is still likely to play a role. In Dar es Salaam racial issues in traditional commerce are more obvious than in the San Diego. Of course they also exist in the U.S., but they are only more subtle. In Tanzania the issue was a black/white issue. (There are also other more subtle racial issues involving Asians, however the white/black issue was most apparent.) If unwillingness of ‘white’ firms to do business with ‘black’ firms continues, it will create a hurdle for black-owned firms in e-commerce. Although some forms of e-commerce may help eliminate race issues, in business-to-business e-commerce the practices developed in traditional commerce are likely to be replicated.

Further differences between the U.S. and Tanzania can be seen in their government programs to support small businesses. As mentioned previously, San Diego firms have access to federal, state, and municipal programs, whereas in Tanzania resources are scarce. A shortage of formal programs simply makes it more difficult for small businesses to start up and stay in business. In terms of e-commerce a lack of government support may make the difference between being able to participate in e-commerce and not. The result may be that large firms develop e-commerce in a business-to-business mode, while leaving smaller firms behind. Subsequently, government programs to automate may focus on able partners resulting in programs that benefit big business.

To conclude this section on the differences in national commercial environments in Dar es Salaam and San Diego consider the following passage from a report written for U.S. businesspersons interested in starting operations in Tanzania.

"The drawback to joint venture operations are that Tanzanian business practices are radically different from those of the United States. This on occasion has led various joint venture operations into trouble as partners sometimes have difficulty bridging the business cultural gap. In addition, while joint venture partners can assist in navigating the sometimes confusing business waters of Tanzania, there have been occasional problems in the past stemming from unethical business practices by the local partner." (U.S. Embassy, 1998)

6.1.2 Industry Specific Differences

In addition to differences in the general commercial environment, differences exist between the two countries at the industry level. Here we discuss differences between Tanzanian and U.S. customs brokers and engineering consulting firms. The section begins with an examination of differences common across both industries, and then explores issues specific to customs brokerage.

The first difference is the greater number and diversity of industry organizations in the U.S. versus Tanzania. The lack of diversity of industry organizations results in fewer opportunities for fine-tuning a particular industry, through streamlining processes and standardization. Also the channels of communication between specific industries and government are limited. This difference in institutional environments is partially a consequence of the lack of specialization
in the Tanzania economy but it may also be attributed to a culture where less importance is placed on civic activity.

A second difference found between the countries is the way firms settle disputes. For example, in Dar es Salaam there was a fear of developing a negative reputation by bringing another firm to court. This is most likely driven by a cultural norm that favors harmony over justice. In the U.S. firms were generally unconcerned with reputational consequences of court action. In Dar es Salaam, inter-firm disputes were, from time to time, settled using family connections. Although use of this mechanism was infrequent, it was more frequent than in the U.S. Use of family connections for dispute resolution competes with more ‘formal’ mechanisms, such as debt collection agencies and courts. In terms of e-commerce, the ability to appeal to family members to resolve payment disputes gives an advantage to local firms and creates a minor barrier to entry for firms outside the economic system.

Another difference in norms for settling disputes concerns the use of threatening letters from lawyers. In the U.S. this mechanism for settling payment disputes was seldom used, whereas in Tanzania it was used frequently. This difference exists even though in both places going to court is reported to be a rare occurrence. This difference underscores that diversity in business customs continues to exist and is likely to be perpetuated in electronic commerce.

A dissimilarity that appeared in both customs brokerage and engineering consulting in San Diego and Dar es Salaam was that San Diegan firms are more willing to walk away from a troublesome client. Some San Diegan firms reported that even when work was difficult to find they shied away from difficult clients. It may be that San Diegan firms are simply more risk averse than firms in Dar es Salaam. The advantage for San Diegan firms is that managing relationships is less burdensome and they can spend their time focusing on more important activities. However, the willingness to take risks and work with risky or troublesome clients may become a competitive advantage for Tanzanian firms.

There was also a difference in both industries in the way firms searched for new work. In Dar es Salaam it was more likely that a new firm would actively market its services than in San Diego. New San Diegan firms relied on personal networks to get work and fewer San Diegan firms considered advertising as a means for finding new clients. This difference may simply be a difference in norms concerning market entry. It may also reflect the support of government for new firms. The greater use of marketing in Tanzania may also represent a general distrust of new firms and market conditions that make entry, in general, more difficult.

Differences also exist in motivations for using the Internet, which are secondary effects of institutional structure. Most Dar es Salaam firms in the sample adopt the Internet to reduce costs. San Diegan firms were more interested in meeting the demands of customers. Customers of the San Diegan firms are more demanding, and powerful clients, such as the government, create strong incentives for firms to adopt. The Dar es Salaam firms never mentioned customer requirements as a reason for adoption.

6.1.2.1 Customs Brokerage

The most notable difference between U.S. and Tanzanian customs brokerage industries is the level of automation. Although much can be said about the lack of recent innovation in U.S. customs, they have achieved a basic level of automation. The Tanzanian customs authority has a long way to go to achieve a similar level of automation. Generally, this creates higher
costs for Tanzanian customs brokers. The situation is mainly the responsibility of the Tanzanian government in their control of the customs process. Through this power the government shapes the technological possibilities for customs brokers. Also, as ports in Africa compete (Mombassa, Dar es Salaam, & Durban) automation affects the competitiveness of the port. Fewer goods moving through Dar es Salaam results in less work for the brokers.

Automation of the customs process also affects clients. In the customs process firms pay duties to customs, either directly or through a broker. In the U.S. firms have the possibility to transfer payments electronically through the ACH system. Such a system is not available in Tanzania. The possibility to transfer payments electronically reduces the burden on the broker who might in some cases be asked to front the duty. The process also increases the efficiency of the customs clearance process. Here again, the customs authority has the power to shape the possibilities for electronic commerce, for brokers as well as their clients.

In addition to automation, differences exist in the streamlining of the clearance process in general. Partially due to the lack of automation, the clearance process in Tanzania can take two to three days versus just hours in the U.S. In addition to the delays at Customs, goods entering Tanzania face delays with the agencies responsible for standards. The effect is that the overall import and export process is much slower in Tanzania. Whereas the lack of automation makes e-commerce challenging by creating a limit on what can be done electronically, highly bureaucratic processes make automation appear daunting. Furthermore, with such a slow process the critical nature of time, which is one benefit of Internet use and automation, is diminished. Why worry about minute to minute updates on a process that takes days?

In addition to automation and bureaucracy, there are differences between the two countries in terms of licensing. U.S. firms are much less frightened of losing their customs brokers license. Due to the history of the customs brokerage sector in Tanzania there is great uncertainty surrounding licensing. Not knowing from you one year to the next whether or not they can legally operate as brokers, firms have less incentive to invest in technology specific to the brokerage function.

A further difference between the U.S. and Tanzania was the level of activity in the customs brokers’ associations. In the U.S. the customs brokers’ association coordinates the voices of brokers in communication with the government. The organization also creates an information flow between the government and brokers, disseminating news of new practices and policies. Conversely, the Tanzanian brokers meet irregularly. The level of association activity in the U.S. versus Tanzania is partly a function of industry history, the present state of the industry, as well as industry and culture. In terms of e-commerce, an active association that promotes the use of Internet technology in its activities can increase the perceived benefit of using the Internet. Although the San Diego brokers association is just now starting to make use of the Internet, they are more likely to fill this role.

An unexpected difference was found in the benefits email adoption presents. In Tanzania if brokers adopt email it is likely their international counterparts also used it. This is not the case for Otay Mesa brokers in the US, particularly those working with Mexican firms. In this way the Tanzanian brokers had greater incentives to adopt the Internet. Thus, depending on the industry and geographical location, the innovative capacity of individual firms may be
limited by clients. On a broader scale, developed country efforts to increase e-commerce in developing countries can help developed country firms. Certainly, the San Diegan brokers would have greater incentives to use email if their Mexican clients also use email.

Differences between the Dar es Salaam and San Diegan brokers also exist with regard to personnel issues, with the Dar es Salaam brokers having more problems with their employees. The Tanzanian brokers reported that work nearly stops when they leave the office, and they occasionally experience unethical or illegal behavior. The result is that Tanzanian brokers have to allocate a greater amount of time to managing employees. When firms must allocate significant time to monitoring employees' behavior, this takes time away from other activities, including e-commerce.

These personnel problems are partially a consequence of external factors. For example, the cash based economy in Tanzania and the high duties require brokers to handle large sums of money. The high value cash transactions increase the temptation for unethical behavior, particularly given the low earnings in the society in general. Thus, comparatively, Tanzanian brokers and their employees face greater temptation than do those in the U.S. These conditions create both greater incentives and challenges for automation.

Differences in the banking systems in the two countries also affect the customs brokers. Due to a lack of availability of credit in Tanzania customs brokers sometimes finance importing activities of clients. This gives them a chance to earn money on brokerage fees. Compared to U.S. brokers, whose clients have alternative sources of finance, the Tanzanian brokers may have a lower cash flow due to these competing demands. Thus, for firm-level e-commerce money for IT investments is diverted to other uses, and this may be true for the economy in general.

6.1.2.2. Engineering Consulting

Next, the discussion turns to inter-country differences in engineering consulting. The first difference to note is the higher degree of specialization in the U.S. One effect of specialization is that the limited local market for specialized services expands the firms’ markets. In e-commerce, particularly where products can be delivered online, skills become a source of greater competitive advantage and the advantages of location are reduced. Although engineering consulting firms in both countries were able to use their web sites to find work, one Tanzanian firm was awarded a job due to its location, and a U.S. firm obtained work due to its specialized skills. The specialized skills of the U.S. firm are a more stable advantage. Locational advantages primarily exist because of local licensing requirements.

Differences in specialization were reflected in the industry associations, of which there is a far greater diversity in the States. In Tanzania all the firms belonged to the consulting engineers association, whereas in the U.S., this was too general an audience for many firms.

A third difference between Tanzania and U.S. engineering consulting firms is the way in which they were awarded contracts by government entities. The objective cost-based approach used in Tanzania is different from the qualifications based selection process used in the U.S. Tanzanian government procurement processes are, in general, unstandardized.
between ministries. However, responding to World Trade Organization pressure, the Tanzanian government is planning a review of its procurement processes.\textsuperscript{131}

Although the licensing process for engineers in Tanzania is more stable than that of the customs brokers, the engineers do face some uncertainty. This was quite different from the engineering licensing process in the States. The uncertainty in Tanzania stems from stepped up enforcement efforts. Thus, the stability gained from stricter enforcement is offset by the uncertainty of change.

The final difference between Tanzanian and U.S. firms is that Tanzanian engineering firms are less likely to find employees on the Internet. By not using the Internet for finding employees firms are less certain of the Internet skills an employee brings. Thus, the chances for a firm to bring in a ‘technology champion’ may be reduced. In general the lack of interest in finding employees on the Internet hinders the formation of a critical mass needed to get online job search services going.

\textbf{6.1.3 National Similarities: U.S. and Tanzania}

After having explored the differences in institutional environments in the U.S. and Tanzania, we now turn our attention to the similarities. First, similarities in the general commercial environment will be discussed, followed by consideration of the commercial environment for electronic commerce. There are, in general, fewer similarities than differences.

One similarity between the two countries is that, among the firms in the samples, few firms used the courts to resolve their problems. There was a common perception in both countries and in both industries that going to court is a waste of time and money. This perception is partly due to the courts but is also partly due to industry norms. Although, both countries have tried to increase accessibility to courts through alternate dispute resolution programs, there is as yet little impact on the perception of firms.

The problem is not really the cost or the process of going to court but more the inability to secure payment for plaintiffs. In many cases when clients do not pay it is because their business is headed for bankruptcy. When the client files for bankruptcy it is difficult to obtain payment, even with a judgement. The result is that firms try to work out their differences through interpersonal relationships.

Another similarity between the two countries is the existence of special programs for small and minority-owned businesses. In both countries special training programs for small firms exist, although they are more developed in the U.S. In practice there is a greater similarity between U.S. small and minority/women-owned firms and locally-owned Tanzanian. In terms of e-commerce, the special status given to those firms, provides additional incentives for them to adopt e-commerce, as firms from outside their networks will be seeking them out to fulfil requirements. These programs also help establish the Internet as a diverse and inclusive medium for business.

\textsuperscript{131} Tanzania is neither an observer to, nor signatory of, the Uruguay Round Plurilateral Agreement on Government Procurement. Except for procurement regulations imposed as part of aid and loans provided by international financial institutions, Tanzania’s own procurement procedures are a confusing agglomeration of memoranda and other understandings that vary from ministry to ministry; procurement issues are under review and new legislation may be forthcoming (WTO, 2000).
In both San Diego and Dar es Salaam the markets for Internet access services are competitive. This results in relatively low prices, intense marketing campaigns, and greater choice for consumers of these services. The marketing efforts by ISPs help firms adopt Internet technologies, which, in turn, creates demand for e-commerce.

Although both places have created competitive markets for Internet services, both also have yet to fully implement digital signature legislation. As the case studies demonstrate, firms are at a roadblock in terms of accomplishing tasks online due to the lack of acceptance of digital signatures. This is not to say that as soon as digital signature legislation is passed firms will immediately adopt online contracts. Digital signature legislation is only the first step in changing a century of business tradition in which wet signatures have been given the greatest level of authority and authenticity.

6.1.4 Industry Specific Similarities

In addition to similarities in their general commercial environments, San Diego and Dar es Salaam also have similarities in their customs brokerage and engineering consulting industries. In this section we cover three types of similarities: international similarities between the industries, international similarities in customs brokerage, and international similarities in engineering consulting. We begin by examining the similarities between the industries.

The first similarity in U.S. and Tanzanian commercial environments is that contract law and contracts themselves have very little impact on the day-to-day operations of firms in both industries. Although a contract serves to spell out terms of an agreement between firms, it can never be specific enough to cover all the details. When problems arise firms find it is easier to work out the problems through interpersonal business relations. They rarely refer to clauses in a contract. This may be the case in all industries, in firms large and small.

A second similarity is that the use of contracts varied by industry. Although firms may not refer to contracts in their operations, in both countries the engineering consulting firms used contracts much more often than did the customs brokers. This demonstrates the importance of industry characteristics versus national characteristics in shaping the use of contracts. Even in two places as diverse as Tanzania and the U.S., these industry level similarities can be found.

The San Diego and Dar es Salaam cases demonstrate that many similarities exist in the roles played by industry associations. First, in both cases, industry associations are more highly valued by firms than general business organizations. This could be an artifact of the industries used in this analysis. Generalized services, as opposed to specialized services, may have greater success with general commercial organizations. The implications for e-commerce are that although general commercial organizations can raise awareness about e-commerce, it is more likely that the 'nuts and bolts' issues particular to each industry will be worked out through industry associations and, since those associations are valued, it is more likely to occur.

There are also similarities in the industry associations' influence on their members' e-commerce adoption. Although these organizations are more important than the commercial organizations, they do little to influence the firms' adoption of the Internet. Industry
associations have the power to prioritize issues or set agendas for firms, and, hence, could encourage Internet use. Their lack of interest in e-commerce may be due to the fact that technology can serve as a competitive advantage for firms, and firms are unwilling to take up the issue in a forum with their competitors.

Although industry associations do little to further the diffusion of e-commerce, they do serve as important facilitators of information flows both between firms and government and the firms themselves. The associations create firm-government information flows as part of their missions. The firm-to-firm information flows are less formal and industry associations serve as mechanisms for the development of inter-firm networks. As industry associations begin to adopt ICTs some of this information will begin to flow in electronic media establishing electronic firm-government and firm-firm links.\textsuperscript{132}

A similarity between the two cities, also related to industry associations, is their role in establishing industry standards. One standard industry associations create are those for behavior, communicated through voluntary codes of conduct. Of course for many associations the enforcement of these norms, most typically through informal sanctions of reputation, is difficult. In the future the use of global level industry associations and their ability to establish global codes of conduct could be an important means of standardizing practices within industries around the world. In both countries, industry associations also played a role in establishing standard contracts. This demonstrates their ability to shape and streamline processes, as well as create expectations of ethical behavior, both of which are potentially powerful tools for electronic commerce.

In both the U.S. and Tanzania there were two types of industry organizations, horizontal and vertical. In both countries, the engineering consulting firms found greater value in their horizontal industry associations than did the customs brokers. This is due to their industry structure in which peers provide work for one another. In both countries it was also found that if e-commerce was promoted in these groups, it was more likely promoted in vertical organizations. The vertical industry associations are more concerned with sector-wide innovation, and their members are less likely to be competitors. The implications for e-commerce are that different types of industry organizations can play different roles in the diffusion of e-commerce.

Also in both countries and in both industries personal networks are very important for a variety of firm functions such as finding work, finding subcontractors, and finding employees. Thus, national context had little impact. In this aspect of the business one might expect this to be more common in a less economically developed country, where firms are less comfortable with impersonalized exchange. As this research shows, in these industries the role of personal networks is similar in both economies.

\textsuperscript{132} It remains to be seen how open these electronic ties will be. Formerly, the information that flowed through these links was limited to members of the organization due to information flows that occurred on paper. However, if organizations choose to post the information on a web site, as opposed to sending it out through dedicated email lists, the information could become available to a much wider audience. This information, which in some sense represents the tacit knowledge of working in a particular industry in a particular geographic area, could help lower barriers to entry.
6.1.4.1 Customs Brokers

In addition to general similarities between the U.S. and Tanzania customs brokerage and engineering consulting industries, there were also similarities in the specific industries themselves. First, the customs brokers will be examined. Considering the similarities in this industry first we see that both samples reflected general industry trends. In the samples from both countries there was one brokerage firm that had previously been an in-house broker for a large multinational firm. The multinational had spun off its brokerage functions and created a subsidiary in which the brokers would offer services to outside clients.

A further similarity related to ownership was that in both countries branch office customs brokers obtained business from the parent. This was not so much the case for the engineering firms and demonstrates how parent-branch office relations differ by industry.

Also, in both countries, customs brokers use agents or have other offices. This creates firm networks that are flexible in geographic scope. Firms use email to communicate internally and this internal communication serves as a good testing ground for automation and e-commerce. The distributed nature of the industry may make it well prepared for global e-commerce.

The customs brokers in both the U.S. and Tanzania demonstrated little product or industry specialization in their brokerage services. The Tanzanian brokers were more involved with forwarding but this was really a form of diversification. This emphasis on remaining diversified across products and industries of import/export is a strategy firms adopt to insulate themselves from fluctuations in supply and demand of particular products. This reflects the true value of a broker: not knowledge of how to process a particular good through customs, but knowledge of the process itself.

A similarity between the U.S. and Tanzanian brokers is their concern over receiving payment. For both groups getting paid was a great source of uncertainty. The Tanzanian brokers often require prepayment to handle this uncertainty and, although American firms also use this mechanism, it is to a lesser extent. The issue of nonpayment in customs brokerage exemplifies industry level differences, particularly those seen in both countries. In both countries, although brokers have less risk than do the engineers, they suffer from this uncertainty of payment. It may be a function of the clientele of the industry or the power between the players in it. It may also be due to the competitive nature of the industry and the certainty of the importer/exporter that they would be able to find a new provider of the service.

6.1.4.2 Engineering Consulting

There were also industry level similarities between the U.S. and Tanzanian engineering firms. In both cities, engineering contracts for larger firms are usually contentious due to indemnity clauses. When branch offices are involved the parent company will usually sets limits. The friction of negotiating these contracts is caused by a lack of an accepted standard in terms of the amount of liability clients should accept. In California, attempts to standardize have been made. However, local governments have the right to establish their own liability requirements and they exercise this right.

Also in both countries, the majority of engineering firms have confidence in the contract awarding process. This creates trust and reduces transaction costs. In terms of e-commerce
the trust in the system creates a solid base from which online contract bidding could be launched.

The confidence in the system was fairly uniform and although managers do not always win the work they feel they should, they do believe the process is fair. There was, however, in each sample, one manager of a firm that questioned the process. Both the Tanzanian firm (an expatriate operating a multinational) and the San Diegan firm (a woman-owned firm) who questioned the process and were concerned about transparency. They were skeptical about the criteria by which they were being evaluated and felt that other firms are given or have inherent advantages. This skepticism may have been due to their position as ‘outsiders’ in the industry. As ‘outsiders,’ when the process is unclear and the results are unsatisfactory, it is possible to conclude that ‘insiders’ (indigenous Tanzanians or non-minority owned firms) are given different treatment. When insiders are faced with undesirable outcomes they assumed the process was fair and that it was their turn to lose.

A further commonality between the countries is that engineering firms have both government and private clients. This is due to the industry structure and the type of services they provide. In this way firms are exposed to e-commerce developments in both the private and public sector. In instances where public sector leadership is required to change established practices the firms will have this exposure. In other instances where innovation requires risk taking and investment that may not be possible in the public realm the firms are also exposed to this.

Similarities were also found in that use of contracts and risk preferences varied by firm size/age. We say ‘size/age’ because interviewees referred to size, although this actually may be more a function of age. The two factors are often positively correlated. However, there were a few firms in the sample that have been around for several years and are small. Smaller firms are less likely to use contracts and take greater risks. Thus, industry norms concerning contracts and risk taking are not uniformly accepted. On the one hand, their willingness to take risks may allow small firms to reap the benefits of Internet-based commerce. On the other hand, the limited mechanisms of recourse in e-commerce could harm those who take such risks.

Also in both countries, engineering firms had very few problems with employees. This may be a function of conservative hiring practices that are part of the industry culture. Whatever its cause, it helps to create stability in the industry.

### 6.2 Implications for E-commerce

As the above demonstrates there are a wide variety of similarities and differences in the various levels of the institutional environment. These similarities and differences are of interest in their own right as previous institutional research has paid only limited attention to the various levels at which the institutions act (providing norms, sanctions, expectations for behavior). These findings are also of interest insofar as they define the potential for electronic commerce. We must also now consider more explicitly to whom these findings apply. In the following sections we examine the most profound of the institutional implications for e-commerce. Subsequently, we examine the specific categories of delimiting factors to which this research applies; namely the service sector, small-to-medium sized enterprises, and B2B e-commerce.
6.2.1 Institutional Levels

The previous sections examined the differences and similarities in institutions at the macro, meso, and micro levels for two industries in the U.S. and Tanzania. Examining the differences and similarities separately allows us to now specify the impact of the institutions. There are several ways these affects occur. Institutional differences may explain differences in e-commerce potential or adoption. The same is true for similarities. The effects may also come from various institutional levels. We begin by exploring the similarities and differences that affect e-commerce at the macro institutional level.

6.2.1.1 Macro Level Institutional Effects

There are many macro institutional differences that affect e-commerce and here we focus only on the most significant of those considered in the previous sections. First and foremost, the differences in the banking sector will have profound effects on the development of e-commerce, particularly consumer-oriented e-commerce, in Tanzania, as compared with the U.S. Many business persons in Dar es Salaam concerned with the sector see this as the biggest hurdle for Tanzania in terms of its potential for e-commerce. The differences included under the 'banking' rubric are payment mechanisms and access to credit. Although B2C e-commerce is directly affected, there are indirect effects, particularly related to the availability of credit, for B2C e-commerce.

The second institutional difference is in the telecommunication and Internet regulatory environment. The market for data communication services in San Diego is more competitive, which is one reason for its lower prices. Internet services are also less expensive in the U.S. Unlike Tanzanian firms, U.S. ISPs are free of licensing fees and other regulatory burdens that increase costs.

If we consider similarities in the macro institutional environment of the two countries that are relevant for e-commerce, the most significant of them is the competition in the market for Internet services. People unfamiliar with Tanzania and perhaps African economies in general may be surprised at the level of Internet usage described in this research. The robust Internet services market in Dar es Salaam is an important driving force in the adoption of the Internet and the development of e-commerce. Competition has led to access prices that are below the African average. More importantly, competition requires ISPs to go out and find new clients, convincing firms of the benefits of using email and the web.

Efforts to increase the use of mediation in the legal systems in both countries may indicate that this form of dispute resolution will be easily adopted for global e-commerce. Thus mediation, independent of national law, could be a solution to the problem of a global legal framework. However, as the evidence from the U.S. and Tanzania clearly shows, dispute resolution for e-commerce will also have to address the issue of payment.

Both countries also have yet to fully implement digital signatures. When digital signatures are fully accepted, both countries will have a bottleneck removed, one which is particularly relevant for business-to-business e-commerce. Although both countries have yet to fully implement these processes, the U.S. is a little bit ahead and will likely adjust more quickly, creating yet another difference in the institutional environment.
6.2.1.2 Meso and Micro Level Institutional Effects

The case studies presented thus far demonstrate that similarities and differences within and across industries exist. In fact, the similarity in the use of inter-organizational and professional networks for a variety of firm processes in both countries and both countries' firms has the most significant impact on firm use of e-commerce in the samples considered here. In terms of bottlenecks to Internet use, these networks present the most significant barrier to e-commerce in small, service sector firms. This interpretation of the impact of interorganizational networks could be unpacked further. The reliance on inter-organizational networks continues due to the benefits that qualification by a known entity provide. The use of these networks also includes aspects of gift exchange, that 'giving' and 'receiving' through networks triggers norms of reciprocity that may benefit the firm in the future.

Similarities in institutional structures also explain potentially positive effects for e-commerce. The firms were unanimous in their perceptions of contracts as useless in the day-to-day workings of the firms. When problems arise contracts are rarely consulted. The contract represents an agreement of terms for the worst-case scenario, which seldom occurs. This lack of reliance on contracts for a firm's day-to-day activities may allow B2B e-commerce to develop outside the structure of a uniform commercial legal environment.

We also found the use of contracts varies by industry. Thus, service sector industries where use of formal written contracts is uncommon, for example customs brokerage, may be better suited for e-commerce. Furthermore, use of written contracts can be seen as a reflection of the structure and level of risk in the industry, which may also have significant consequences for the potential of e-commerce in an industry.

Institutional differences also have effects for e-commerce. In both industries in Dar es Salaam firms rarely cited clients as a reason to adopt the Internet, whereas in San Diego in both industries clients were cited as both motivators and barriers to adoption. The greatest incentive for adoption was provided by the demands of powerful clients. Thus, in its role as a client, the government provided an important incentive for firm adoption.

The implication for firm level e-commerce is that there are fewer possibilities for developing e-commerce best practices for a particular industry. In society as a whole it will most likely mean that standard e-commerce practices, if they are developed by industry organizations, will come from countries with more specialized economics and hence are unlikely to take into account local factors. This, up to now, a theoretical argument as industry-specific organizations appear to be doing little to encourage e-commerce adoption among their member firm.

At the meso level there were also similarities and differences in the customs brokerage industry. Within this industry one of the strongest institutional effects shaping the potential of e-commerce is the level of automation in the customs clearance process, a responsibility of the government. This institutional effect was witnessed in both countries. The difference between the level of automation in customs clearance between the U.S. and Tanzania is the most important explanatory factor for the differences in the potential for e-commerce in this industry in the two countries.

The second most important institutional factor is differences in the licensing process. Tanzania's customs brokerage industry is going through a turbulent phase, creating high levels
of uncertainty in the sector. This uncertainty, which is not present in the San Diego environment, is expected to result in differences in the uptake of e-commerce.

Institutional similarities and differences also exist in the engineering consulting sector. Similar to customs brokerage, the Tanzanian engineers face greater uncertainty in their licensing process, compared to U.S. firms. This uncertainty makes planning for ICT investments a relatively more difficult task. A second difference is that in San Diego the market for engineering services, particularly among the smaller firms, is more specialized. This difference may eventually make the Internet and its market expansion capabilities more attractive to these firms, creating greater incentives for adoption in the San Diego market.

Institutional similarities in engineering consulting between the two countries include the following. Although most engineering firms used written contracts, it was found that in both countries the younger firms were less strict about this requirement. Younger engineering firms were also willing to take on greater levels of liability and risk than their larger counterparts. Thus, the national context was less important than the industry-specific context in determining the risk preferences of engineering consulting firms. In terms of e-commerce, it appears the Internet and the use of e-commerce will, in general, be more attractive to younger engineering firms. This age related difference was not found in customs brokerage.

6.2.1.3. Findings
The above sections explicate the consequences of institutional assets for e-commerce. Both macro and meso level institutions will influence the potential for e-commerce. In the industries analyzed the meso level effects had greater implications for adoption than did the macro level effects. Macro level effects are more associated with determining the broader potential for e-commerce.

The finding that institutional effects occur at different levels has several consequences. First, it identifies the need for research to focus on effects attributed to different institutional levels. Much of the institutional research up to this time focuses on macro level institutional effects, thus greater emphasis on meso and micro level effects is now warranted.

Second, the implication of focusing on meso level effects is that they may be easier to act upon. Traditional macro level institutional research typically results in policy recommendations that may take years to implement. These recommendations are valuable and inform policy makers. The value of simultaneously addressing meso level effects is that in some cases changes can occur more quickly. The effect of the changes will be more limited in scope, and hence the number of beneficiaries will be less. The advantage is, however, problems can be addressed in parallel with meso level changes moving forward while larger changes are being planned.

Third, research on the multiple levels of an institutional environment will provide understanding of the interrelated effects that the multiple levels have on organizations. After all, organizations create strategies, plan investments, and perform a wide variety of tasks that require simultaneous consideration of factors in their micro, meso, and macro institutional environment.

Now that we have explored the effects of the various institutional levels, we can consider the findings from this research that are more concerned with popular notions of e-commerce, as
well as the particular characteristics of the limited scope of firms examined here. In the next sections we consider what this research can add to the study and practices of the service sector, small firms, and business-to-business e-commerce.

6.2.2 Service Sectors

As you will recall from Chapter 2, we describe a particular set of services as knowledge intensive services (KIS), and here we deal with a subset referred to as KI-business services. This research has identified three key relationships that apply to all KI-business service firms, as well as issues relevant for developing countries. The first relationship involves the interaction between institutional structure and product characteristics in determining the potential for e-commerce. Second, this interaction can limit the applicability of e-commerce to various steps in a transaction. Third, institutional factors can limit the export potential of a service product. We first consider the general findings and thus consider the characteristics of KIS products.

KIS products contain a high degree of tacit knowledge, and the real products offered are specialized expert knowledge, research and development ability, and problem solving know-how. In engineering consulting the value is based more on specialized expert knowledge, whereas in customs brokerage problem solving is more highly valued. Since KIS production involves a high degree of customer interaction, the success of production relies to some extent on the customer (Windrum, 1999). This level of interaction also affects the choice of technology used in the production process, as this research shows. Thus, in engineering consulting and customs brokerage, and possibly KIS services in general, the level of e-commerce adoption will partly depend on clients.

Other general characteristics of services include intangibility, inseparability of production and consumption, heterogeneity, and perishability. These characteristics both help and hinder the ability to sell, produce, and deliver products online. On the surface the intangibility, heterogeneity and perishability all favor e-commerce. The inseparability of production and consumption to some extent discourages e-commerce in this sector, and in engineering consulting and customs brokerage is further restricted by local licensing requirements. Secondary effects, such as intangibility requiring personal recommendations, also add to the factors determining e-commerce use.

The results of this research show that in engineering consulting and customs brokerage the theoretical benefits of tangibility are mitigated by these other objective product characteristics, as well as institutional effects. For example, the need for a recommendation when choosing service provider is a result of the product’s characteristics. Consequently, this recommendation is found through inter-organizational networks and thus, is an institutional effect. Likewise, the importance of clients in the production process is a product characteristic, but the importance of that client in the firm’s network and how this position affects e-commerce adoption is an institutional factor.

We also find that, in the case of KI-business services, e-commerce may be more or less successful in various stages of a transaction. The requirement for recommendations creates challenges for selling products online, while intangibility creates advantages for online production and delivery. Hence, to find advantages in Internet use firms are likely to isolate specific parts of their business for e-commerce.
The interaction between product characteristics and institutional factors also results in limitations to export for some services. Theoretically, engineering consulting and customs brokerage could be consider likely candidates for export. They are services required in all countries, and the final product is in digital form. Other key factors to high export potential for services are a high level of standardization, such as exists in software design; easily testable products, again a benefit of software; and clear quality guidelines, which is often a function of standardization. Despite theoretical justifications for high expert potential local licensing requirements hinder the ability of firms to deliver products abroad.

In addition to these more general relationships, there are also issues specific to developing countries. Recent research in Botswana found that indeed services are different from other sectors and these differences can be used in development planning. The research by Duncombe & Heeks (1999) studied firm-level adoption of ICTs based on their information needs. They found the information needs and hence the use of ICTs varied among industries. Their conclusions are that "the very diverse nature of the enterprises surveyed suggests the need for a differentiated development approach. One obvious differentiation would be between the needs of service, manufacturing export, and non-exporting manufacturing enterprises." (Duncombe & Heeks, 1999).

One reason for this differentiation is that service industries tend to use computers more than other sectors. This difference can be leveraged. Less developed country governments who could work with this sector to develop further local computer skills. Furthermore governments can examine critical interfaces where they create bottlenecks to Internet use for service sector firms. These critical interfaces can then become a priority for automation programs. Customs clearance is one example of a critical interface.

For developing countries e-commerce represents two possibilities. The first, and most talked about perspective, is as a means of establishing new industries to increase exports. Using e-commerce to export services is one way developing countries can take advantage of the Internet and globalization. Software development and data entry are the classic examples of services now being exported from developing countries.

The second, and less discussed use, is to increase efficiency and overcome obstacles in existing domestic and internationally oriented businesses. This perspective might not have the macroeconomic impact of new export-oriented industries, however it does help build indigenous capabilities without the need to attract large quantities of investment. These two possibilities need not compete with one another and the ideal strategy would be to pursue both types of e-commerce simultaneously.

One reason to pursue both simultaneously is this research shows that in some small KI-business services there is little export orientation. The reasons may be temporary, based on geographical limitations created by licensing and required knowledge of local policies, but they do exist. Interestingly, this geographical limitation exists even in industries, engineering consulting and customs brokerage, where trends toward international standardization are on-going. Engineering consulting and customs brokerage are two examples. Thus, policies that focus exclusively on export oriented services would miss a valuable opportunity to further develop e-commerce in these sectors.
The use of e-commerce in small KI-business service firms will be greatly facilitated by two government policies. The first, which applies not only to this sector or to small firms, is digital signature legislation. The second is concerned with licensing. By, becoming a party to mutual recognition agreements in which licensing, accreditation, and certification of service providers are internationally recognized may allow us some domestic services providers to begin exporting.

In conclusion, we have found that assumptions about the advantages of e-commerce that are based solely on product characteristics are often too abstract. Consideration of industry level factors, in combination with product characteristics, provides a more realistic assessment of the potential of e-commerce. For example, we found upon closer examination the positive implication of tangibility is mitigated by a variety of institutional factors. These factors are namely licensing requirements, which limit the market expansion capabilities of firms; the risk structure within the industry that determines issues such as the reliance on formal written contracts; the interaction with powerful players in the industry who can direct investment in ICT and e-commerce; and issues concerning industry culture that influence general levels of innovativeness. Thus, in considering the potential for e-commerce in the services sector, macro and more importantly meso level institutional factors should be considered.

6.2.3 E-commerce in SMEs

This research is fundamentally about institutions and small firms. In the discussion of the implications for services it is obvious findings about the limited export potential do not apply to large multinationals who can subcontract work to locals thereby circumventing these issues are relevant, however, to small firms. In many ways the general use of the Internet and the innovative activities of the firms in the samples are characteristic of small firms.

Characteristics of small firms provide both advantages and disadvantages for e-commerce. Disadvantages include those faced in traditional commerce, such as cash flow, longevity, indebtedness, promotion, and finding staff. Advantages include flexibility, innovativeness, and flatter hierarchies. In terms of ICT adoption small firms have traditionally lagged their larger counterparts in adoption due to limitations in financial and technical resources. They are also typically less aware of how ICTs can be applied to solve their problems.

Research on EDI adoption among small firms found that pressure from partners was a key factor in the decision to adopt (Iacovous et al., 1995). The less expensive nature of the Internet was expected to reduce the importance of this factor. This research has found, however, that pressure from important clients still remains a significant factor in adoption. Conversely, the lack of adoption by clients also serves as a disincentive for adoption.

Concerning e-commerce and SMEs this research has focused on what Chappell & Feindt (1999) referred to as ‘channel experimenters’: firms who use the Internet to augment traditional business practices. Similar to their findings, the findings here are that most firms can attribute only a very small part of their revenues to e-commerce activities. Firms typically view e-commerce as a productivity-enhancing tool, or in the case of the Dar es Salaam firms, as a means to reduce the cost of telephone services.

The possible disadvantage of e-commerce to SMEs, that large firms will be able to enter their markets, are unsubstantiated in the samples in this research. Institutional structures, such as
local licensing requirements and localized processes, have sheltered firms from this danger. This research also shows that the expected advantages of e-commerce to small firms in general, which are access to new markets, new ways of marketing, and improved customer relations, are only partially applicable. For the small KI business service firms studied here access to new markets was not a substantial benefit of Internet use. The benefits are seen more in production processes and customer relations.

Other findings of this research, many of which are expected to have indirect effects on e-commerce, are also typical of small firms. In Dar es Salaam payment was an economy-wide problem. In San Diego this was a problem limited to customs brokers. In their research on small firms in the UK, Clark et al. (1995) found that late payment is a survival strategy of small firms. Naturally, other small firms who are their clients receive payment late. Thus, cultural differences related to payment are more affiliated with firm size and industry, rather than national context. Other factors expected to be due to national context such as embarrassment as a means of resolving payment issues may also be related to size. As the Clark et al. study found:

"Few firms reported that they were using or investigating technology-based solutions to their business problems. An interesting exception was the use of the fax as a means of embarrassing debtors and so hastening payment. Several entrepreneurs explained that if customers fail to pay by the prescribed date they are sent a fax every day asking for a cheque. In most offices the fax machine is open to general use by staff who find it difficult to ignore continual demands for money. In most small businesses the proprietor does not want employees to know that the firm regularly defaults on payment." (Clark et al., 1995, p.178)

Thus, small firms find ways of using technology that may be unexpected. These applications, although at first appearing to have a cultural context, appear to be common to small firms.

Differences between the developed and developing country SMEs in terms of Internet use were indeed linked to the availability of information on the web, as predicted by Duncombe and Heeks' (1999) work in Botswana. The firms in San Diego were able to use the Internet as a research tool, which is becoming nearly as important to some as email. In Dar es Salaam the primary use is for email. Speculation that developing country SMEs could be attracted to e-commerce by intermediaries who can pool demand for various services are realistic. However, expectations should be mitigated by our findings of lower levels of cooperation and lower levels of centralized activities through organizations such as general business associations (Chamber of Commerce) and by industry-specific associations.

In conclusion this research has found that SMEs, although adopting the Internet, are slow to integrate it into firm processes. This is as true in San Diego as in Dar es Salaam. This is demonstrated by small differences in Internet use observed in the two countries. Programs targeting Internet use in SMEs may well find industry associations offer a central entity where process issues can be reserved. However those organizations have little experience with such activities so such attempts may be regarded as experiments.

6.2.4 B2B E-commerce

As a study of e-commerce, this research addresses only a very limited scope: business-to-business e-commerce in small, knowledge intensive business services. Much of the current discussion concerning B2B e-commerce focuses on the market expansion capabilities of the medium and assume a high level of existing IT systems and skills. The focus on small firms
in this research, and their typically less-than-average IT sophistication, broadens the scope of B2B e-commerce research.

First, as reiterated many times in this work, B2B e-commerce for small KI business service firms is less concerned with market expansion. The firms in the sample prefer to rely on inter-organizational networks to find new work and are skeptical about the capabilities of e-commerce for this aspect of their business. Even the development of closed online markets or 'trading communities' (as opposed to more open 'exchanges'), seems unlikely in the knowledge-intensive business services sector.

This research did find isolated cases where the sharing of information, common in B2B e-commerce exchange, is a concern. In project management web sites, for example, even password protection does not change the fact that information presented there is available to all project members. Outright policies limiting information to particular parties may be seen as uncooperative. In this way firms are slightly more exposed in using e-commerce.

Examining the differences in B2B and B2C e-commerce listed by Huff et al. (2000) we found two are relevant for the firms in the sample, while the others appear to be more relevant for larger firms. Firms consulted in this research do use price differentiation and thus are unwilling to post prices on web sites. The use of traditional payment systems was also found. Thus, B2B e-commerce systems for small KI-business service firms should be developed with these issues in mind. These differences, as expected, also create different policy implications. Although in Tanzania lack of access to credit cards is considered the biggest hurdle to e-commerce, none of the KI business service firms received payment by this mechanism. Thus the lack of credit cards is more an issue for their purchasing activities, rather than being an issue for them receiving online payment. As e-commerce in this sector is focused on business processes, the most significant policy is digital signature legislation.

In B2B e-commerce, issues such as IPR protections are important, however firms have other means of working out these difficulties. One San Diegan firm was involved in the design of very sophisticated software. They resolve the IPR problem simply in the specialized nature of their design. Since B2B is often more specialized than B2C this can help firms circumvent IPR problems.

This research shows that in term of potential for e-commerce in developing countries, if Tanzania is considered a representative case, the potential for B2B e-commerce is greater than that for B2C. All of firms interviewed use computers and have Internet connections. Firms already use email and transfer documents online. Greater use of e-commerce appears to be blocked primarily by the firms themselves. Greater levels of cooperation and coordination could lead to simple email-based billing processes using 'pdf' files, web sites for project management, and higher levels of automation in general. Granted there are barriers such as higher costs of equipment and unreliable power supplies. However, firms have already overcome these barriers, at least to a limited extent. For small firms we have seen that many of the challenges such as cash flow exist everywhere. Thus, small firms in developing countries could try to match or exceed their developed country counterparts in use of e-commerce.
6.3 Conclusions

The goal of this research is to explore the ways in which institutions shape the potential for e-commerce in developing countries. Having made comparisons of the institutional structure in San Diego and Dar es Salaam, we are now prepared to draw conclusions as to the difference institutional structure makes. In coming to these conclusions we first summarize the findings of the significance of institutions in general, and then the findings concerning popular notions of e-commerce are reviewed. We then sketch some alternative explanations for the evidence of the state and potential for e-commerce. Finally, recommendations for the specific industries and policy makers are presented.

6.3.1 Significance of Institutions

With just a cursory glance at the macro-institutional environment of the U.S. and Tanzania, one can quickly conclude the U.S. environment is more favorable for e-commerce. Although such a conclusion may have implications for research examining the global spread of e-commerce, it is not the goal of this research. The goal here is to shed light on which institutional structures matter most for e-commerce. We seek to identify targeted areas for institutional change that will help firms in developing countries take advantage of the Internet. Furthermore, although the Internet can not overcome many of the dysfunctional institutional structures that have hindered economic development in the past, it may, in insolated cases, help firms circumvent these structures.

To achieve these goals we have examined the importance of both macro and meso institutional structures. Comparing two industries in each country has allowed us to draw the following conclusions. First, we have found the importance of networks is pervasive in the services industries, and is not just merely an industry-specific phenomenon. Second, we have identified the importance of customers in the adoption decisions of firms. When these customers are important members of a firm’s network, such as the government, the impetus for adoption is greater. The government also plays a role in adoption at critical interfaces between the government and industry. In service sectors that require licensing, the licensing process acts simultaneously to limit the scope of the market for firms, as well as provide them protection from competition by firms outside the licensing the area. We have also seen that the role of the industry organizations varies across industries, and that their effect on e-commerce is less than expected.

In terms of macro-institutional structures we found significant differences between the two countries. The differences are reflected in the potential for e-commerce in each country. The potential for e-commerce in Tanzania is expected to be significantly less than the U.S. due to differences in the banking sector, in taxation, tariffs, and in regulation in the telecom and Internet services sectors.

In general we also found that macro institutional structures have significant implications for the potential of e-commerce. Institutional differences in traditional commerce will simply be mirrored in electronic commerce. These differences, however, had little effect on the adoption decisions of firms. In terms of firm-level adoption, meso-level institutional structures were of the utmost importance, while macro-level similarities had an indirect effect.
6.3.2 Popular Notions of E-commerce

In addition to results concerning institutional effects, this research has provided insights on some popular notions concerning B2B e-commerce in the services sector. There are many expectations concerning the ways in which these firms will make use of electronic commerce, as well as how electronic commerce will affect the markets of these firms. One finding of this research is that objective characteristics of products such as tangibility can not, in and of themselves, determine the potential for electronic commerce. Product characteristics, mitigated by institutional structures, provide more realistic expectations for e-commerce in particular sectors.

This research has also found that although small firms may be taking Internet connections, they have been slow to integrate the full capabilities of the medium into their work processes. Additionally, network members and business partners still play a role in adoption decisions.

In terms of B2B e-commerce, this research has found Internet use may be appropriate only for certain stages of a transaction. The extent to which the Internet can be used is likely to vary within sub-sections of an industry. Firms in knowledge intensive business services, which in some cases have limited geographical markets, may favor B2B e-commerce in production and delivery of their products.

In terms of B2B e-commerce in developing countries it is possible to make great strides in Internet use in services in general. Although macro economic benefits can accrue from focusing on services exports, governments should not limit their attention only to the export sector. With their greater use of computers, the services sector can serve as a training ground for increased computer use throughout the economy. Furthermore, emphasis on both international and domestic commerce will help build local networks, which will increase efficiency and the international competitiveness of firms in general.

6.3.3 Other Factors Shaping the Potential for E-commerce

In the following paragraphs we examine other factors shaping the potential for e-commerce. In this section we address the research question: To what extent do institutional structures influence the scope of opportunities electronic commerce represents to developing countries? This question was partially answered by examining the institutional impact on e-commerce in Tanzania, but to really assess the extent of the effects of institutional structure they must compared with effects brought about by other factors. Thus, to put our institutional explanations in perspective we offer comparisons of the effects of other forces shaping the potential for e-commerce.

We have identified five categories of additional forces shaping e-commerce. The first is political economy, including issues such as path dependencies, information sharing, and transparency. The second category examines the implications of embedded technologies. In the third category we propose that industry-level differences may be structural as well as institutional. In the fourth category we consider the implications of cultural differences. Last but not least, we consider the implications of firm-level characteristics. We now turn to a brief discussion of issues of political economy.
6.3.3.1 Political Economy

In this research we have explained differences in the general commercial environments of San Diego and Dar es Salaam based on institutional differences. These differences can also be explained in terms of political economy. Tanzania is currently transitioning from a socialist to a market-based economy. It is also in only the early stages of establishing a fully entrenched multi-party democracy. Differences such as those found in the competitiveness of the telecommunications markets can be partially attributed to the state of market development and the power of party politics in each country. The state of the economic and political transition can also explain the state of enforcement mechanisms for policies such as tax collection and licensing of firms. The speed of these transitions is partially dictated by the strength of path dependencies inherent in previously adopted policies.

One conclusion of this research is that government adoption of the Internet affects the speed of adoption in firms. A government in which the political climate shuns the free flow of information and transparency will hinder Internet adoption by government departments. Tanzania's previous ban on computer imports and subsequent slow process in reducing tariffs may reflect such a political environment, in addition to dysfunctional institutions.

The general lack of wealth in the country, which can also be explained as a function of political economy or weak institutions, is also a strong factor determining the potential for e-commerce. Some of the barriers to e-commerce, such as the banking sector and use of computers, will be difficult to overcome. It will take a great deal of institutional development to overcome the very low level of wealth in Tanzania.

In some ways, these political economy and institutional explanations are related. The weaknesses noted in the institutional structure are a function of the political economy of the country. Conversely, the transition to a market economy, a political economic factor, is a function of the institutional environment, particularly in terms of enforcement. Likewise, transparency can be a result of institutional structure or political economy, wealth, and particularly the lack of it, is likely a function of both.

6.3.3.2 Embedded Technologies

A second alternate explanation of the forces shaping the potential for e-commerce is the embedded technical base that exists in a country. Technological change, similar to political and institutional change, exhibits path dependencies and therefore can be slow. Thus, a snapshot of a city's potential for e-commerce must consider the technological base that exists. The state of development of embedded technologies is governed by a wide variety of factors. First, if the economy is large and can expect large numbers of users of a technology, the cost of the technology will be driven down by economies of scale. Furthermore, when large numbers adopt complementary services, such as maintenance and repair, are more likely to be available. Thus, in Tanzania where demand and hence economies of scale are limited, older technologies, limited support, and higher costs prevail.

Differences in levels of adoption may also be a function of the amount of time that has passed since a technology was introduced. This is certainly true for the Internet. Although some firms in Tanzania mentioned getting online because of competitive pressure, this was a stronger motivation in the U.S. where more firms are online. Although all firms in both samples had an Internet connection this does not describe their position in terms of level of adoption compared to others in their own industry. The Tanzanian firms may have been early
adopters, hence competitive pressures may not have kicked in yet. The U.S. firms may have been late adopters responding to pressure by clients and competitors thus adopting for different reasons.

The potential for e-commerce will not only rely on the embedded base of ICTs, but also depends on complimentary technologies. For example, one of the biggest bottlenecks to e-commerce in Tanzania is the irregularity of power supply. The embedded base of hydroelectric power technology deployed in Tanzania makes it difficult for the country to supply power during a drought\textsuperscript{133}. Although there have recently been isolated incidence of power supply problems in California, the U.S. is considered to have a very stable and robust industry.

Naturally, the embedded technological base and the institutional environment are mutually dependent. Institutions influence the speed at which governments and private firms adopt new technologies. They may also constrain decisions concerning which technology to adopt. On the other hand, technologies can help define the scope and the functioning of institutions. For example, the uncertainty created by the Tanzanian tax authorities could be reduced through consistent use of ICT technology.

6.3.3.3 Structural Industry Differences

The institutional basis of industry differences in the use of e-commerce has been an important component of this research. Issues such as differences in the use contracts, similarities in using courts, differences in processes for awarding licenses, are all examples of institutional factors in industry differences.

However, if we look deeper at these differences we may find they merely reflect fundamental structural differences in the industries. For example, the use of written contracts, an institution in itself, appears to be dictated by both the value of the transaction and the risk preferences of managers. The value of the transaction can be considered a structural factor in the industry. In most industries the value of transactions fluctuate, but this is typically within a certain range. For example the value of the transaction of the customs brokers is significantly less than that of the engineering consultants. Although the institutions are that contracting, and hence enforcement of the legal commercial code, are of less importance to the customs brokers, we cannot ignore that the underlying reason for these differences is in the risk and the value of the transaction.

What this might imply for institutional analyses at the industry level is a need to identify the critical aspects of an industry, which shape its institutional structure. The value of transactions and risk are just two. Other factors might also include the typical structure of networks, amount of government involvement in the sector, etc. Thus these factors drive the development of institutions within the sector.

\textsuperscript{133} Power disruption is a very serious threat to e-commerce and automation in general in Tanzania. Currently they are suffering a severe drought and the lack of development in the energy sector has left the country vulnerable to these weather conditions. The result is that in November 2000 power rationing was implemented, which has required firms to operate on generators, an expensive form of electricity. See http://www.ippmedia.com/guardian/2000/11/24/guardian4.asp

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6.3.3.4 Cultural Factors

Cross national differences in technology adoption can also be explained by cultural differences. Cross-cultural research by Hofstede established four national cultural dimensions that have been used to explain technology adoption.134

If we examine scores for the US and Tanzania on Hofstede’s (1991) cultural factors, the results are somewhat mixed. A high score on uncertainty avoidance is an indicator of innovativeness, which both countries share. A low individualism score, such as that for Tanzania, indicates a more collectivist nature, which can hinder technology adoption. The high score on masculinity for Tanzania would indicate less strict gender roles, which is likely to lead to more innovativeness among both genders, rather than relying on only one group. The lower score on power distance indicates greater tendencies towards hierarchies in Tanzania, and this can hinder innovativeness. Thus, the scores on Hofstede’s factors give each country positive marks for technology adoption in two categories. Since it is difficult to judge the relative importance of the various factors in terms of Internet adoption, this comparison is inconclusive.

<table>
<thead>
<tr>
<th>Hofstede’s Cultural Variables</th>
<th>USA rank</th>
<th>TZ rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty Avoidance (1=greatly avoids uncertainty)</td>
<td>46</td>
<td>52</td>
</tr>
<tr>
<td>Individualism (1= high individualism)</td>
<td>1</td>
<td>33-35</td>
</tr>
<tr>
<td>Masculinity (1=fixed gender roles)</td>
<td>15</td>
<td>39</td>
</tr>
<tr>
<td>Power Distance (1=largest power difference)</td>
<td>38</td>
<td>21/23</td>
</tr>
</tbody>
</table>

Table 6.3.3.4: Scores on Hofstede’s (1991) Cultural Variables

A more immediate effect of culture, particularly in this research, is seen not at the national level but instead at the industry level. Many processes and procedures that exist within industries and that are hurdles to e-commerce persist simply because ‘that is the way we do it.’ Industry culture has also been used to explain industry-wide attitudes toward change and innovation, such as in the engineering consulting sector.

Unsurprisingly, there are close ties between culture and institutions. The range of possible institutions that can develop within a nation or industry is influenced by culture. Institutions may, over time, shape culture. Thus at the industry-level, institutions such as the role of the industry associations, may partially be established by industry culture. This, in turn, can affect the potential for e-commerce.

6.3.3.5 Firm-Level Characteristics

The last alternate explanation considered here is the impact of firm-level characteristics. Two studies of ICT adoption in African countries have shown organizational level variables as responsible for determining the extent of ICT adoption. In their study of user acceptance of group support systems (GSS), De Vreede, Jones and Mgaya (1998/1999) found that due to the

134 In research by Van Everdingen et al. (2000) the adoption of enterprise resource planning (ERP) systems in various European countries used Hofstede’s cultural factors to explain the differences. By Yvonne Van Everdingen; Jos Van Hillegersberg; Eric Waarts; "ERP adoption by European midsize companies" Association for Computing Machinery. Communications of the ACM; New York; Apr 2000; Volume: 43;Issue: 4; pp: 27-31
emphasis of hierarchical relationships in Tanzanian firms, the endorsement by top management of a technology is an important factor for the acceptance of the technology.

Research by Duncombe and Heeks (1999) in Botswana found ICT adoption is a function of information practices and needs of firms. Based on their findings it can be argued that e-commerce will be adopted when it is perceived to fill a need of the firm, particularly an information need. In their research in discussing likely candidates foe ICT adoption they observed:

"Investments for Internet access are significant in terms of financial outlay, running costs, and investments of time and skills. Because of this, such investments would need to be accompanied by significant benefits in terms of regularity of use and quality of information provided. The evidence shows that it is only in specific sectors, such as technical services, the IT sector and travel and tourism, that information access benefits can be achieved as yet. These are all sectors that require regular access to information and/or software across borders, both regionally and worldwide." (Duncombe & Heeks, 1999, p. 7)

Although their findings point to sectoral as well as firm-specific qualities, we would argue that individual firms could access information through email. Firms with well developed networks may find information through the web as well as from individuals.

Certainly, firm-level characteristics will partially be shaped by institutional structure and vice-versa. The institutional structure itself may shape what types of firms can exist in terms of size and scope. Firms themselves through participation in organizations like industry associations in turn shape the institutional structure.

The above addresses the issue that factors other than institutional structure will also shape the potential for e-commerce in developing countries. With each plausible alternative explanation we have explained the relationship between the factor and the institutional structure. The reason we believe that institutional structure is the most powerful force shaping the potential is that it provides both a mechanism for explaining differences as well as a broad perspective. Explanations of e-commerce adoption and potential based on factors of embedded technologies and firm-level characteristics may be very powerful within a particular context, however they do not explain the reasons for differences in the factors. Explanations based on structural industry differences described differences but do not give a basis for these differences. Finally, explanations based on political economy and cultural factors do explain differences and are broad in scope. However, political economy and cultural factors are perhaps too distant from e-commerce adoption. One can imagine a model where political economy and culture are used to explain the existence of a particular institutional environment, which in turn explains e-commerce adoption. Thus, for reasons of differentiation and appropriate scope institutions are seen as the most plausible explanation of the forces shaping the potential for e-commerce in developing countries.

6.3.4 Recommendations

In forming the following recommendation we have considered how institutions help or hinder the adoption of e-commerce in each of the following sectors. In areas where the institutional structure provides benefits for e-commerce, recommendations focus on reinforcing these mechanisms. Where institutions hinder e-commerce adoption, recommendations focus on realistic solutions to these problems.
6.3.4.1 Engineering Consulting and Customs Brokerage

This cross-national study of engineering consulting and customs brokerage firms bring to light the following recommendations. In terms of B2B e-commerce it is unlikely that engineering consulting firms will migrate to the Internet to find work. Their use of networks provides validated and current information while fostering relationships. There is a wide range of possibilities to integrate B2B e-commerce into the production and delivery processes of these firms. Greater levels of coordination at the industry level will speed diffusion of B2B technology throughout this sector. The technology is now either in place or being developed and thus the constraints to B2B e-commerce in this sector appear to be managerial in nature.

Changing or supporting the institutional environment for e-commerce can be addressed individually by firms or through cooperation in industry associations. The engineering consulting sectors in both the U.S. and Tanzania could take advantage of the trust that exists in the government procurement of engineering services and transition this process online. Such a transition could reduce costs and speed up the process.

Another task faced by most engineering firms is getting contacts. This process could easily be handled through B2B e-commerce with two changes: Standardization in indemnity clauses and digital signatures. Through coordinated efforts of industry associations, firms should lobby governments to adopt policies to resolve these situations.

In both San Diego and Dar es Salaam, industry associations appeared to be inactive in helping members develop coordinated, industry-wide best practices for implementing e-commerce into their business processes. Continuing on such positive developments as standardized contracts, industry associations could provide guidelines for standard practices in billing as product delivery. The benefits of a digital product should be leveraged as much as possible.

Customs brokerage is similar to engineering in that implementation of B2B e-commerce technologies and processes is a managerial issue. However, customs brokers do face a technological ceiling in their B2B activities that is imposed by government processes in customs clearance. It is optimistic to think that greater cooperation among small brokers could place enough pressure on large governmental organizations such as the customs administration to force them to change. Greater models of cooperation, however, can speed the diffusion of technologies independent the government processes throughout the sector. B2B e-commerce will, over time, help reveal the true value of the brokers. Administrative functions will become less important, and the value of the broker will be derived from their knowledge of the customs clearance process. Those brokers aware of this evolution will be able to create new value for their customers in their brokerage role.

Despite the already stated realities of the limitations of power of an industry association, firms should push their industry associations to pressure customs authorities for the most advanced technology. As customs brokerage becomes increasingly standardized, one day competition may become more international. Brokers operating in countries with advanced systems will benefit from their knowledge of this system. Also, in the present advanced technology can help ports compete in bringing increased traffic.

Firms can capitalize on their relationships with agents and other branch offices. Brokers should use those relationships as test-beds for automating firm processes. Once the processes have been worked out, brokers can implement them with clients. Overall, brokers need to be
careful when allowing clients to dictate a low level of technology use. Creative arrangements can be useful to provide incentives.

6.3.4.2 Small Knowledge Intensive Service Sector Firms
B2B e-commerce has great potential for small firms in the knowledge-intensive service sector. Unfortunately, the hype surrounding market expansion capabilities of the Internet has turned attention away from other uses of the medium for firms. In addition to market expansion capabilities, the Internet can facilitate better customer relations through increased frequency of communication and increased ease in sharing information. It can also be used to increase efficiency in internal firm processes. For example, where information related to the knowledge sold by the firm is available online, the research stage of production can be less time consuming and produce greater quality.

In general, small KI-business service firms are expected to benefit from Internet use. One institutional structure preventing them, in some cases, from taking full advantage of that use are local licensing requirements. Firms should consider the disadvantages and protections such requirements provide. If firms see licensing as a restriction they should support government efforts to establish mutual recognition programs in the industry.

This research has demonstrated that small firms rarely use courts to resolve disputes and that contracts are infrequently used in day-to-day activities. Those findings might lead firms to critically evaluate their use of written contracts. Potential changes might include developing standard contracts to minimize costs of settling contracts, or simply not using contracts, if such an option exists.

6.3.4.3 Firms and Governments in Developing Countries
As far as Tanzania is a representative developing country, we can see from this research that despite many barriers e-commerce is moving forward. Some developing country governments, convinced of the potential of the Internet, have allowed competitive Internet services markets to develop. Hopefully their commitment to an unfettered industry will continue. In Tanzania recent regulation of the Internet services market, and particularly license fees, are steps in the wrong direction. Fortunately, policies can be reversed.

Competitive Internet services markets are partially responsible for the adoption by firms. It is hoped that greater numbers of firms will adopt the Internet and that those who have already done so will continue efforts to automate and use the Internet wherever feasible in their business processes. In their implementation firms and ISPs have developed innovative solutions, such as the use of wireless connections, to overcome problems inherent to developing countries. Creativity is the key to continued success.

In order to ensure continued success changes must be made in macro-institutional environments. Governments can start by creating competitive markets for telecom services. Creating a diverse and robust banking sector is also the key to the development of e-commerce, as well as low and stable tariffs. Where governments must enforce policies related to the commercial sector, such as in tax collection and licensing, they should try to do so with utmost uniformity. Uncertainty is as great a barrier to e-commerce as poor telephone lines.

Governments must also understand their own power and how that power to some extent establishes the speed of e-commerce adoption. In prioritizing automation programs for the
government, areas in which governments interface with firms should be given the highest priority. This will facilitate Internet adoption and use in the commercial sector, creating further demand and developing skills. For some industries, such as customs brokerage, the government’s adoption of technology shapes the level of adoption in the entire sector.

This, however, raises an important point for developing country firms, that is do not wait for the government. The most important advances in e-commerce are to be made within the processes of firms. Even though the macro-institutional environment may not be ideal for e-commerce, there is still much that can be done at the firm and industry level.
Section III

E-commerce and Developing Country SMEs
Chapter 7:

Global Trade Point Network

Up until now our examination of institutional structures and their ability to shape the potential for electronic commerce has focused on national and industry-level contexts. However, if we consider the definition of an institution, the humanly derived constraints that shape human exchange, it is obvious there are many different sources of institutional structure. Furthermore, with e-commerce the sources of institutional structures may differ from traditional commerce.

In this case we examine the institutional structure established by a development program that targets small firms in developing countries to help them participate in global e-commerce. The institutional structures established by the program are considered to be meso-level institutions, only relevant for those firms operating within its environment. Similar to the U.S. and Tanzanian cases, intermediate institutional forms are described and their implications for the potential for e-commerce in developing countries are analyzed.

The program examined here is the UNCTAD Global Trade Point Network (GTPnet). GTPnet has as its mission to provide electronic commerce tools to assist developing country firms in entering the global economy. It is considered particularly relevant for this research in that unlike other electronic commerce programs it is focused on the issues faced by developing country firms. In this sense it is an extreme example of institutional design, one which should help developing country firms the most.

The objective of this case is to provide evidence of the impact of institutional structures on the potential for e-commerce. This case study serves to broaden the concept of institutional structures beyond the realm of national legal and policy frameworks, by applying the concept of institutional structure to an area that is the heart of e-commerce: a web-based program.

The overall research questions addressed in this case are:

- What institutions are established by the Trade Point program?
- How do these institutions affect the ability of the program to facilitate the use of e-commerce by small firms in developing countries?
- What changes, if any, need occur in the institutions to improve the performance of the program?

To answer these questions GTPnet will be analyzed on two levels. First an analysis of the institutions created by its online matchmaking program will be examined. The matchmaking program allows firms to post offers for both buying and selling goods. The program uses a web-based interface but also relies on email lists for distributing information. The site and service are controlled by UNCTAD, who are responsible for developing the institutions involved in this service\(^{135}\).

\(^{135}\) UNCTAD expects to hand over operation of the online program to a non-profit entity by the year 2003. See document number TD/B/WP/128
The second aspect of the Trade Point program to be examined is the role of the Trade Point operators. The Trade Point system recognizes that the first barrier to participation in electronic commerce is access to the Internet. To increase access, the Trade Point program has offices in countries around the world to serve as Internet access points. Firms without the financial resources or faced with inadequate infrastructure can post offers or requests for goods through a Trade Point office. The institutional aspects of the Trade Point operator's role as an intermediary and broker of information for the system will be examined.

In this chapter we first discuss the history and operation of the Trade Point program. Subsequently, an analysis of the implications of the Trade Point's institutional structure for the use of e-commerce by developing country SMEs is made. Next we compare the results of this case with those of the U.S. and Tanzanian cases. Finally, the chapter concludes with an examination of the various effects of institutions and recommendations for the program.

7.1 The Trade Point Program

7.1.1 The Global Trade Point Network

The Global Trade Point Network (GTPnet) is a program of the United Nations Conference on Trade and Development (UNCTAD). The concept was formulated in 1992 and was officially launched at the 1994 United Nations International Symposium on Trade Efficiency (UNISTE). The overall objective of the Trade Efficiency Initiative is to facilitate the integration and participation of developing countries and economies in transition, as well as small-to-medium sized enterprises (SMEs) worldwide, in international trade (Lanvin, 1995).

One part of this initiative, GTPnet focuses on the use of the Internet for international trade. The goal of the Trade Point program, in particular, is to assist SMEs in participating more effectively in international trade by reducing transaction costs and providing access to the most recent information technologies. To attain this goal UNCTAD developed a two pronged strategy. The first was to directly be involved with the development of electronic commerce tools thereby guaranteeing the usability of these tools in both developed and developing countries. These tools are developed at the United Nations Trade Point Development Center (UNTPDC) and are made available free of charge. The second part of the strategy was to establish local Trade Point offices in both developed and developing countries. Details of these two parts of the GTPnet program are given below.

7.1.2 ETOs

The most popular electronic commerce tool developed by the UNTPDC is a bulletin board where firms can post offers and demands for goods, known as Electronic Trading Opportunities (ETOs). Over the years the system has evolved to a series of categorically delineated email lists. In countries where it is unlikely a SME would have their own Internet connection, firms can call, fax, or deliver messages to be posted via email by a Trade Point

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office. It is also possible, as with most email lists, to have an individual subscription. Therefore, ETOs may be posted by firms through a Trade Point office or a firm may set up their own subscription and have ETOs delivered to them directly.

The ETO switch transfers over 2 million emails a day with trade leads to 10,000 organizations in 148 countries\textsuperscript{137}. The system grew rapidly since its introduction in 1994. The number of posts to the system is, however, only a partial indication of success. In this open network where use is free, the number of postings does not reflect either the uniqueness of each ETO or the validity of the offer.

To better understand the use of the ETO system, UNCTAD made a survey of users between September 1997 and August 1998\textsuperscript{138}. During that time they received 768 replies. One measure used by UNCTAD in this study to gauge the success of the system is the number of responses users received for their posted ETOs. Of the 768 respondents, 27\% received no responses to posted ETOs. Between 1 and 10 responses to ETOs were received by 48\% of the sample. Fourteen percent received between 10 and 30, while only 4\% received between 30 and 100. There was, however, a small group (7\%) who received more than 100 replies to an ETO. Therefore, the majority received at least some response to their postings, a positive sign of the usefulness of the system.

Another important indicator of the success of the system is the value of trades resulting from ETOs. The number of respondents who had concluded a transaction based on an ETO was roughly 30\%. Of the 30\%, 34\% completed trades with an average value of less than US$10,000. Fifty-three percent reported average transactions in the US$10,000 to US$1,000,000 range, while 13\% reported contracts for over US$1 million. While the dollar value of the transactions concluded in the system is impressive, particularly if these are SMEs, having only 30\% of the participants actually conclude trades from leads found in the system indicates inefficiencies.

One reported inefficiency of the system is that users must sift through thousands of postings to find those relevant for their business. UNCTAD is trying to address this issue through promoting the use of ‘structured ETOs.’ Structured ETOs require postings to be made using UN/EDIFACT standard codes. ETOs submitted using these codes could easily be filtered. However, there is resistance on the part of the majority of users to post in this format. Roughly 60\% of users preferred the free format ETOs. It is assumed these users do not want to invest the time (incur the cost) required to learn the UN/EDIFACT codes. Requiring use of the standard by UNCTAD could present a barrier to some firms’ participation.

The low percentage of users having completed transactions may also be due to other factors. Some users have suggested that the open nature of the Trade Point network makes it difficult to evaluate the validity of the postings. One way UNCTAD is addressing this problem is through their efforts to establish secure and authenticated transmission for ETOs. UNCTAD’s efforts in this area were focused on a program known as the Secure Electronic Authenticated Link – Infrastructure (SEAL) program\textsuperscript{139} and the complementary Smart Card program\textsuperscript{140}. Despite earlier optimism about these programs, there is now a retreat from efforts in this

\textsuperscript{137} http://www.untpdc.org/unipto/eto/info/about.html
\textsuperscript{138} Results can be found at http://www.untpdc.org/unipto/etosurvey/
\textsuperscript{139} http://www.untpdc.org/unipto/eto/info/securetto.html
\textsuperscript{140} http://www.untpdc.org/unipto/eto/info/smartcard.html
realm. The Trade Point program decided instead to rely on market-based security solutions as they become available.

UNCTAD has tried to address the quality of information issue by adding a usage charge for the system. A charge would also provide Trade Points with a source of income. Of course usage charges guarantee little about the validity of the information, but other systems have used this tool as at least one step to deter system abuse. The issue is a tricky one for UNCTAD and up until now they have let the system users decide whether or not a charge is warranted. Few users agree that a charge should be implemented, some stating concern that a charge may limit the use of the system by developing country firms. This is certainly a concern for UNCTAD as well, as the goal of implementing the system was to bring developing country SMEs into international trade.

This discussion raises the issue of the level of participation of developing country firms with the UNCTAD ETO system. A study by UNCTAD on the make-up of users of the system from March 1 to July 15, 1998 shows that 36% of the ETOs during this period were posted by firms in the U.S., Canada, and South Korea. Others in the top ten list of users were China, at number two behind the U.S., with 18.7%, India at number 4, behind South Korea, with 6.7%, and Egypt, behind Canada, at number 6 with 3.0%. The survey indicated a geographical concentration in terms of the numbers of ETOs being posted, with 75% of the postings coming from the top 10 countries. This raises some concern over who is benefiting the most from this part of the Trade Point program.

In addition to the geographical distribution of firms using the ETO system, it is also interesting to consider the types of firms using the system. Original expectations for the Internet were that it would allow direct communication between buyers and suppliers, thereby eliminating intermediaries. This hypothesis was replaced by the re-intermediation hypothesis, which predicts intermediaries will adapt the services they offer to maintain their position, thus continuing the value of their services. The make-up of GTPnet system users appears to support this ‘re-intermediation’ hypothesis. Trade intermediaries represent roughly 67% of the users, with other private and public institutions accounting for 24% and 7%, respectively. The use of the ETO system has largely by-passed the second strategic area of the Trade Point program, the Trade Point offices, as only 35% of the respondents send their ETO postings through a Trade Point office. Thus, the majority of users have their own access to the Internet and send their postings directly to the GTPnet switch. These statistics indicate that perhaps the users of the system are not the target audience. This has both pros and cons but is an inevitable part of providing a free service via the Internet.

7.1.3 Trade Point Offices

The second part of the GTPnet program, designed to address the local issues inherent in international trade, are the Trade Point offices. As of December 2000, 161 Trade Point offices in 124 countries were operating or in the process of being established. The global distribution of these offices is a strength of the GTPnet program. In 1998 the distribution of Trade Points

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142 roughly 2% did not answer the question.
in developing countries was as follows: Latin America and the Caribbean (39); Africa (27); Asia (25); Eastern and Central Europe (23); and Oceania (1). The distribution of developed country Trade Points are as follows: Europe (20); North America (9); Asia (3); and Oceania (2).\textsuperscript{143}

7.1.3.1 Establishing Trade Point Offices

The Trade Point offices operate as self-sustainable, non-profit entities and theoretically have several roles. First, they create a network of Trade Point offices across the globe who work together to share information and experiences in providing trade facilitation and intermediation services. The operators of these offices meet at yearly meetings where they interact with UNCTAD staff and build inter-personal relations. A second role of the Trade Point offices is to bring together local organizations to provide a single point of presence for trade facilitation services offered by a wide variety of organizations such as Chambers of Commerce, World Trade Centers, and government supported export promotion boards. Activities undertaken by these groups can be labeled as 'pre-transactional' trade services. The Trade Point offices also attempt to unite organizations offering transactional services such as customs clearance, intermediation, and freight forwarders. Finally, Trade Point offices may also serve as a point of Internet access for firms in developing countries where direct connections are either too costly or not available.

Trade Point offices pass through several stages from their initial request to UNCTAD to establish such an office to the time when they become fully operational. The first stage is the feasibility stage, where parties interested in establishing a Trade Point office request the national government to send a formal request to UNCTAD indicating such an intention. Next, during the development stage, the Trade Point is established as a legal entity and its business plan is submitted to UNCTAD. Finally, at the operational stage, the Trade Point starts to offer the services listed in its business plan. The UNCTAD administrative staff helps coordinate the validation of Trade Point operators around the world. The staff interacts with applicants to help them obtain the necessary approvals from local governments and UNCTAD. In a sense the Trade Point operator applicant is applying for a franchise, which requires local government authorization. As of December 2000, 62 Trade Points had reached the operational stage, 20 were at the development stage, and 79 were in the feasibility stage. Although the majority of the Trade Point operators make straightforward progress through these stages of development, a few have either been downgraded to a lower stage of development or have left the program altogether\textsuperscript{144}.

As stated above, an objective for the Trade Points is to act as an umbrella organization, coordinating the efforts of a diverse range of trade services. However, because the office must also be self-supporting, the Trade Point must offer a range of services for which firms are willing to pay. Identifying these services, and thus achieving break-even financial status, is a challenge for some Trade Point offices.

7.1.3.2 Trade Point Office Performance

The Trade Point program laid out the objectives of the Trade Point offices, recognizing however that each office would face a unique operating environment creating diversity within the program. To understand how their views and objectives for the Trade Point offices were

\textsuperscript{143} Ibid.
\textsuperscript{144} Ibid.
actually unfolding ‘on the ground’ UNCTAD, in 1996, conducted a survey of 25 operational Trade Point offices\textsuperscript{145}. The locations of these offices were as follows: Africa-2; Asia-4; Europe-3; Latin America-15; and North America-1\textsuperscript{146}. The average age was one-and-a-half years. Although all Trade Points are non-profit entities, the ownership can either be public, private, or mixed. The ownership of the Trade Points in this study was: private-60%; mixed-20%; public-20%. The success of the Trade Point, particularly those in the private realm, is partially determined by the amount of money the entrepreneur has to invest in starting up the operation. Trade Points receive technical and managerial assistance from UNCTAD but are responsible for their own start-up and operating budgets. Of the Trade Points in the 1996 study, the amount of investment required for start-up was as follows: 40% spent between US$10K-50K; 20% spent between US$50K-100K; and 40% spent more than US$100K. The Trade Point offices are small with an average staff size of: full-time-7; part-time-3.8; temp-2.6.

As noted previously, one of the roles of the Trade Point offices is to form a network. The offices in the UNCTAD study reported collaboration in the following areas: information exchange & verification-92%; follow-ups on business and product info-76%; collaboration on technical and logistical issues-60%. The Trade Points were also to act as an umbrella organization for various trade related entities. Of the 25 Trade Points in the study the percentage of those with contractual relations with various partners is shown in Table 7.2.3.2.1.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|}
\hline
Contractual Partner & Percentage \tabularnewline \hline
Banks & 40\% \tabularnewline
Transport Companies & 36\% \tabularnewline
Foreign Trade Institutes & 36\% \tabularnewline
Chambers of Commerce & 32\% \tabularnewline
Insurance Companies & 26\% \tabularnewline
Freight Forwarders & 16\% \tabularnewline
\hline
\end{tabular}
\caption{Table 7.2.3.2.1: Contractual Arrangements}
\end{table}

The contractual arrangements are not as high as would have been expected from the original UNCTAD mission statements\textsuperscript{147}. The ability of the Trade Point office to fulfill this ‘umbrella’ function varies and depends both on the roles of the external organizations, the services offered by the Trade Point, and the personalities of the players involved.

As self-sustaining entities, the Trade Points must offer a variety of services. Most Trade Points offered between 5 and 9 different services as shown in Table 7.2.3.2.2. The number of services a Trade Point offers will affect its ability to survive. It also serves as an indication of the level of expertise the Trade Point has to offer. Table 7.2.3.2.3 shows the range of services

\textsuperscript{145} results can be found at http://www.unpd.org/unptdc/library/te/survey/
\textsuperscript{146} The higher number of offices in Latin America was representative of the distribution of offices at this time and reflects the decision to run the pilot program in Latin America. The present day distribution of Trade Points, although still favoring Latin America, is more even.
\textsuperscript{147}See http://www.unptdc.org/unptdc/gtptnet/tpoint.html#1. What is there in response to the question ‘What is a Trade Point’ is written ‘Trade Point is a trade facilitation centre, where participants in foreign trade transactions (e.g. Customs, foreign trade institutes, banks, Chambers of Commerce, freight forwarders, transport and insurance companies) are grouped together under a single physical or virtual roof to provide all required services for trade transactions at a reasonable cost.’

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a Trade Point office might offer. It is not surprising that nearly all the Trade Points offer matchmaking services because this can be accomplished through the ETO system. Going further down the list, the services require greater knowledge of international trade transactions and there are fewer Trade Points offering these particular services.

<table>
<thead>
<tr>
<th>Numbers of Services</th>
<th>% TPs who offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14 services</td>
<td>24%</td>
</tr>
<tr>
<td>5-9 services</td>
<td>56%</td>
</tr>
<tr>
<td>1-4 services</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 7.2.3.2.2: Number of Services per Trade Point

<table>
<thead>
<tr>
<th>Services</th>
<th>% of TPs who offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matchmaking Services</td>
<td>88</td>
</tr>
<tr>
<td>Follow-up on Company &amp; Product Info</td>
<td>88</td>
</tr>
<tr>
<td>Consulting in Transport Matters</td>
<td>76</td>
</tr>
<tr>
<td>Market Research</td>
<td>76</td>
</tr>
<tr>
<td>Translation Services</td>
<td>64</td>
</tr>
<tr>
<td>Production of Web Pages &amp; Product Catalogs</td>
<td>56</td>
</tr>
<tr>
<td>Preparation of Contracts &amp; Business Letters</td>
<td>48</td>
</tr>
<tr>
<td>Provision of Facilities for business meetings</td>
<td>48</td>
</tr>
<tr>
<td>Customs Clearance</td>
<td>44</td>
</tr>
<tr>
<td>Direct Assistance in Financial Services</td>
<td>40</td>
</tr>
<tr>
<td>Training Courses</td>
<td>28</td>
</tr>
<tr>
<td>Issuing Trade Certificates</td>
<td>24</td>
</tr>
<tr>
<td>Function as EDI Clearing House</td>
<td>20</td>
</tr>
<tr>
<td>Others</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 7.2.3.2.3: Services

In addition to offering a variety of services, Trade Points may also make them available to clients under different terms and conditions. In the first case the Trade Point may offer services to clients who are ‘members’ or ‘subscribers.’ Services such as newsletters with ETOs or the ability to access databases, etc. are most easily offered on a subscription basis. Although subscribers are typically the preferred mode of handling customers, most Trade Points will also accept clients on a demand basis. The number of clients reported by the Trade Points is as follows. Among those with subscriber clients, the average number was 144. Twenty-four percent of the Trade Points reported having no subscribers. The average number of customers (not subscribers) was 119 per month.

The type of clients the Trade Points serve is an important indicator for assessing the success of the program. The Trade Points in the 1996 study reported that roughly 31% of their clients were firms engaged in production. Wholesale and retail firms accounted for 25% each, and 19% were labeled as ‘other’, which includes service providers, municipalities, or local governments. This indicates a fairly even distribution among different sectors of the economy. The sizes of the clients are reported in Table 7.2.3.2.4 and indicate that the majority of the Trade Point clients are medium, small, or micro enterprises. It is also interesting to
note, although most of the ETO users send their postings via email directly to the switch, the majority of the Trade Points continue to use traditional modes of communication. To communicate with their clients the most frequently used medium was the fax (27.2%), telephone (26%), personal contact (22.6%), email (15.6%), regular mail (7.9%), and telex (0.7%). Thus, the Trade Point offices are an important bridge between the Internet and their clients. However, as increasing numbers of SMEs take their own Internet connections this role is likely to change.

<table>
<thead>
<tr>
<th>Client Size</th>
<th>Percent of clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (1-10)</td>
<td>31.6%</td>
</tr>
<tr>
<td>Small (10-50) &amp; Med (50-500)</td>
<td>54.1%</td>
</tr>
<tr>
<td>Large (&gt;500)</td>
<td>14.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Client Sector</th>
<th>Percent of clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary (agricul., fishing, etc.)</td>
<td>22.8%</td>
</tr>
<tr>
<td>Secondary (industry &amp; manufac)</td>
<td>43.2%</td>
</tr>
<tr>
<td>Tertiary (tourism, consult, etc.)</td>
<td>34%</td>
</tr>
</tbody>
</table>

Table 7.2.3.2.4: Trade Point Office Clients

UNCTAD also asked the Trade Points about the use of the ETO system. The Trade Point operators reported that successful matches resulting from the ETO system ranged from 20-50 per month, although only a few Trade Points answered this question. Only 7 Trade Points indicated the numbers of transactions they facilitate each month. The average per month was 18, with one Trade Point indicating they served 40 transactions per month. The combined values of these transactions were given by 3 Trade Points as roughly US$25K, US$100K and US$650K per month.

A final point in the UNCTAD study was related to the patterns of trade that were being facilitated by the Trade Point offices. Although the Trade Point program focuses on international trade facilitation, as increasing exports is seen as a mechanism for economic growth, it also recognizes the value of stimulating domestic trade as well. Also, the regional networks created by the Trade Points might be reflected in patterns of trade, which was indeed the case (not implying causality in either direction). The Trade Points reported the percentage of trade they handled were: national trade-19.3%; continental trade-28.2%; global trade-27.1%.

These details concerning the Trade Point program provide background information for understanding the analysis of the institutional structure of the UNCTAD system. The analysis is based on the details presented above as well as results from interviews.

### 7.2 Analysis

The following analysis considers both the UNCTAD matching making ETO system as well as the network of Trade Point operators. In the analysis the following questions will be addressed:

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148 See section 5 "Trade Points, NGOs and micro enterprises" at http://www.untpdc.org/untpdc/gtpnet/tpoint.html#1. what is
1. What new types of institutions are created by the ETO system / Trade Point operators?
2. What types of existing institutions impact on the use of the system?
3. How do these institutions shape the potential of developing country SMEs in electronic commerce?

In the following paragraphs the above questions are first answered regarding the ETO system. Subsequently, the questions are applied to the network of Trade Point operators. In addition to examining the institutional structures, we also assess the extent to which the program meets its own goals.

One institutional structure that will receive particular attention is that of the intermediary. In both aspects of the program the goal of the Trade Point program is to function as a form of intermediary. Theoretically, intermediaries perform four functions in a market. First, they reduce search and hence transaction costs and smooth out the transaction process. Second, intermediaries also absorb risk. Third, intermediaries can assess product quality and in turn create pressure for greater quality. Finally, intermediaries can serve as sources of information, for both producers and consumers, facilitating feedback between the two.

Given these theoretical functions of an intermediary, we will analyze the institutional structures and examine the extent to which these intermediary functions are fulfilled. If they are not fulfilled we examine the reasons why.

7.2.1 ETOs

Institutions are humanly derived constraints that structure incentives in economic exchange. The Trade Point ETO system creates several new institutions for firms involved in international trade. The institutions can be described in terms of their influence on aspects of exchange such as access and use of the system. In the following paragraphs we examine how the institutional structure impacts the use of the system. Ideally, the system would provide for rich flows of information between parties, system norms that reduce uncertainty, and overall system-use guidelines that maximize these characteristics while enhancing operation.

7.2.1.1 Institutional Structure

Access to the ETO system is open. Any firm or individual can post and receive ETOs, regardless of country of origin, size, operating history, industry, etc. Open access guarantees wide distribution of the messages and theoretically allows for the participation of any firm that can access an email account. The open nature of the system is also reflected in the consideration of the level of technology used. The system is designed such that exclusion resulting from the need to have the latest computer equipment is avoided.

The use of the ETO system is free. The number of ETOs that are posted by a user is unbounded either by policy or cost, as there is neither a subscription charge nor a per-post charge. In addition to being free, the system also requires very little training to use. ETOs can be submitted in free form where the required fields include contact name, company name, email address, country, a one line product description, and statements concerning the details of the offer. The ease of use of the system facilitates entry into the market as well as exit since little is lost in time invested to get to know the system. Costs are incurred, however, in the
time spent to sift through the messages, although separate lists for different industries and indexes have made this easier.

There are not restrictions about redistributing ETOs so the messages can be passed around the world electronically or printed in a newsletter. Limitations do not on the frequency with which ETOs can be posted exist. The policy states that the same ETO cannot be posted twice in one month. Also, limitations on the nature of offers have been created. Offers for pornography, firearms, and narcotics have been banned.\footnote{See Appendix II or http://www.unpd.org/unctdc/eto/info/copyright.html}

The institutional characteristics of the system can also be described by whether or not they define sanctions, consequences for violating norms, in access or use of the system. As is clear from the descriptions above, the institutions, and the incentives they create, are relatively weak for creating high quality, easy to use information. This is partly the result of the mission to have open access and free use.

There are two sanctions defined by the system. Users who violate the norms of posting the same ETO more than once in a month and those who post ETOs related to prohibited goods will be banned from using the service. No fines are imposed and if barred from using the system little is lost in terms of investment in learning to use it. Given the tools available in list software, the policing and enforcement of these sanctions should be relatively easy. However, the screening process for the ETOs is not made explicit, making it difficult to judge the policing and enforcement cost.

Although these sanctions related to frequency and content of ETOs are a start, there are no sanctions for firms posting dubious offers on the system. UNCTAD warns users it cannot be held liable for the postings on the system and encourages users to investigate firms personally before transacting business.\footnote{http://www.unpd.org/unctdc/eto/info/OFER_info.html#policy} Given the user characteristics and the fact that most ETOs are posted directly from locations worldwide investigating firms could prove difficult. It is clear however why UNCTAD has such a caution as sanctions for dubious offers could incur high policing and enforcement costs, making them difficult to implement.

Examining the role of the ETO system in terms of intermediation it is apparent the system aims to reduce search costs. Other roles of intermediaries such as providing information about product quality and facilitating feedback although not present here could be developed in future systems.

7.2.1.2 External Institutions

We now examine existing institutions related to the use of the ETO system. There are few macro level institutions that apply to system use due its global nature. The system’s affiliation with the United Nations does provide expectations for behavior such as professionalism and continuity. Alternatively, individuals using the system may be bound by institutions in their particular national, cultural, or geographical context. Firms ‘meeting’ online who are from the same country may feel comfortable transacting business after having met through the UNCTAD system based on shared institutions in their country. These types of matches are random, however, as geographical matching is not offered.
Due to the lack of existing global institutions, it is expected that few existing sanctions, such as contract law or reputation mechanisms, apply to the use of the system. Although international trade law is a theoretical mechanism of enforcement, the issue here is whether or not small firms would actually use it. One Trade Point operator, who was cheated by a firm he met through the ETO system, reported that he, like many others, merely absorbed the loss. For firms conducting business in the same country, a wide range of existing sanctions would apply. However, when small firms use this global system few existing sanctions apply.

An efficient match making system, by providing high quality information, should facilitate trust between firms and between firms and the system and should reduce transaction costs of participants. Sanctions concerning the frequent posting and content of ETOs can help facilitate trust in the system to a limited extent. These sanctions reduce uncertainty surrounding the nature of the ETOs a subscriber is likely to find on the list. The attempts by the system administrators to streamline the process by eliminating double postings could increase the positive expectations of intentions of the administrators. However, the important relationship requiring trust here is that between the users. Since there are no limits to access and use of the system that would create positive expectations, it is expected little trust between users will exist. Indeed, UNCTAD encourages users NOT to trust one another based merely on their mutual use of the system.

An efficient match making system should also reduce transaction costs. Although it is difficult to say explicitly that transaction costs have been reduced (because they are not calculated), it is likely that the costs of finding a trading partner through the UNCTAD system are no higher than traditional means, such as through catalogs. Transaction costs may be significantly less than using trade intermediaries, however it is difficult to know. Transaction costs refer to all of the steps in the process of transacting business, of which finding a partner is only one. The open nature of the ETO system, and the resulting lack of validation of its participants, could in the end increase transaction costs. Although a trade intermediary may charge a hefty fee, their knowledge of the buyer could reduce transaction costs related to ex post contracting. One must also consider the amount of time spent sifting through the large volume of postings to find a match.

The final question in this part of the analysis is concerned with whether or not the ETO system reduces the barriers to entry into electronic commerce by developing country SMEs. Developing country SMEs have identified a lack of market information as one of the key barriers to trade. Through the ETO system they can begin to assess the marketability of their product and learn about competing products. However, when SMEs say they lack access to market information it is presumed that quality is more important than quantity. Trade leads that are unqualified may facilitate trade, but they may also be just a waste of time. Unfortunately, the ETO system does little to qualify trade leads.

This analysis of the ETO system demonstrates how system institutional characteristics affect its ability to function in terms of providing information and reducing transaction costs. The system’s inability to perform both at once is due to the trade-off between offering an open system and offering one that provides quality information. The analysis now continues with an examination of the Trade Point operators’ network.
7.2.2 Trade Point Offices

We now examine the institutional structures that are or could potentially develop from the TP network. First we examine what new institutions are developing followed by an examination of how they facilitate exchange through offering sanctions and providing information. Lastly, we examine how existing institutions from outside the TP program interact with the program itself, and how it does or does not facilitate e-commerce.

As mentioned in the description of the program, the Trade Point offices are diverse in their overall characteristics, including the services they offer, the sources of their financing, and even their goals. Thus each Trade Point will create institutions particular to their goals. Despite this heterogeneity, we have identified 3 new institutional forms that most Trade Points are considering.

7.2.2.1 Institutional Structure

The first new institutional form is that of a combined facilitator and intermediary. Traditional trade intermediaries are for-profit organizations who are paid based on percentage of the deal they arrange. Trade Points, as non-profit entities, many with a trade facilitation or promotion agenda, could create a new form of trade intermediary. Some operators see a need to extend their traditional facilitation services to include intermediation, thus becoming more involved in actual transactions. Suggestions for such a role included receiving pay on a flat fee basis, as opposed to a percentage. The intermediation role would, for those with close relations with their clients, be a natural outgrowth of their work to encourage these firms to become actively involved in export. Additionally, since Trade Points need to support themselves this flat fee structure would serve as a competitive advantage vis-à-vis the traditional intermediaries.

Intermediaries are supposed to be neutral parties to a transaction. They typically bring clients together and through their relationship with each party create an enforcement mechanism for both to operate fairly. For those Trade Points operators from a trade promotion background making judgements about the conduct of a client and the liability it brings is undesirable in terms of a business model.

This intermediation role could act as a complement to the second new institutional form, that of a certification authority. The majority of Trade Point operators interviewed thought it was vital for Trade Points to engage in this activity. It should be mentioned, however, that the interpretations of the responsibilities of a certification authority varied widely. Some believed certificate authorities would only be responsible for verifying the identity of a firm, while others felt that the Trade Point/CA should be able to provide up-to-date information as to the financial viability of a firm.

Surprisingly, there was little discussion of the enforcement mechanisms involved with authentication. In fact, little discussion of policing and enforcement is found in discourse concerning authentication and digital certificates. More commonly addressed issues are the issuance of the certificate, what information will be required, what is considered valid data, and who is authorized to issue such certificates.

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151 Since the Trade Points are still trying to identify business models the questions were geared to assess the range of possible institutional forms.
The third new institutional form of the Trade Point operators is as a global network. This network has already established norms of reciprocity in sharing of experiences and information about local firms. The Trade Point network also extends to a network of global information brokers such as embassies, the Chambers of Commerce, and the World Trade Centers. Most of the Trade Point operators have experience with these groups and their own network often relies on this existing network institution.

Although not explicitly stated, it can be assumed that the norm of reciprocity among the Trade Point operators is reinforced by an informal reputational sanction. One operator mentioned the need for the operators to trust one another, particularly when validating a firm. That all operators expend the same level of effort to find information about a firm, both positive and negative, is a concern. Certainly an operator who does not provide valid information will quickly suffer a loss of reputation among the other operators.

Examining the theoretical roles of an intermediary, there is hesitancy by Trade Point operators to adopt the role beyond that of the information provider. 'Higher level' functions such as absorbing risk and judging quality are deemed as risky and carrying liability. Since the Trade Point must be self-sustaining and it is likely the competition in trade information will be fierce. Interestingly, it appears many of the Trade Point operators do make judgements about their clients, there is merely resistance to formalizing them.

7.2.2.2 External Institutions
To judge the extent to which the Trade Point program helps SMEs overcome barriers to international e-commerce we must also consider other institutions of international trade. Additional institutions of international trade include various mechanisms of payment and the banks that support them. Those mentioned by the Trade Point operators were letters of credits (L/Cs), prepayment, and the banks themselves.

L/Cs are an important mechanism for trade as they allow banks to absorb the risk of the trade between unfamiliar parties. Because the sanctions for defaulting on a bank are more easily enforced than for defaulting on an individual firm, the use of L/Cs is an important facilitator. Although this system reduces uncertainty, the overall cost of the transaction may rise with the use of L/Cs as several operators mentioned they are expensive.

Another method of reducing uncertainty is by using prepayment. Prepayment is usually required when a supplier has no experience with the buyer of the goods. It is often required when a developing country firm is buying goods from a foreign supplier. Opinions on the use and willingness to pre-pay varied among the Trade Point operators. It appeared the differences are due to location. One operator from Africa saw SMEs' unwillingness to prepay as a barrier to expanding their businesses. After all, most African firms are required to prepay and when dealing with an established supplier the deal usually goes smoothly. Another operator from South America felt prepayment is too risky. It appeared, however, to be a less established business practice there.

It became apparent that among developing countries some locations have worse reputations than others in terms of business ethics do. Even from other areas of the developing world Africa's reputation is quite poor. There was no differentiation made between different African nations. Although this uniform application of a negative reputation may seem unjust, it may well reflect actual risks. One Trade Point operator from a recently war-torn African country
raised several important points about domestic circumstances (institutional context) and its impact on international trade. The operator discussed the need for domestic firms to trust one another before they could be worthy of trust from other countries. The short-term orientation of the people, resulting from years of war, has created what the operator referred to as a “thieving culture.” People are more interested in earning one-time profits, often from cheating, rather than through long-term relationships. As profits gained from an honest, long-term relationship are typically slower to accrue than the one-time gains from cheating, habits can be hard to change. Also, this mode of operation may have saved these firms during wartime. Thus there is a need to adjust behaviors to changing circumstances. Not only does this situation highlight the relative disadvantage small LDC firms face in global electronic trade, but it also highlights the existing inequalities in traditional international trade.

Reflecting on the issue of trust, Trade Point operators added that banks are suspect as well. Historically, a lack of trust in banks was not unreasonable in LDCs. During unstable time when banks would close firms learned to keep money in cash. Some operators found in their export promotion role the need to convince firms to trust in the system of international trade, including banks and their new technologies. In some countries big international deals are still carried out using cash payments. The need to convince firms, especially SMEs, that banks can now be trusted is an ongoing task. This lack of trust hinders the participation of small enterprises in both traditional and electronic based international trade. Another point of difficulty raised by several operators was a lack of trust in information and communication technologies. Particularly with SMEs, the firms need to be convinced of the reliability of the system.

This lack of trust in international trade institutions is clearly related to situations where sanctions could not be actively policed and enforced. As previously stated, the institutions available to Trade Point operators around the globe will vary. Those institutions will define a variety of sanctions and in turn these sanctions will be policed and enforced with a variety of rigor. Thus the concept of a level playing field of electronic commerce is challenged merely on the differences firms face or benefits they perceive in the international trade system.

The final question to be considered whether or not the Trade Point system helps to clear away hurdles to the participation of developing country SMEs in electronic commerce. As previously stated, the roles of the Trade Point operators vary. Much of the information flows in international trade are facilitated by networks of contacts that provide information about the validity of firms. The efficiency of this system relies heavily on informal reputational sanctions and partially closed networks of personal contacts. The Trade Point operators certainly play a role in this system. The system operates both as a closed network unto itself, as well as interfacing with existing networks of trade professionals. The Trade Point operators also represent a choice for small firms to gain access to these interpersonal networks by becoming a client of a Trade Point. Trade Points can also help facilitate Internet adoption by introducing small firms to the use of email, online research, and making web pages. Furthermore, Trade Points help SMEs become involved in international electronic trade by acquainting them with traditional trade institutions.
7.3 Results

The results of the analysis are twofold. First, the implications of institutional structures for shaping the potential for e-commerce are identified. Second, recommendations on how to increase the potential of e-commerce for SMEs are made.

From the ETO system analysis, the examination of institutions demonstrates the link between institutional structure and the information flows between system users based solely on the system's institutions. In their disclaimer UNCTAD states "Every effort is made to provide accurate and up to date information as supplied by our Trade Points and ETO senders." However, the study of ETOs found that only roughly 30% go through the Trade Point operators. Persons sending ETOs directly to the switch are encouraged to send accurate information, however there is no indication of user agreement.\(^{152}\) Thus, the trade leads are not qualified and may contain poor quality information.

Open system access has also allowed users from outside the target audience to take advantage of the system. With 75% of ETOs coming from only 10 countries (granted they are large countries) and 67% of the users from the 1995 study were trade intermediaries. These are firms already involved in international trade taking advantage of a free system.

There is also an observation about the ETO system and the goal of increasing exports. It would appear the ETO system is best at facilitating one-off trades. Development literature suggests exports are best facilitated by long term relationships. Perhaps a match making system for alliances rather than Trades Point System would be more appropriate.

UNCTAD could alter the ETO system to help increase the quality of information in the following way. First, an institution allowing communication either between users and UNCTAD or among users themselves, with the purpose of reporting fraud, could help create trust in the system. This would create a 'loss of reputation' sanction within the system for firms behaving unethically. Use of reputation sanctions has been used extensively by eBay\(^{153}\) at their auction site (see Kollock, 1998, for a review of this system). Although eBay users are subject to institutions and sanctions external to the system (U.S. Postal and banking laws, for example), the system appears to have a high degree of trust among its participants based on the institutions of the system itself. The results show that 60% of members complete trades using the system. The addition of a reputation sanction to the ETO system would neither limit access nor compromise the free status of the system.

There are several other mechanisms that sites use to help improve the quality of information. These mechanisms, such as requiring registration forms or indicating agreement to adhere to system standards, are of questionable effectiveness. These mechanisms impose costs (in terms of time) on system users, and all participants know the other users have also incurred these costs. As institutions they establish norms for access to and use of the system, with the sanction for non-compliance being no- or restricted access. Along these lines, UNCTAD could make downloading ETOs completely unrestricted, but require users to fill out a registration form, including an agreement to act ethically, if they want to post to the system. Of course such an agreement will not be legally binding due to jurisdiction issues but it does

\(^{152}\)see ETO tools section of http://www.umn.edu/umtpdc/eto/ (or go directly to http://www.umn.edu/umtpdc/eto/tools/post_OFFER.html to see the web version of an ETO submission form)

\(^{153}\)http://www.ebay.com/
create one barrier for those potentially dishonest firms. In addition, the cost in time of filling out forms increases the severity of the sanction of being eliminated from the system. These mechanisms benefit both developed and developing country firms, and although creating a more trusting environment they do not address the particular challenges of developing country firms in establishing themselves as trustworthy participants in electronic commerce. With this in mind, attention is now turned to the analysis of the Trade Point operators.

The network of Trade Point operators, in addition to the ETO system, can also work to improve quality of information. In the analysis three new institutional forms for Trade Point operators were discussed. The potential of these forms is highly dependent on the activities and responsibilities the Trade Points assume. Through close relationships with their clients the Trade Point operators have the ability to create sanctions for unethical behavior. By monitoring their clients and providing recommendations for only those who meet their commitments, the Trade Points could represent an institution for building trust in electronic commerce. There was not uniform agreement on whether or not the Trade Points would accept this role. Some, with more of a facilitation rather than intermediation orientation, preferred to remain as suppliers of trade information, backing away from the sticky task of evaluating the credibility of clients. For small firms with limited capital in countries with reputations for unethical business practices, the recommendation of the Trade Point may be the only means for establishing their validity.

Taking on this intermediary role with local clients would enhance the network function of the Trade Point system. Trade Point operators acting as intermediaries would have an incentive to be honest about the strengths and weaknesses of their clients by their membership in the worldwide Trade Point network. Thus, information shared throughout the network would increase in quality. At present Trade Point operators may only be able to say whether or not a firm exists. In international trade the knowledge of the local intermediary is very valuable. In this way the network could work to enhance the use of ETOs.

These results demonstrate how the existing institutional design of the Trade Point program, both its ETO and Trade Point office systems, both help and hinder the use of e-commerce. The program faces challenges in that its goals of providing high quality information with access open to all are conflicting. Furthermore, the Trade Point operates with a background in trade promotion, many of which are still government entities, need greater awareness of the plethora of trade information systems on the web with which they must compete. There is also the need to recognize the value of the information they have about their local clients and to develop a method of formalizing their judgements. This is the real value-added service they can provide. Vouching for their clients, if appropriate, could lead to greater formalization of information which might have secondary benefits such as access to credit, another major barrier to e-commerce.

In this next section we will examine findings on the impact of institutional structures in Tanzania and the U.S. and how the impact found there are similar or different from the findings here.
7.4 Case Comparison

Although this examination of the Trade Point program is very different in many ways to those made in Tanzania and the U.S., there are some interesting similarities. Before considering the findings we first discuss the institutional structures of the cases.

In the U.S. and Tanzanian cases the institutional structures are promulgated by a variety of forces. Of course the macro institutional environment is most influenced by the federal government, although cultural factors do play a role. At the meso level institutions were shaped by the structure of an industry, the role of government in determining that structure, and industry culture. All of these are rather diffuse sources of institutions. In the Trade Point case there were a few sources. First, the institutional structure is very much centrally defined by the UNCTAD staff, based on feedback from donors, an advisory board, and Trade Point operators. The institutional structure of the online program is very much defined in this centralized way. In some respects this is the power of the Internet. An institutional structure as reflected in the terms of use of a web-based system becomes the institutional structure faced by users worldwide. On the other hand, the institutional structure developed by the network of Trade Point operators is done so in a decentralized manner.

Naturally the centralized and decentralized manner in which these institutions are developed also have implications for the ways in which they evolve. The centralized nature of the development of online institutional environments may significantly reduce their path dependencies. However, since this is a static study we will have to limit the discussion to how these different modes of development affect the development of institutions.

The U.S. and Tanzanian cases had four findings that are of relevance to the Trade Point program. Although the two country cases focused on knowledge-intensive business service SMEs, the findings highlighted here are likely generalizable to a broader range of SMEs. The first two findings are relevant for the Trade Point program of today and the second two are more relevant for the future. We address the former first.

In the U.S. and Tanzanian case it was found that inter-organizational networks, and the validated information that flow through them, play an important role in the commercial lives of SMEs. The Trade Point network is capturing the same synergies. Similar to the Trade Point operators, SMEs in the U.S. and Tanzania preferred to keep the information flows informal and uncodified. This desire to keep this information in an uncodified form is theoretically contrary to the success of the ETO system. The desire is also contrary to the rants and raves found on the e-Bay system. Of course, the difference in the SMEs and the Trade Point operators is they are dealing with people they know rather than strangers. Thus, perhaps it is necessary to strike a balance.

The second finding from the U.S. and Tanzanian cases with implications for the Trade Point program is the role of general business organizations vis-à-vis industry associations. Since the SMEs in the country samples were more active in their industry associations, it may in some cases, be productive for Trade Point operators to reach out to those entities. Particularly in cases where a country has a comparative advantage in a particular product the relationship may be extremely beneficial.
The findings of the country cases relevant for the future Trade Point program concern payment, contracts, and courts and are relevant for Trade Point operators involved in transactions. They may also apply to an ETO system that goes further in the transaction process.

First, we find that the issue of prepayment exists in all three cases. Of course firms trying to export may have problems receiving prepayment without the use of banks so that issue needs to be resolved. The really interesting aspect of prepayment is the distribution of risk to one party and that it alleviates some pressure on trust. In a "normal" transaction trust is a bilateral issue with parties simultaneously being required to trust as well as be trustworthy. With prepayment whether or not the prepaying party is trustworthy no longer matters. However, prepayment raises other issues such as power disparities and risk. Those SMEs already requiring prepayment by clients are well situated for e-commerce. These issues will be more relevant for the Trade Point program when it enters the transactional phase.

The last issue relevant for the future Trade Point program is contracts and courts. In the U.S. and Tanzanian cases we found that contract use was largely dictated by industry and few of the SMEs used courts to settle disputes. Those findings may be limited to firms who operate within a local context and therefore have other means of dispute resolution. We can conclude, however, use of written contracts did not imply some predisposition to use courts. Perhaps, the, online mediation will be an acceptable arena for e-commerce dispute resolution. And because contracts are becoming more standardized by industry, perhaps jurisdiction and contract law will not present such a great hurdle to e-commerce. Trade Point could experiment with an online standard contract that only States firms will use a mediation service.

Finally it should also be mentioned that the two case studies highlighted the very great differences that exist in customs regimes. Differences in customs regimes disrupt international trade and firms in international e-commerce will continue to have to deal with these differences. Although this is beyond the scope of the formal agenda of the Trade Point programs, Trade Point operators could serve as another lobbying body to encourage national governments to upgrade their customs systems.

7.5 Conclusions

In the coming decades economic progress in developing and transition economies will occur in the context of increased globalization, changes in information and communication technologies, and liberalization of trade. It is hoped that electronic commerce, as a new medium of exchange, will help developing country firms overcome traditional barriers to entering global markets.

The Trade Point program is a first step to assisting developing country firms' participation in electronic commerce. The ETO system, supplemented by access to Trade Point offices, helps firms find partners for trade in a relatively inexpensive way. With high levels of participation established, further steps to facilitating trade can now be made. Redesign of the ETO system is one way to improve information flows. Increased synergies between the Trade Point operators and the ETO system would also help achieve this goal. Furthermore, careful consideration of the future role of the Trade Point operators, particularly in a way that maximizes their potential for value-enhancing intermediation, should be made.
The Global Trade Point network (GTPnet) case study also demonstrates how institutional analysis in e-commerce can help develop these new markets. The results of the case study show that online markets such as the ETO system can be designed in such a way that access remains open but that sanctions that create expectations for behavior are included. The analysis also served to highlight what might be considered the true value of the Trade Point offices, their ability to serve as a source of information about their clients. This function is likely to outlast those of providing general trade information.

The perspective offered by this research is that the discourse of key elements for e-commerce such as information quality and trust must be expanded beyond technological issues such as encryption and authentication. Many of the issues faced in e-commerce have already been solved in the traditional realm. Since these old and new systems interact, it also benefits designers to consider the institutional structures of traditional commerce, such as information quality and enforcement of norms, and to use these in an electronic realm. The differences developing countries face in this realm may create a barrier to their successful participation in electronic commerce. However, with careful design of new commerce institutions these differences can be overcome.

Finally, a study of the Trade Point program would not be complete without a comment on the mission of the program. UNCTAD is a trade oriented body and therefore will promote an agenda that sees growth in exports as the key to economic development. The importance of exports to economic development is well documented. However, this does not imply that development of internationally oriented commerce over domestic commerce does not come without a cost.

Consider the following quote that hypothesizes about the effects of telecommunication technologies on rural economies.

"Telecommunication services that primarily connect articulating agents or groups from rural areas to the metropolis will weaken existing local networks and create new networks in which those individuals function as nodes. Local market relations will be disrupted, since production will be oriented to distant metropolitan requirements and local products will face competition. On the positive side, certain monopolies will be destroyed; but benefits will flow disproportionately to the more experienced and better-capitalized players in the metropolis, at least in the short term." (Samarajiva & Shields, 1990, p.99)

It is easy to imagine that e-commerce could bring about similar effects, with developing countries representing the rural areas and developed countries assuming the role of metropolis. Given the possibility of such effects, development programs should pursue a simultaneous focus on domestic as well as export oriented e-commerce. This would reflect a more realistic view of trade, one that recognizes and acts on both the positive and negative outcomes.

**7.6 Post Script**

Since this study was performed several changes have been made in the Trade Point system. Coincidentally, many of them are recommended here. First, in order to both increase the quality of information and provide a revenue stream for Trade Points UNCTAD has closed posting on the ETO system and allows only members of Trade Points access to this function. The system remains partially open in that non-members have access to postings when they are
eight days old. It is interesting to see how fairly easily this type of institutional change can occur. Furthermore, UNCTAD plans to turn over the operation of the system to a non-profit entity. The likely candidate is a federation formed by the Trade Point operators. This shift in management should compliment the greater synchronicity, symbiotic between the operators and the electronic matchmaking program.
Chapter 8:

Institutions and E-commerce for Developing Country SMEs

Institutions shape the adoption and potential for e-commerce in many ways. First they act simultaneously at the macro, meso, and micro levels to influence adoption and implementation decisions by firms. Institutions also have many sources. As we have seen, they can be developed by national governments, local governments, industry associations, a UN body through a development program, or simply through culture. The source of the institution partly determines its level and the scope of its effect, and hence the ease with which the institution can change.

Up until now the analysis has focused on identifying intermediate level institutions and examining how they affect e-commerce. The analysis further examined how institutional differences between developed and developing countries can explain differences in the potential for e-commerce. The analysis is limited, however, in that intermediate level institutions are specific to their source and the function they perform in exchange. They have unique characteristics and thus it is difficult to generalize from them and develop more general theoretical concepts.

Given the interest in economic development in this research, if we look at institutional theory for well-functioning markets it is possible to identify fundamental institutional elements that exist in many contexts. Well functioning markets efficiently allocate resources with low levels of uncertainty and low transaction costs. The efficient allocation of resources is facilitated by institutional foundations of competition, intermediation, networks, and trust. Property rights, contracts, enforcement, and information facilitate low levels of uncertainty and low transaction costs. Using these institutional foundations it is possible to bridge the gap between the observable intermediate institutions found in commerce and the theories that describe how institutions affect markets, and hence e-commerce.

In this chapter we undertake the task of bridging the gap between the observed institutional effects and theory. The intermediate institutions described in the cases will be classified according to their basis in one of the 8 institutional foundations discussed above. As each fundamental element is considered in turn the implications of the evidence for theoretical notions of the concepts are considered. Next we examine the observed relationships and expected relationships between these foundational elements. Subsequently, the implications of these fundamental elements for e-commerce are considered. Finally, we make some conclusions concerning institutional theory and the findings of this research. This will cover both general issues and issues relevant for small firms in developing countries.

8.1 Intermediate Institutions and Fundamental Elements for Well-Functioning Markets

In this section we take the intermediate level institutions discussed in the three cases and map them onto the eight fundamental elements. Only those intermediate institutions that have a moderate or high level of impact on either the adoption or the potential for e-commerce are
considered. Thus we take elements of previous discussions and group the findings from the three cases according to their association with a particular fundamental element.

In the following the discussion will be organized around the various fundamental elements. Within each section intermediate institutions at the macro, meso, and micro levels that represent in observable form the individual fundamental element are described. Furthermore, applying the evidence provided by these intermediate institutions, the nature of the fundamental elements is explored.

8.1.1 Property Rights

Property rights are considered the rights individuals appropriate over their own labor and the goods and services they possess (North, 1990). Nearly every action a government takes can be interpreted through a property rights framework. Regulation, laws and policies are state tools for making public claims on private property. But property rights are also established and applied at the meso level by industries and programs.

From the U.S. and Tanzanian cases, it is concluded the effects of property rights at the macro level have strong implications for e-commerce. The areas in which property rights differences are most clearly seen are in regulation of the Internet and telecom markets, tariffs and taxation, and intellectual property rights. In regulation of markets and tariffs the real differences are in policies, whereas in taxation and IPR more variance exists in enforcement and its consistency.

At the industry level the U.S. and Tanzanian cases demonstrated that property rights play a less significant role than at the macro level. The most immediate meso-level property rights issue was that of licensing. In both the customs brokerage and engineering consulting industries licenses for operation are required.

In UNCTAD’s Trade Point program the meso-level implications of property rights are significant. Particularly with their matchmaking program, UNCTAD uses its property rights to establish the terms of use of its system. The system is open to all who have access either directly or indirectly to the Internet. The openness of the system is enhanced by technology choices made by UNCTAD. By keeping the level of sophistication down and not requiring passwords, openness is enhanced. Thus, UNCTAD has chosen not to exercise their right to require payment for their labor.

We consider these rights to be at the meso level because in fact they are not associated with any one country. Access to the system can be made from any country and the ability of UNCTAD, and other entities who establish online markets, to lay claim to property rights to their market is very much related to the technology.

The evidence from the cases demonstrate that differences in property rights regimes will have significant implications for the relative success of e-commerce in different countries. Its affect is seen mostly through uncertainty and how this affects the potential for e-commerce. The uncertainty comes from constant changes in the delineation of rights. As the Tanzanian case demonstrates a strong political machine can define property rights at will. The state, as an expression of the people, is weak and has little power to protect individual rights. The
uncertainty created by governments when property rights are changed will hamper both domestic and international e-commerce. Property rights affect e-commerce by:

- Frequent changes in property rights creates uncertainty for both traditional and electronic domestic and international commerce
- Differences in property rights stability creates inherent disadvantages for firms in both traditional and electronic commerce
- Differences in property rights internationally creates challenges for both traditional and electronic international trade

8.1.2 Contracting

In this research the parties in the samples are free to contract and legal protections, however imperfect, do exist. Thus in examining the implications of contracting for e-commerce we are interested in the forces that create problems to the use of contracts that is theoretically possible.

One impediment we observed is the limitation to settling contracts online caused by a lack of resolution over digital signatures. Although there is movement toward the acceptance of digital signatures, institutional change has been slow. The lack of acceptance of digital signatures limits the possibilities for electronic commerce.

Industry level differences in contracting may result in different levels of acceptance of e-commerce. One industry level difference is the use of standard contracts. In both the Tanzanian and U.S. engineering consulting sectors industry associations established standard contracts. Although a standard Power of Attorney form was used by U.S. customs brokers, no industry-wide standard contract is used. Differences between the two industries in the use of written versus verbal contracts was observed. In both countries engineering consulting uses written contracts more often.

At the meso level we also found that the forms of contracts varied and that the use of prepayment as a contractual condition is used frequently. As the Trade Point operators and the U.S. brokers dealing with Mexican firms reported, developing country firms are often required to prepay when involved in international trade. We also saw that developing country firms use the same tactic in both domestic and international transactions.

The evidence found in this research both supports and refutes theoretical expectations. The findings first provide a basis for questioning the value of a contract itself. From there implications concerned with standard contracts, contract form (verbal versus written), and payment terms are considered.

This research raises fundamental questions about the value of a contract. If contracts, both verbal and written, are forged due to the legal protections they afford, what is their purpose when the legal protections are rarely pursued? We can examine why firms continue to use contracts by considering both ex ante and ex post contracting costs. Although few firms go to court, for some the value of a contract is still the legal protection. It simply means that the contingencies in the contract rarely arise or are contested. It is interesting, though, that in engineering consulting high ex ante costs of contracting are incurred to create contingencies for highly unlikely circumstances. Industry norms, government requirements, and sometimes
the power of a parent company continue this process. Fortunately, as more standardized contracts are adopted these costs are reduced.

The role of contracts can be seen from another perspective by examining the ex post costs of contracting. The ex post costs of contracting are those associated with efforts to protect oneself after the contract has been agreed to and includes the costs of developing alternate forms of dispute resolution Williamson (1985). Since networks are an important part of the dispute resolution process efforts to develop and maintain networks would fall in this category. Thus the need to rely on networks as mechanisms of enforcement is partially dictated by incomplete ex ante agreements.

According to TCE contracts serve as governance structures for relationships between firms. Given the infrequent use of contracts found here, and their relatively unimportant role in the operations of firms, what does this say about contracts as governance structures? Small firms in KI-business services typically forego the process of designing ex ante safeguards and accept ex post costs as they come, thus governance structures are likely to be fluid.

This research also has implications for our expectations about the use of standard contracts. It was expected that standard contracts would be used in stable legal and political environments, assuming that fewer contingencies would need to be spelled out in such circumstances. The finding of this research demonstrate this is not the case, as use of standardized contracts was found in both Tanzania and the U.S. It is likely that since the specifications of a contract are generally low, the challenges presented by an unstable political or legal environment are unlikely to be spelled out in an ex ante contractual agreement. Thus, the use of standard contracts, which is facilitated by strong industry organizations, is accepted.

This research has other implications for contractual form. TCE theory posits that the form of a contract is determined by the specificity, frequency and uncertainty characteristics of the transaction. Although these factors may play an important role in the structure of a contract, for knowledge-intensive business service firms there are other important factors. First, we found that engineering consultants tend to use written contracts much more frequently than do customs brokers. The lack of use of contracts by customs brokers was driven partially by industry norms and competition. Industry norms appear to develop based on the value of the transaction at hand as well as the risk structure in the industry. An emphasis on transaction specific issues may point to the desired or most efficient form of contract, however these other factors have a greater influence in the service sector on the form that is actually used.

Enforcement was also found to have implications for contractual form. When enforcement of contracts, either formal or informal, is weak the nature of the contract may be significantly affected, leading firms to require prepayment. The ability of firms to use prepayment as a means of mitigating weak enforcement depends on the power between the parties to the transaction. Prepayment allows firms to avoid the issue of jurisdiction, and allows them to bypass issues of trust.

Since small firms rarely go to court and are inconsistent in their use of written contracts, efforts to develop a global legal framework are of little consequence to them. In e-commerce with small transactions firms will simply require prepayment and for large transactions will rely on laws for traditional commerce.
The last effect of contracting for e-commerce is concerned with differences in informal contracts in different societies. These differences may also be interpreted as cultural differences (Commons, 1934). As the descriptions of developing economies from the Trade Point operators and as seen in the Tanzanian case there are large differences in many of the informal contracts in different societies. It will be interesting to see if these differences bog down e-commerce or if in some way it is able to rise above them.

8.1.3 Enforcement

Although property rights and contracting in and of themselves have implications for e-commerce, more direct effects are seen in the mechanism of enforcement. This research demonstrates that enforcement has implications at macro, meso, and micro levels. In turn these effects reveal several aspects of theoretical expectations that need revisiting.

Macro-institutional effects of enforcement are seen in the areas of intellectual property rights and consistent enforcement of tax laws. The differences between countries in the sample in terms of IPR enforcement will establish different perceived benefits to firms for producing content for e-commerce. Also the variations in tax law enforcement in Tanzania creates greater levels of uncertainty in their commercial environment.

At the macro level we see how a wide-spread acceptance of inconsistent enforcement can change an entire commercial environment. Timely payment is to a large extent the result of contract enforcement, whether written or verbal contracts are used. Although in the U.S. late payment is an issue in isolated sectors, in Tanzania late payment is endemic. This is accepted across the entire economy or is mitigated by the use of pre-payment.

At the meso-institutional level we also observed issues concerning enforcement with effects for e-commerce. The first implication of enforcement is seen in the reliance of small firms on informal dispute resolution mechanisms such as interpersonal relations and intermediation by third parties. This is a result of their perception of the courts as inadequate enforcement mechanism.

Enforcement is also issue in the licensing of firms. In Tanzania, the inconsistent enforcement of licensing introduced greater levels of uncertainty than in the U.S. Enforcement is also an issue for industry associations in both the U.S. and Tanzania that attempted to establish ethical standards. These organizations felt powerless to enforce ethical codes.

The Trade Point program faces similar problems in terms of enforcement. Although they attempt to limit the type of content and the validity of offers in the their online matchmaking program these norms are difficult to enforce. The Trade Point operators will also face issues of enforcement if they adopt the role of certificate authorities.

Theoretically the issues of enforcement can be broken into two categories. There are difficulties of creating consistent enforcement and the results of effective and ineffective enforcement.

Problems with carrying out enforcement have many sources. In some instances problems of enforcement are concerned with exclusion and information flows. This can in some cases be achieved by technology. UNCTAD enforces the norms of access for their site using software
technology. However, technology can only solve part of the matchmaking program's problems, as enforcing the criteria that the system be used only for valid offers or demands shows. Problems in screening the content can be seen as a problem in information flows.

The difficulty of enforcement may also be dictated by the nature of the transaction. Problems of late payment to customs brokers may be an artifact of the low value of the transactions and the role of the broker in the transaction. Since it is difficult for brokers to withhold service until payment is received, they are in a less powerful position.

It has been postulated that enforcement is best carried out through a combination of state voluntaristic mechanisms. Aspects of this research bring into question the usefulness of state enforcement, and lead to conclusions that greater attention should be paid to these informal modes of enforcement. On the other hand, as observed by Fafchamps (2000), networks are also imperfect enforcement mechanisms. Fafchamps observed that in business networks cheaters are only infrequently expelled and people dealing with cheaters are not ostracized.

This research shows mixed support for the efficacy of networks as enforcement mechanisms. Evidence where firms report that networks do and do not work were found. However, it appears that one important factor in the efficacy of networks may be time. Networks may be initially forgiving and allow for nonstandard behavior in isolated incidents, while over time the expulsion may eventually occur.

But one reason networks might not work are cultural norms that discourage strong enforcement. One of the reasons industry associations have difficulty enforcing codes of conduct is a norm against officially reporting unethical behavior. Norms of enforcement may vary across countries as well. In Tanzania we saw that firms were afraid of developing a negative reputation by going to court. Instead they sometimes relied on family connections, which in the U.S. may be considered an infringement of privacy.

Although enforcement may be difficult to carry out, if it is not it has several negative consequences for the commercial environment. Certainly weak enforcement has its negative consequences but even more problematic is erratic enforcement. Fluctuations in enforcement are bound to occur, particularly when a government is attempting to 'crack down.' However, this does have implications in the level of uncertainty it creates.

Successful enforcement can also have deterrent effects. Fafchamps (1999) observed that when the size of a transaction is small or when parties to the transaction have little or no assets to foreclose on, the deterrent effect of the legal system might be insufficient. We certainly found this to be the case. This can affect small service sector firms in two ways, in that knowledge based assets are difficult to seize. Also that the value of their transactions may be low. But the interesting thing this research shows is that this finding is just as relevant in developed as developing countries.

The level of enforcement is also expected to affect the value of assets. The interesting thing here is that sometimes when you have a service, such as customs brokerage, the value of your asset, the service you offer, is higher the lower the level of enforcement. Actually, customs brokers in developing countries derive part of their value based on continued lack of enforcement. Transparency and enforcement reduce some of their value. The lack of
enforcement may be the result of a weak state or of powerful players within the state that wish to continue the status quo.

8.1.4 Competition

Competition has implications for e-commerce at both the macro and meso levels. At the macro level the first effect is the role of competition in the telecom market. With a less competitive telecom market, Tanzanians face higher costs for Internet access than in the U.S. Competition is also a factor in the Internet services market. Both countries have fairly competitive access markets that have resulted in relatively low costs. This competition has also helped in adoption as ISPs help clients solve problems in order to create new customers and keep existing ones. In both countries the ISPs also helped their clients overcome obstacles in complementary products such as telecommunication services to increase their use of Internet services.

At the meso level the competitiveness of markets was one motivator for innovative activity. In both the engineering and customs brokerage sectors the firms perceived their markets as extremely competitive. In the U.S., however, the brokers in Otay Mesa are in a more competitive market than those in San Diego and this higher level of competition is one factor driving greater use of e-commerce at the border. Thus, we find that competitive industries do have a positive impact on e-commerce adoption through Schumpeterian forms of innovation.

Competition in the industries also affected the behavior of smaller firms and new entrants. In engineering consulting new entrants were more likely to take risks than their larger counterparts. The smaller firms’ ability to take greater risks because of having fewer assets was a competitive advantage.

At the industry level competition also helps in the development of specialization and has implications for e-commerce. Greater specialization in engineering consulting has led firms to search for clients across a greater geographic area. Extending their network geographically provides an impetus to use the Internet, both for communication and marketing purposes.

Competition also plays an important role in enforcement. In competitive sectors sanctions such as fines and loss of reputation are effective, whereas in monopolistic markets the costs of fines can simply be passed on to consumers and loss of reputation does not result in migration to other providers.

Although competition is important for e-commerce, there are cases where it can be sacrificed for other goals. In both the U.S. and Tanzania purely competitive markets were partially sacrificed by using state power to manipulate demand for the services of minority-owned and small firms. In both cases firms given special status through these programs were using the Internet to help other firms find them. In this way, a compromise of a purely competitive market was somewhat beneficial for e-commerce use.

8.1.5 Networks

Implications of inter-organizational and professional networks for e-commerce were found at both the macro and meso levels. At the macro level we found that differences and similarities in the composition of networks between the two countries exist. Differences are that in
Tanzania there is a greater role for social clubs in the business networks of firms. Furthermore, in the U.S. there are a greater variety of industry associations. This is most likely a reflection of the higher degree of specialization in the economy. Similarities were found in that industry and business organizations play key roles in business networks. A further similarity was found in that in both the U.S. and Tanzania industry organizations are seen as more valuable than business organizations.

At the meso level similar findings concerning industry associations were found. In both customs brokerage and engineering consulting, industry associations played an important role in the formation and maintenance of professional networks. The importance of these professional networks versus their inter-organizational networks varied however. In Tanzania the customs brokerage industry association is not nearly as important as is the one in San Diego. There is also overlap in the functions of professional versus inter-organizational networks. Some industry associations were horizontal while others were vertical, meaning they operated at one level or across multiple levels of the value chain.

Also at the meso level, firms in both the customs brokerage and engineering industries reported their biggest motivation for getting online is to meet customer requirements. Although the willingness to meet customer requirements exists because the markets are competitive, the firms were in most cases not innovating for the sake of establishing an a priori competitive advantage, but more to enhance their relationships with their clients. Thus, although the motivations are combination of network and competitive forces, from the interviews it can be concluded that the motivations were more focused on relationships than creating competitive advantages.

Firms also rely heavily on networks for references when finding work, subcontractors, and employees. The implications of the lack of such references from networks can be seen in the Trade Point program. The lack of network connections in their online matching program is partly responsible for a lack of validation in the trading opportunities. This kind of validation can occur through the network of Trade Point offices through their global network however.

The implications of inter-organizational networks for e-commerce are both positive and negative. As mentioned above, the relationships that are established through these networks can serve as an incentive to adopt. If these networks include powerful actors, such as the government, this can be a further impetus to adopt. Several firms in the engineering consulting field in the U.S. mentioned meeting the requirements of government clients as the main reason for adopting electronic commerce. Networks such as GTNnet enhance the flow of qualified information. This in turn provides a basis for trust and allows exchange in traditional and electronic commerce to go forward.

On the other hand the customs brokers in both Tanzania and the U.S. are being restricted in their e-commerce adoption by the presence of the national customs authorities in their inter-organizational networks. In the customs brokerage industry globally, national governments play a powerful role. Firms are unlikely to adopt a technology they cannot use to communicate with their most important contact. The negative effect of interorganizational networks for

154 Other bases for differences in business networks such as race and ethnicity were not explicitly examined in this research. This is some evidence that in certain industries ethnicity does play a very important factor in determining business networks in Tanzania.
technology lock-in is demonstrated by the U.S. customs brokers who are locked-in to a system with the customs authorities.

Another negative effect of networks for e-commerce is that networks compete as a source of information. The use of networks to provide qualified information competes with information that is available in the electronic realm. Thus, particularly in search processes such as finding work, finding subcontractors, and finding employees, networks present a challenge to e-commerce.

Differences in the likely makeup of a business network, such as social clubs in Tanzanian business networks, may create differences in information flows and transparency. Subsequently, differences in barriers to entry may result.

Although this research did not attempt to formally categorize networks in terms of hierarchical or decentralized structures, different network structures in the engineering consulting and customs brokerage industries were observed. The way that networks delivered work to firms was a reflection of the structure of the networks. In engineering consulting the networks consisted of clients and peers. Peers play a greater role in providing work to engineers as they often sub-contract work to one another. This is different from the structure of custom broker networks where work typically comes from referrals through clients. Customs broker networks also differed in that the firms used agents in other locations or had multiple locations.

All three cases demonstrated the value of networks in different settings. This is actually contrary to expected findings. Fafchamps (2000), who studies African markets, notes that relationship-based networks are expected in markets where screening costs are high and personal trust is a substitute for external enforcement through lawyers and courts. The findings of this research show that it is likely networks always exist and that screening costs for small firms are always high, regardless of context. The U.S. firms perceived court to be just as much a waste of time and money as did the Tanzanians.

8.1.6 Information Flows

Information flows affect e-commerce at both the macro and meso levels. At the macro level the limitation of information flows is partially responsible for the tight credit market in Tanzania. The lack of information flows also hinders the development of expectations for behavior, and hence trust. The assumption made by Tanzanian bankers is that if given a loan a Tanzanian firm will default.

In the Trade Point program the goal of the matchmaking system is to facilitates the flow of information about trading opportunities. It accomplishes this, however the quality of the information is an issue. Higher quality information flows through the network of Trade Point operators. Information flows will be further enhanced if the Trade Point operators take on the role of certificate authorities, as the presence of a certificate in an online environment is a short cut for information flows concerning authenticity.

The participation of firms in business networks shapes the flow of information within the sector. In an economy like that of Tanzania, where many firms exist in the informal economy it is easy to see how information flows are segmented between the formal and informal.
economy. This separation is exacerbated by the inability of illegal firms to join general business organizations.

Information flows differ by industry as processes and procedures can affect the flow of information. In the customs brokerage industry the flow of information about the status of customs clearance is often slowed by bureaucratic procedures within government customs authorities. The flow of information, and hence the transparency, is much less in Tanzanian customs clearance than in the U.S. Naturally, this also leads to a more corrupt customs system in Tanzania.

The implications of information flows for informal enforcement are demonstrated by the following observation about unethical practices by Tanzanian engineers:

"Very few instances have occurred here. Maybe because the number of firms we have. In this type of business where most active people know each other, you can cheat only once. Slowly, slowly...you write an expression of interest and nobody replies to that. You write proposals, nobody replies to that. There is sort of an indirect discipline mechanism."

ICTs are expected to enhance information flows with various effects, one of which is improved enforcement. In informal enforcement the type of information that provides loss of reputation is delivered through networks. Although the ICTs may create more robust physical networks, the kind of information that results in loss of reputation is not easily shared in written form. Thus the effect of ICTs on enforcement may be less than originally expected.

ICTs and e-commerce are also expected to increase access to information, although these effects will be mitigated by the role of inter-organizational and professional networks. When assessing access the first question one must ask is what type of information is valued in an industry and then issues of access can be addressed. Since networks provide the information that is important to firms in both developed and developing countries the affect of ICTs on inter-firm networks may provide some insight into access issues. One might think the Internet would alter the information flows in and industry however in this research ICTs are used as a means of supporting existing relationships. Frequency and quality of communication may improve but overall patterns were not very different. This implies that access to information will not increase. In any case, as the enforcement example demonstrates, some information may be difficult to share in electronic form. Furthermore, increasing access to information may also require changing norms such as the role of social clubs in a commercial culture.

Differences in information flows are in some cases due to differences in transparency. It is important to recognize that implementing transparency is a complicated process. Information asymmetries created by non-transparent processes may benefit some parties and therefore persist. Nontransparent processes may mask illegal activities or merely create a market for services that address nontransparent processes. Transparency may also be difficult to implement simply because it requires formalized processes. Formalization may not provide the flexibility needed in unstable environments. Thus improving information flows through transparency will face many challenges and the expectations for ICTs in improving transparency should take into account these factors.
8.1.7 Trust

Trust is the willingness to be vulnerable given positive expectations of behavior, which is greatly influenced by institutional structures. It has implications at both the macro and meso levels. At the macro level results are observable in a lack of cooperation. Thus the Tanzanian commercial environment was seen as having a lack of trust in limited participation in business organizations, distrust in government institutions, and in the banking sector.

At the meso level the Trade Point operators acting as certificate authorities would enhance the trust in the overall system and if certificates were required for use of the online system would enhance the trust on that system as well. The expectations that are created by recommendations from the various Trade Point offices also facilitates trust among their clients. This is also a function of the trust between the offices. The trust the Trade Points have in one another will be affected by the screening procedures for becoming an operator as well as the organization's willingness to sanction Trade Point operators who do not properly validate the information they pass through the network.

There was also evidence of implications for trust at the meso-level in the U.S. and Tanzanian cases. There the beneficial effects of institutional trust were observed in the engineering consulting industry, where firms in both countries had a high level of trust in the government procurement processes. The processes are not always completely transparent and sometimes subjectivity is used as a basis of awarding contracts. However, experience with the process over time demonstrated to the firms that the process was fair and worth participating in.

At the meso-level we also found that contextual factors can also affect the development of trust. In Tanzania, where customs brokers handle large sums of money and hence face greater risks from their employees, the customs brokers had lower levels of trust in their employees than the U.S. brokers did. Trust in employees is important for the diffusion of desktop Internet access, which greatly facilitates the adoption of e-commerce.

The implications of trust observed in this research can be compared with the many notions of trust discussed in Chapter 3. First we can examine the validity of the perspectives of Fukuyama and Platteau that view trust as a sort of cultural trait. In examining macro-level institutional structures and trust it does appear that some sort of general variable does exist. Above we mentioned it is observable partly through cooperation, and Tanzania does appear to be a less cooperative society than the U.S. However, although we do observe a sort of general variable that indicates trust, this does not imply it is an inherent cultural trait. As proposed by Murshid we see it more as effect of lack of formalization.

In comparing the 'lower levels' of trust discussed in Chapter 3 (process-based, characteristic-based, and institutional-based trust versus contractual, competence, and goodwill forms) institutional analyses will find the first structure more applicable. In Zucker's description she accounts for dynamic elements, such as experience with another firm, in process-based trust. Her proposition of characteristic-based trust was found in this study but not in the expected ways. In studying Tanzanian firms, it was not the indigenous firms that relied on characteristic-based trust, as many would expect. Instead it was the expatriate community that relied on characteristic based trust. Their identity as British firms provided a basis for trust.
Her last category, institutional-based trust, is of great importance to this research\textsuperscript{155}. She proposes that institutional-based trust is derived from mechanisms such as credentialing and intermediary mechanisms. This research has found these to be an important component of trust particularly if they are applied in transparent, consistent ways. We have referred to them here mostly through their impact on e-commerce, in which they create uncertainty.

Further implications of trust are found by focusing on the definition adopted here: the willingness to be vulnerable given positive expectations of behavior. Based on the definition we expected that the willingness to be vulnerable would be a function of risk preferences of managers. We found that risk preferences of managers are very much determined by the industry and industry risk structures vary. Thus the development of trust and cooperation is likely to vary across industries, partly based on their risk structure.

Again focusing on the definition, we also saw that e-commerce challenges firms’ abilities to establish positive expectations for behavior. Firms typically develop positive expectations through experience with a partner or through information received from inter-organizational networks. Since these sources were inappropriate for developing positive expectations with partners found from the web, firms in the sample often engaged in blind trust in their dealings with their 'electronic' clients.

Upon closer examination, however, we found the trust was not entirely blind. Although firms could not ‘externally validate’ their clients through credit checks or even through reputation, they did ‘internal validation.’ Internal validation meant that firms communicated with one another over the details of the work to get a sense of the competency of their partner. It was assumed that a competent partner would also be a trustworthy one in terms of payment. If a more robust institutional environment that provided better information flows exists these types of judgements would not have to be made. However, in considering the type of institutional structure that would make this process easier one must also recognize the norms involved. It was certainly possible for the firms to ask for references from one another and then check out the operating history of the firm. However, if the client is more powerful it may be seen as an insult to ask directly for a reference. Thus the institutional structure should support surreptitious investigations.

The firms in the samples studied here have a simple solution to the issue of trust in e-commerce: prepayment. When asked how they would come to trust a firm they meet online overwhelming they replied that at first they would require prepayment, and that these terms could later be revised. So the traditional means of establishing trust through experience, or process-based trust in Zucker’s terms, persists. The reputation mechanisms that can also serve as a shortcut to process-based trust will be less useful, unless global networks such as Trade Point are developed. The need for a Trade Point network supports a continued need for international trade intermediaries.

Regarding the comparative position of developing country firms in terms of trust we return to a concept put forth by Goldstein (2000), in which it is proposed that in many developing countries trust is established through family association, personal contact and interaction.

\textsuperscript{155} Most references to trust in electronic commerce are referring to institutional trust and they address concerns over whether or not people will trust the new e-commerce institutions such as eTrust and digital signatures. These are important questions but are not really addressed here. Here we are more concerned with the migration of trust from traditional commerce to practices in electronic commerce.
And furthermore that developed economies have devised ways of extending the basis for trust through the impartial enforcement of the law and are adapting this to the Internet environment. This research challenges these ideas in the following ways. Although it is likely that developed country firms enjoy a more favorable reputation in international commerce, whether justified or not, the findings of this research are that in inter-firm e-commerce, particularly between two small firms, reliance on networks or intermediaries such as Trade Point may overcome differences. After all, small firms in both countries rely on networks and informal modes of contract enforcement. For the small firms in this study the legal structure is of little consequence and therefore it should not matter in e-commerce.

The report by Goldstein (2000) goes on to suggest that developing country efforts to build trust in electronic commerce include the following. First, they recommend the best solution to the problem of establishing trust is a legal and judiciary framework that meets certain minimum standards of transparency, impartiality and timeliness. However, recognizing that this is a rather ambitious goal for some countries they recommend the use of self-regulated codes of conduct. The report also recognizes the challenge of building reputational capital and fostering trust in consumers. Recommendations for this aspect of trust include relying on industry organizations or globally recognizable NGOs as a means of building customer confidence (Goldstein & O'Connor, 2000, p.12).

These recommendations basically encourage firms to avoid formal institutions and to develop a system of robust informal institutions that avoid problems inherent to dealing with the state. Although these are the similar to recommendations made by this research, they do not recognize the already existing informal institutions that exist through networks. What is needed is a mechanism to take these locally developed informal means of establishing trust and making them more portable. One way is through formalization using industry organizations or NGOs, but these are not used traditionally and could face difficulties in terms of the cultural change that would be required to use such a system. Certainly such a change would take time to be accepted.

8.1.8 Intermediation

Similar to trust, intermediation is perhaps most visible when it is lacking. In this research we found intermediation or the lack of it has implications for e-commerce from both the macro and meso levels. At the macro level the lack of intermediation in several markets in Tanzania has created challenges for the commercial system. For example, intermediation of a credit reporting agency could help bring about banking sector change. Particular aspects of intermediation are also missing. The risk absorbing function of intermediation usually handled by the banking sector makes investment and innovation challenging.

At the meso-level forms of intermediation were observable and we examined the implications of e-commerce for three forms of intermediaries. The first form is the customs brokers, who are intermediaries in the international trade industry. Customs brokers deal in information and knowledge related to the specific process of customs clearance. Their end product is successful clearance of a good, however the intermediary products include operating through networks of contracts and providing customs with information about the process.

The customs brokers in both the U.S. and Tanzania are not afraid the Internet will allow firms to bypass them and process their goods through customs independently. As much of the hype
in international trade concerns free trade it seems to be becoming only more complicated. NAFTA increased the flow of goods between the US and Mexico but it also increased the myriad of regulations and exemptions. Thus these intermediaries do not feel threatened. They do know however that the Internet will reduce the value of some of their services and they are happy to be rid of the more mundane tasks.

The second group of intermediaries is the Trade Point network. The Trade Point network is being developed in conjunction with e-commerce. It exists to allow connections between various parts of the world and for the operators to share information. Their value in terms of a business model however will depend on the range of intermediation functions they perform. Some of them will suffer from competition from other online trade facilitation services. However, those who are willing to take greater risks should prosper.

Finally the last example of intermediation is the Trade Point ETO system. The system simply matches buyers and suppliers and does little else in terms of intermediation. There is some information filtering but not much. This research demonstrates how intermediary functions need to be designed to complement one another and that stand alone intermediary services are of much less value. For example, qualification of buyers and suppliers before entering the ETO system would greatly enhance what is offered there. Fortunately, UNCTAD has taken steps toward developing such a system.

The study of the Trade Point operators highlights an important difference between facilitation and intermediation. Some Trade Point operators wish to remain facilitators, actors who provide information to clients but stay out of the actual transaction. In some cases there is however a need for intermediaries who are willing to absorb risk

Differences in the need for intermediation do exist and just because they are possible through e-commerce does not necessitate demand. In the Tanzanian employment market little intermediation exists. Most firms find employees through networks as jobs are scarce and it is easy to find people through this means. There is a problem finding skilled people, however, and the resistance to use the Internet may be just a problem of the lack of intermediation in the labor market.

The demand for intermediation is affected by the reliance on inter-organizational and professional networks as sources of information. There are many potential business models based on intermediation that could be developed in the engineering consulting and customs brokerage sectors. The success of such businesses would however be hindered by the reliance on networks. Further research is needed to study this interaction between the use of networks and intermediation.

8.2 Theoretical Implications

The above descriptions of the fundamental elements and the implications of the evidence on theory set the stage for further analysis of the theoretical implications. Based on the findings we can revisit the expected relations between the variables as laid out in the propositions in chapter 3. We can also examine the implications that different levels of institutions have for e-commerce as well as theory. In doing so we will examine the mechanisms by which these theoretical elements affect e-commerce, the relationship between these mechanisms and the various levels, and finally the comparative significance of the elements and the levels.
8.2.1 Propositions

In this section we examine some of the proposed interactions between the fundamental institutional elements and draw conclusions as to how theory can be informed by the research here. In Chapter 3 we proposed four types of expected interactions. Each of these is discussed in turn and subsequently we make conclusions about theory.

![Diagram of Proposition 1]

Figure 8.2.1.1: Proposition 1

There were two expected effects of property rights, enforcement and contracts for e-commerce. The first postulated that the level of enforcement of property rights and of contracts would determine which industries are able to take advantage of e-commerce. We have seen that inconsistent enforcement in such areas as licensing and taxation create uncertainty that affects the potential for e-commerce. In terms of the two industries examined here there is little support for the proposition that enforcement of contracts will negatively affect adoption. In fact, where enforcement is weak and firms require prepayment they expressed a great willingness to take on unknown clients via the Internet.

![Diagram of Proposition 2]

Figure 8.2.2.1: Proposition 2

The second proposition offered here is that competition and information flows through networks will enhance enforcement. This proposition raises the issue of the mechanisms for effects. Competition in telecoms affects e-commerce directly through the cost of Internet access. This is one way competition works. Competition also affects e-commerce by establishing perceived benefits of the Internet. The relationship between competition and enforcement is that competition serves as a means of weeding firms out of an industry and helps enforce industry norms of conduct. It also allows regulators to issue fines as a sanction because a firm in a competitive market cannot simply pass the cost along to customers. Thus, although competition does help in enforcement its more direct effects on e-commerce are through costs and perceived benefits. The direct effect of enforcement on e-commerce is through reducing uncertainty.
The third proposition concerns trust, contracts, networks and information flows. Trust was proposed as a substitute for contracts, as an enabler of contracts, or may result from contracts. This research shows mixed results in this area. First, not all firms use written contracts, and whether or not they did was largely dependent on industry norms.

There does appear to be a relationship between networks and trust. As we saw with the search for employees, validated information from networks helps establish trust in new employees. Information flows from traditional commercial structures such as inter-firm networks can help establish the trust necessary to engage in e-commerce. In particular, institutional trust is affected by information flows. Transparent, reliable, and robust information flows help establish trust and give people confidence in institutions.

Trust affects e-commerce in several ways. First, e-commerce represents a new institutional form in itself and therefore requires the development of institutional trust. The use of e-commerce also introduces issues of trust into traditional commercial arrangements, such as delivering documents in electronic form. When this happens consistent enforcement can aid in developing trust and hence reducing barriers to e-commerce. Also, the success of business-to-business e-commerce relies on trust in established commercial institutions. Thus institutional trust in traditional commercial structures will affect the performance of e-commerce. The lack of trust in banks, and the banks’ lack of trust in their clients, may create a hurdle for e-commerce.
The fourth proposition is concerned with interactions between networks, information flows, intermediation, and contracts. In this research the customs brokers and Trade Point operators demonstrated their value as an intermediary partially relied on their networks and the information derived from these networks. The relation between intermediation and contracts appeared to be weak.

8.2.2 Modes of Effect

In the propositions above a sample of the numerous permutations of relationships between the fundamental elements were explored. However, the discussion for the most part ignored several essential elements in this research, namely the mechanism by which these fundamental elements affect e-commerce and the different institutional level at which they operate. In this section we address these issues and aim to answer the following questions: How do the fundamental elements affect e-commerce? Do institutional levels matter? Which fundamental elements work at which levels? Which is the most important? How are the above propositions affected by levels?

8.2.2.1 Mechanisms

In this research we found there is a two stage process by which the fundamental institutional elements affect e-commerce. In the first stage we see the implications of the institution, and in the second stage the process comes closer to e-commerce. In the first stage there are a wide variety of mechanisms by which the fundamental institutional elements can affect e-commerce. Possibilities include the following:

- shape processes and procedures
- choose technologies
- affect perceived benefits
- create expectations
- influence levels of uncertainty
- influence market structure
- affect costs
- develop & enforce norms
- make norms explicit
Although to some extent all of these mechanisms are present, those that most directly related to e-commerce are affecting costs, affecting perceived benefits, and influencing levels of uncertainty. These are particularly important in a comparative mode. Although costs may not be a major factor for e-commerce in a stand-alone situation, as we saw in the case of Tanzania, it is an important factor when comparing the potential for e-commerce in two commercial environments.

On the other hand, the affects of institutions on perceived benefits is reflected in the decisions made by individual firms. The comparative nature of the perceived benefits mechanism is mostly in comparisons with other ways of doing business (other than e-commerce) or staying with the status quo. This is analogous to the classic diffusion variable of relative advantage, and is similar in that they both rely heavily on the firm's perception. The last mechanism is that of influencing levels of uncertainty.

Uncertainty is also a comparative mechanism as it is difficult for firms to perceive the effects of uncertainty on their decision making. Instead it is more of a comparative variable that is best used when analyzing the relative positions of various institutional environments for their potential to support e-commerce. Uncertainty particularly affects the long term orientation of a commercial environment and this is vital to increase investment.

The second stage of the affect includes two variables, adoption of e-commerce and the potential for e-commerce. In studying the institutional affects on e-commerce we found that costs, perceived benefits and uncertainty affect both the direct immediate adoption of e-commerce, but also affect the potential for e-commerce adoption in the future. In examining the fundamental elements we can see that although all the elements at some level affect both adoption and potential, some of them had a stronger effect than others.

The fundamental element with the strongest affect on adoption is networks. We saw in the research that networks have both positive and negative implications for e-commerce. The relevant first stage mechanisms are perceived benefits and costs. The negative affects of networks on e-commerce are the technical lock-in that can occur, which can affect both the costs and perceived benefits of e-commerce adoption, and the reliance on validated information through networks, which affects the perceived benefit. The positive affects are that powerful players in the network can facilitate adoption and this changes the perceived benefits.

![Figure 8.2.2.1.1: Implications of Networks](image_url)
The potential for electronic commerce was affected most by the fundamental element of enforcement. Enforcement's effect was seen through the mechanism of uncertainty. As we saw in many circumstances, enforcement has the power to make or diminish uncertainty. In Tanzania, inconsistent enforcement of the tax law has led to high levels of uncertainty. We also saw a similar situation with licensing in the customs brokerage sector. Although property rights also plays a role in establishing a stable and certain commercial environment, the enforcement of these provisions has a more direct impact on uncertainty, and hence e-commerce.

![Diagram showing Enforcement, Uncertainty, and E-commerce Potential](image)

Figure 8.2.2.1.2: Implications of Enforcement

### 8.2.2.2 Levels

Institutions exist at the macro, meso, and micro levels and at each level the implications for e-commerce may differ\(^ {156} \). For example, we found that the potential for electronic commerce is affected to a greater extent by macro level institutions. At the macro level the strongest foundational elements were those typically associated with national governments such as property rights and enforcement, which have direct implications for uncertainty. Other fundamental elements such as contracts and competition were important at the both the meso and macro levels.

The introduction of levels into the analysis means that we can compare both the overall effects of individual fundamental institutional elements, the relative strength of the elements at various levels, and the relative strength of the levels themselves. A table reflecting these comparisons is found in Appendix V.

Overall the most important variable for e-commerce is that of networks. Networks affect e-commerce in several ways both positive and negative and the effects are predominantly at the meso level. Enforcement is that second most important factor, with implications at both the macro and meso levels. Enforcement gains some of its importance from being the instrument through which the influence of property rights and contracting are seen. Competition has effects for both potential and adoption. It provided an incentive for firms to adopt e-commerce, however it is not as powerful as the incentive provided by network relations.

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\(^ {156} \) In this research examining institutional impacts at all three levels was attempted. We did however find that institutions at the micro level are difficult to synthesize in such an analysis. The micro level institutions, those established between a firm and their exchange partner, tend to be very idiosyncratic or they could be observed as similar across many firms. When micro level institutions, such as the use of a standard contract from an industry association, were similar across firms they were then generalized into a meso level institutional structure. The idiosyncratic micro level institutions were difficult to address in this research. In research that looks very closely at firm-level relationships micro level institutions could be better analysed. For example, in research on alliances that look explicitly at these relationships the terms of exchange, both formal and informal, devised by the firms may be of interest. Perhaps the integration of micro level institutions in an analysis with macro and meso level institutions could be done, but further research would be necessary.
Information flows also have implications for potential and adoption. Unfortunately their effects are closely tied with the networks through which they flow. Further research is needed to further delineate the effects of information flows from networks. At this time, we believe the networks, which have several different functions and effects, are a more significant variable, possibly with information flows serving a sub-effect of networks. The variables of trust and intermediation also have effects at both macro and meso levels. Their effects are less clear than those of networks and enforcement, and both have more direct consequences for e-commerce at the meso level rather than the macro level.

Considering the individual elements and their associated mechanisms of effects we can see that certain levels are more or less associated with certain mechanisms. The macro level is more closely associated with the mechanism of uncertainty. Here is where we see the results of a traditional institutional analysis. Alternatively, the meso and micro levels are more closely associated with the perceived benefits mechanism. We see that many of the institutional effects at the meso level are on firm’s perceived benefits of adopting e-commerce. The mechanism of cost, which is the least important of the three mechanisms, is not more strongly associated with one level or another. Costs were affected by macro level institutional elements as well as those at the meso level. These relations are shown in Figure 8.2.3.2.1.

![Diagram of Level Implications](image)

**Figure 8.2.3.2.1: Implications of Levels**

**8.2.2.3 Comparative Strengths**

The last aspect of our consideration of levels is a discussion of the impact of various levels and which one appears to have the greatest significance for e-commerce. Although all levels have implications for e-commerce, it appears the most significant level is the meso level. This conclusion could partially be the result of a bias toward the more concrete effects on e-commerce adoption, whereas e-commerce potential is most affected by uncertainty that comes from the macro institutional level and is less concrete. Despite this potential bias, the uptake of electronic commerce in Tanzania and by the developing countries represented in the Trade Point program support the conclusion that macro level institutional effects exist but can be overcome. It is more difficult for firms to overcome issues at the meso level and these have a more direct impact on their ability to adopt e-commerce.

**8.2.2.4 Model**

If we consider the combined findings of the above sections, we come to a model which describes the relationship between the fundamental institutional elements and e-commerce. The model is shown in Figure 8.2.2.4.1. The model describes the three general stages in the
process. First there exist institutional elements and they exist at one or more levels in the institutional environment. These elements characterized by their level will affect e-commerce through one or more of the mechanisms of uncertainty, costs, or perceived benefits. The level of the element will influence the mechanism of effect. In turn the mechanism of effect will influence the mode of effect, which is either through e-commerce potential or e-commerce adoption.

![Diagram showing the relationship between fundamental institutional elements, uncertainty, costs, perceived benefits, e-commerce potential, and e-commerce adoption.]

Figure 8.2.2.4.1: Model of Relations between Concepts

Now looking back at the propositions discussed above, we can see that there is actually a 'black box' between the arrows that connect the institutional elements and e-commerce and the elements of the black box are the levels, mechanisms and modes of effect.

The theoretical implications of this model are a continued emphasis on the need for multi-level research. This research demonstrates that one fundamental element can have effects at several different levels and this in turn changes the mode of effect. Take for example competition. At the macro level competition affects costs and in turn e-commerce potential. At the meso level it affects perceived benefits and affect adoption.

8.3 Institutions, E-commerce, and SMEs

As we come to the end of the analysis we find there is ample evidence of the various effects that institutional elements have on e-commerce. The research in this study has a limited focus however and we now turn to consider this. The research is interested not on the effects of institutions on e-commerce in general, but more so on the effects it has for SMEs and more specifically SMEs in developing countries. We first examine the fit between New Institutional Economics and SMEs and then turn to issues of developing countries in particular.

8.3.1 Institutions, E-commerce, and SMEs Globally

This research has used an NIE theoretical framework to examine the potential of e-commerce for service sector SMEs. NIE has in the past been criticized for its limited focus on manufacturing firms and large firms. This research has provided an opportunity to examine the relevance of these theories for this subset of firms.
First, we have seen that the issue of contracting for small firms raises some interesting points, particularly the importance of industry risk structures and other factors in determining contractual form. Furthermore, an emphasis on macro level issues when considering contextual factors may be the result of research performed using large firms. Large firms will have more power to change their institutional environment and macro level institutions are more likely to play a role in the investment decisions of larger firms. Thus the conclusion reached in this research, that meso level institutional factors are more significant, may be an artifact of the types of firms studied.

This research also examines issues concerning the overlap between institutional structures for traditional commerce and those for electronic commerce. In the Trade Point case we saw how the program developed its own institutional for its electronic matchmaking program for SMEs. However, beyond the matchmaking function of the Trade Point case, and in the other two cases we found the use of electronic commerce was dictated by traditional commercial institutions. First, the research shows that SMEs typically can attribute only a very small part of their revenues to e-commerce activities. Thus their business that remains part of the traditional commercial and institutional environment is still very important. Realistically the more favorable the institutional environment for traditional commerce is, the more successful SMEs will be, and the more likely they are to adopt e-commerce.

This research also demonstrates that transaction cost analyses of the effects of e-commerce on markets and firms improve when they consider the institutional context. Although these findings may be limited to knowledge-intensive business service SMEs, they can inform theory. The first finding concerning institutional context and transaction cost analysis is that e-commerce is likely to be most important in production processes. Many TCE based analyses of the Internet focus on its capacity to expand markets. The conclusion that the production process will be more important to SMEs than market expansion is a result of several findings. First, this research found that pressure from important clients still remains a significant factor in adoption. Conversely, the lack of adoption by clients also serves as a disincentive for adoption. Clients are naturally interested in process efficiencies, as opposed to market expansion capabilities. Furthermore, institutional structures such as licensing requirements and localized processes, further restrict market expansion abilities. Thus, for this subset of firms, institutional structures are affecting what is considered to be one of the most fundamental benefits of the Internet.

A further analysis that pits the effects of institutions against general expectations for the Internet is the importance of networks. The research demonstrates in all three cases that the use of networks is an issue for SMEs worldwide, in both developing and developed countries. Networks are basically used as information sources and thus point to what could theoretically be rich market in information services. However, firms seem unwilling to formalize their network relationships and to codify the information that flows through them. Thus, the institutional realities create barriers for what could theoretically be an important area for e-commerce. It should be noted, however, that as Powell & Smith-Doerr observed, the use of networks is different for small firms than for large firms. They find that large firms tend to rely on more formalized processes while small firms rely on networks. Thus, the importance of networks for e-commerce may be a relationship that is limited to SMEs.
8.3.2 Institutions, E-commerce, and SMEs in Developing Countries

In developing countries it is hoped electronic commerce will help firms overcome deficiencies in their traditional commercial environments. The logic is that inadequacies such as those in roads and transport infrastructure will be less important to firms using e-commerce. However what these arguments fail to take into account is that the underdevelopment is caused by weak institutional structures. Furthermore, these weak institutional structures are likely to affect electronic commerce as much as they affected traditional commerce. This research, as will be discussed now in detail, provides evidence to support this claim.

In examining the potential for e-commerce in Tanzania it is impossible to ignore the impact that the underdevelopment of the banking sector will have for e-commerce. The limited forms of payment and the lack of available credit will create challenges for e-commerce. Also, as was observed by the Trade Point operators, the lack of trust that small firms have in the banks must also be overcome before they are able to rely on bank related payment mechanisms. Furthermore, the uncertainty created by inconsistent enforcement of policies such as tax law will create additional challenges.

At the meso level, developing country firms will continue to fight the bureaucratic processes involved with any government interaction. In some cases, such as with the customs brokers, the low level of automation by a government agency will directly affect the use of e-commerce in a sector. The uncertainty created by inconsistent enforcement of industry level policies such as licensing creates challenges.

If we take a comparative perspective we see that developing country SMEs will face many more hurdles to implementing e-commerce than do developed country firms. Their macro institutional environments are typically much less conducive to e-commerce. The state of telecommunications markets that create much higher costs are just one example.

The good news is, however, that meso level institutions were seen to have a stronger effect on e-commerce adoption by SMEs. Thus there is potential for SMEs to overcome their macro institutional deficiencies and adopt e-commerce. Greater efforts to create positive institutional environments for e-commerce at the industry level can be undertaken by industry associations. This of course will not create a better position for them vis-à-vis more developed countries, but in domestic e-commerce large gains can be made.

If we look to the fundamental institutional elements one of the largest differences in developed and developing countries is the lack of enforcement and clearly defined property rights. This is reflected in the finding that enforcement was the strongest element at the macro level. This has important practical and theoretical implications. Presently the focus in development circles is on building institutions. In the future the enforcement will have to taken into account as well. As countries develop and international institutions such as the WTO and IMF bring about greater homogeneity in legal strictures, the role of enforcement will be even greater. IPR is a classic example of laws being in place but little being done about enforcement. Developing countries struggles with enforcement are sometimes simply a matter of a lack of money. Enforcement takes time and resources. Perhaps in the future greater emphasis will placed on institutional development that focuses on mechanisms for enforcement.
The most important fundamental element was found to be the influence of networks. The influence of networks has both similarities and differences in developed and developing countries. In both countries firms relied on the information from networks to find new work, subcontractors, and employees. Hence these challenges to e-commerce exist globally for SMEs in knowledge-intensive sectors. The differences in the impact of networks are seen in the interfaces with governments. In the U.S. when the government is part of a firm's network there are likely to be incentives to adopt e-commerce. In developing countries these incentives do not exist. Furthermore the lock-in that results from networks can be harder to overcome in developing countries and firms there are more likely to locked in to less advanced technology. Isolated, industry based automation programs by developing country governments can clear this impediment to adoption by SMEs.
Chapter 9:

Conclusions

Due to technological advances in the last decade convergence of telecommunication and computing technologies has led to changing industrial structures and the emergence of what has been labeled 'the information economy.' These changes have resulted in industrial and economic policies that focus on the use and impacts of investment in ICTs. ICT investments are considered essential for improving communication with secondary effects for productivity and economic efficiency. The mechanisms through which ICT investments affected economic development are not straightforward. It is now hoped that electronic commerce will provide a more direct link between improvements in ICT infrastructure and skills and economic benefit, and that these benefits will accrue to both developing as well as developed economies.

The potential for e-commerce to create this link will be influenced by a variety of factors. As has been argued in this research, institutions represent one of the most significant factors. Institutions structure exchange and influence the costs and benefits that e-commerce presents. Evidence gathered from three case studies has been used to first examine the role of intermediate, or observable institutions, on the adoption and potential for e-commerce. The evidence from the intermediate institutions was then mapped on to higher level theoretical concepts, denoted here as 'fundamental institutional elements.' The elements include property rights, contracting, enforcement, competition, networks, information flows, trust, and intermediation. The roles of these individual elements and their interactions in shaping the potential for e-commerce were analyzed.

In the following sections we complete the research by examining the implications of the theoretical findings in a broader context. We begin with a discussion of the research questions and a summary of the findings. This is followed by an overview of the theoretical, practical, and policy implications of this research. Subsequently, the scope of the research is discussed in terms of the limitations of the research. Finally, the chapter concludes with recommendations for future research.

9.1 Institutions and E-commerce

This research has explored the effects of institutions on e-commerce in small firms in developing countries. The goals of the investigation are summarized in the following research questions and we address each one in turn.

1. How do institutions impact on electronic commerce adoption by small firms?
2. Which fundamental institutional elements and at what level have the greatest impact on electronic commerce adoption by small firms?
3. To what extent do institutions influence the scope of opportunities electronic commerce represents to developing countries?
4. How do developing/developed country institutional differences affect the prospects for electronic commerce being an equalizing force in global commerce?
The first research question seeks to clarify the relationship between institutions and electronic commerce. This clarification occurred in three stages, each revealing issues concerned with the relationship between the factors or institutional analysis in general. The first phase was the realization of the disconnect between institutional theories, and in particular the fundamental institutional elements, the observable institutions found in commercial systems. This was resolved by mapping observable institutions and their effects onto the ‘higher’ level theoretical constructs. Certainly this has been an issue in previous institutional studies. However by making this process explicit, and using a limited range of institutional variables, this research will aid in the development of institutional theory and help create stronger links between theory and practice.

In the second stage the ways in which the fundamental institutional elements affect e-commerce were identified. Unpacking the ‘black box’ between the fundamental elements and e-commerce, we found the effects occur through three mechanisms: uncertainty, costs, and perceived benefits. Each fundamental element can be shown to have an effect through one or more of these mechanisms. In the third phase we found the effects of the institutional elements on e-commerce actually occur at two levels: adoption and potential. Institutional elements that did not have an immediate direct affect on adoption were considered to be of interest for their longer-term impact, affecting the potential for e-commerce.

The second question,
Which fundamental institutional elements and at what level have the greatest impact on electronic commerce adoption by small firms?

required an assessment of first the impact of the fundamental elements at each of the three levels, then a determination of the most significant level and finally the most significant element at that level. As we saw in Chapter 8, the fundamental element with the greatest impact on adoption is networks, and it is most significant at the meso level. Networks were significant forces in the adoption of e-commerce in both the customs brokers and engineering consultants in both Dar es Salaam and San Diego. Furthermore the use of networks to validate trading partners among Trade Point operators help reduce the uncertainty of using the medium. The second most significant element is enforcement and this was evident particularly at the macro level.

The third question
To what extent do institutions influence the scope of opportunities electronic commerce represents to developing countries?

required an examination of alternative explanations and an assessment of the relative strength of our institutional explanations. In Chapter 6 we discussed five complementary forces shaping the potential for e-commerce: the political economy, embedded technologies, structural industry differences, cultural factors, and firm-level characteristics. There we argued that for reasons of differentiation and scope institutions are the most powerful and consistent force shaping the potential for e-commerce. Here we would like to add one more reason and that is the comparative under-development of institutions in developing countries. In countries with sound institutional structures these other explanations might carry more weight. However, in developing countries, particularly those with economies and polities in transition, there is typically more intervention by the state and therefore institutional factors play a greater role in the life of a firm. Not only do firms in e-commerce have to deal with the uncertainties of demand and preferences, they must also handle the uncertainties resulting from arbitrary enforcement of a wide range of policies. Thus, for reasons of differentiation,
appropriate scope, and the context of developing countries, institutions are the most plausible explanation of the forces shaping the potential for e-commerce.

How do developing/developed country institutional differences affect the prospects for electronic commerce being an equalizing force in global commerce?

This last research question requires that we step back from the details of the investigation and view the findings in a broader context. We first consider whether or not these differences matter and if so then how. Essentially the prospect of e-commerce being an equalizing force in global commerce is dependent on the institutional environments of developing countries. Their commitment to institutional reform will largely establish the scope of the potential of the Internet and e-commerce. The differences between developing and developed country institutional environments will however affect the potential for e-commerce to serve as an equalizing force. Even if developing countries make significant strides in the development of institutions, this does not guarantee they will be equivalent to institutions found in developed countries, as these institutions are changing as well.

Also, many of the positive effects of institutions take time to accrue. For example, the institutional trust Americans have in their banking sector has developed over the 7 decades since oversight of the banking system began in the late 1930s. This trust did not develop overnight, and those dealing with institutional development must keep this in mind. However, the effective implementation of ICTs can help increase information flows, which in turn will help establish transparency, reliability, and accountability and perhaps reduce the time required for the benefits of institutional reform to accrue. However, as things stand, the institutional differences that exist today pose a significant challenge to e-commerce serving as a leveling force in global commerce.

These conclusions are not meant to imply that e-commerce will not be a useful tool for development. There are many advantages to e-commerce and attaining these advantages should be pursued. The lessons learned here should be used to set realistic goals and objectives. They may also be used to fuel arguments about the need for greater, not less, development assistance. Specific targets for development assistance, as well as a discussion of the theoretical and practical implications of this research are the topics of the next sections.

9.2 Theoretical Implications

This research has relied predominantly on theories from New Institutional Economics (NIE), particularly those of North (1990), Eggertsson (1990) and Williamson (1985, 1993, 1996). Among these theorists North and Williamson represent two distinct schools within NIE\(^{157}\), and as Williamson (1996) demonstrates, tension exists between the two streams.

“New Institutional Economics exists in two complementary forms. One deals predominantly with background conditions, and the second deals with mechanisms of governance.” p. 325

“But there is also a concern that too much weight will be assigned to the institutional environment, as opposed to the institutions of governance. The exaggerated weight that is placed on court ordering (as provided by the institutions of the state) in relation to private ordering (as crafted by the immediate parties to and affiliates of a transaction) is one example.” p. 328

\(^{157}\) Indeed, Eggertsson (1990) suggests the name NeoInstitutional Economics to separate those who accept the rational choice model such as himself and Williamson, from those who maintain an arm’s length relationship with it such as North.
This research takes to heart Williamson's concern, however the concern is interpreted not as macro/micro dichotomy but as a formal/informal one. The research presented here has attempted to take into account formal and informal institutions, and both contextual factors and mechanisms of governance. The research does not use the transaction as the unit of analysis as a strict TCE study would require, but its inclusion of such variables as contracting produces conclusions that should be of interest to transaction cost scholars.

Naturally, when multiple theories are used there are violations of the basic assumptions of one or another. However, violating the assumptions can help make clear the limitations of a theory. TCE, for example, de-emphasizes contextual factors to focus attention on the transaction. Such assumptions are necessary for the development of a high-level theory. However, as this research demonstrates contracting is very much determined by the risk structure within an industry, a contextual variable not accounted for by TCE. The conclusion drawn here is that competing assumptions should direct the use of NIE theories. For example, when risk is an issue expectations of outcomes should be based on more contextually oriented NIE theories. Moreover, further development of NIE will require greater harmony in the assumptions of the various theories that comprise it.

Picking and choosing relevant theories does little however to improve existing theories. As a relatively young school of economics, there are widespread calls for improvement of both theory and method in NIE. As Toy (1995) observes:

"The main weakness of NIE as a grand theory of socio-economic development is that it is empty. As a critique of other theories which altogether ignore the role of institutions in long-run change and growth, it is welcome. Institutions (cultures, ideologies, property relations, particular organisational forms) are important determinants of economic performance. But when it comes to new general insights about how that determination works, the theory adds nothing to what we already have." P. 64

Thus, as academics concerned with theory building we attempt to address some of Toy's concerns. In the following sections we discuss the findings of this research that contradict one or another theoretical expectation. Further we attempt to clarify some theoretical constructs and relationships between these constructs. The theoretical contributions made in the following sections are simply attempts to add clarity and spark debate in NIE.

9.2.1 Implications for NIE

This research has several implications for NIE, and in particular for the theories of North and Williamson. We begin by addressing the findings concerning constructs associated with each and then address findings that highlight similarities and differences in the theories.

As discussed in Chapter 8, one of the most significant institutional elements in terms of its impact on e-commerce adoption is networks. Networks of inter-organizational relations provided the major incentives and disincentives for firms to adopt e-commerce. Networks are themselves institutions typically having informal norms of expected behavior.

The construct of networks has a somewhat peripheral role in NIE. Williamson (1996), responding to criticisms of Granovetter (1985), includes networks in his conception of the institutional environment. From his perspective networks affect the mechanisms of governance through what he refers to as shift parameters. But the conceptualization of shift
parameters does not take into account the dense and dynamic nature of networks. Williamson contends that network analysis and transaction cost analysis are complementary, but this assertion requires further support. Although this research provides little in terms of clarity on this point, it does raise the issue that despite the availability of technologies that would reduce transaction costs, firms choose higher cost mechanisms such as interpersonal networks and face to face meetings to share certain types of information.

We also found in Chapter 8 that enforcement plays an important role in determining the long-term potential of e-commerce. When discussing the issue of enforcement in Chapter 3, we noted North’s perception that enforcement was a key difference between his and Williamson’s approach to transaction costs. North noted that although they both assume enforcement to be imperfect, Williamson does not make it an explicit variable in analyses. Although this research does not focus explicitly on transaction costs, we have gathered enough evidence to support North’s contention that treating enforcement as an exogenous variable raises problems for the assertion that governance mechanisms (in our case contracting) are based on comparisons of transaction and production costs. Take for example the effect of banking on firms’ decisions to use e-commerce. Firms in the U.S. have a high degree of trust in the banking system due to consistent enforcement. Their decision to use transaction cost saving technology offered by the bank changes the comparative transaction costs vis-a-vis a Tanzanian firm in a similar situation. Thus, although the argument that transaction costs determine governance mode choices is not challenged, not accounting for the role that enforcement plays as an a priori influence on transaction costs is.

The findings of this research support in several ways the need to modify transaction cost-based expectations for e-commerce as a result of the mitigating effects of institutions. This is similar to the shift parameters suggested by Williamson (1996), and thus is supported in TCE. Naturally, including such variables is in line with North’s perspective. First, we found that product characteristics expected to favor e-commerce based on the potential reduction of transaction costs do not, on their own, accurately predict the potential for e-commerce. The 2 knowledge-intensive business service sectors examined here demonstrate that the adoption of e-commerce was greatly affected by networks, in both positive and negative ways. Furthermore, for services industries the product characteristic of intangibility plays a much greater role in determining the benefits of e-commerce than asset specificity or product complexity. These latter characteristics are less relevant for service industries, and hence sectoral institutions mediate the effect of transaction cost reducing characteristics on e-commerce adoption.

Furthermore, expectations that information flows would be greatly affected by e-commerce (Choi et al., 1997) must be mitigated by sectoral institutions in this case institutions of small service sector firms in B2B e-commerce. This research shows that small firms are very cautious about the type and amount of information they put on their Web sites. Information regarding clients, prices, and employees were typically not included. Additionally, although superficial information is shared via email, the sharing of valuable information, such as that required to resolve problems or to establish reputations, is limited to face-to-face meetings.

Lastly, expectations that e-commerce will allow more ad-hoc relations, which was refuted by Chappell & Feindt (1999), were partially supported here. This research found that although firms used the Internet predominantly in relations with existing business partners, there were
new opportunities for establishing ad-hoc relations. The role networks play in facilitating these ad-hoc e-commerce relations is an interesting area for further research.

9.2.2 Characteristics of Institutions

Now that the supportive and contradictory evidence for NIE theories has been reviewed we turn our attention to areas of NIE which can be clarified based on the findings of this research. We begin by addressing two questions: What are key characteristics of institutions? and How are these key characteristics related? Just as Williamson has done in TCE by dimensionalizing transactions, here we propose a model for dimensionalizing institutions. Institutions can be described by a variety of characteristics. Those characteristics that exist along a continuum are level, complexity, and formality. As we have demonstrated in this research all institutions can more or less be associated with a certain level, somewhere between macro and micro. Institutions can also be described by their complexity. Industry licensing is a meso level institution that is somewhat complex. The complexity is reflected in number of requirements that must be met and the tacit knowledge required in meeting them. Institutions can also be described by their formality. A rough measure of formality is whether or not the institution is codified. Since the requirements for licensing are codified this is a formal institution.

The dimensions of institutions are shown in Figure 9.2.2.1. There we see the location of the industry licensing as meso level, formal, and moderately complex. A second example is the institution of sharing reputation information in networks. This is an informal, meso-level institution and as norms concerning this transfer of information are based on tacit knowledge it is highly complex. For the last example we return to our example from Chapter 2 of the institution of posted prices in grocery stores. This is a fairly simple macro level institution whose sanctions are well understood. Since the posted prices institution is uncodified it is an example of an informal institution. Thus, the posted prices institution appears in the space of macro, informal, and simple.

![Figure 9.2.2.1: Dimensionalizing Institutions](image-url)
By creating dimensions for institutions we avoid confusion over such issues as formality and level. This appears to be a source of confusion in Williamson's comments about court ordering versus private ordering. These two constructs share differences in formality, as well as differences in analytical level. Greater parsimony in the critical aspects of institutions will help clarify similarities and differences in NIE theories.

The concept of levels is taken one step further by considering the issue of nesting. As described by North and experienced in this research, institutions are nested with micro level institutions being a function of those at the meso and macro level. Institutions also overlap, meaning that in choosing a behavior an individual may be faced with a variety of norms from different institutions. These overlaps combine with nesting to create an institutional environment that, in a very simplified way, is depicted in Figure 9.2.2.2.

In the figure the growing breadth of the circles at the various levels represents the increasing breadth of their jurisdiction. The overlap demonstrates the relationships between institutions. Ideally there would be a large number of overlapping ovals at each level, indicating the myriad of institutions. The nesting of the different levels, although appearing somewhat separated here, reflects the interaction between the different levels. For example, the macro and micro institutional environments will shape industry-wide policies.

The dots in the figure represent individual actors. Fewer actors exist at the macro level and have the power to determine the norms and rules at this level. Moving down through the layers the number of actors increases. The ability of individual actors to change their institutional environment is represented by the ‘movement’ of one of the actors along the dotted line. Actors can move and thus change the macro and meso environments in which they exist. Furthermore, the actors actively create their own micro level environment. The distance away from a level also reflects an individual's ability to change that environment. In hierarchical societies only a few individuals have the power to change macro level institutions. Most individuals are far removed from affecting macro level institutions. Of course actors that have power to change macro level institutions and are represented here at this level, are subject to their own macro, meso, and micro level institutional sphere. This representation reflects North’s (1990) assertion that institutional environment varies with a person’s position in society.

Figure 9.2.2.2: Nesting of Institutional Levels
Now that we have described the dimensions of institutions and how they interact, we need to address the issue of institutions versus institutional elements, and relations that are responsible for the observable effects of institutions. This is a first step in responding to Toye’s observation of the limited contribution of NIE to understanding how institutions serve as determinants for economic performance. We begin by examining the differences between institutions and the institutional elements described in this research.

Recall that institutions are the humanly derived constraints that shape human interaction, the rules of the game. Institutions must define sanctions for violating rules. Although concepts such as property rights, contracts, intermediation, and networks all provide structure and establish norms for exchange, elements such as competition, information flows, and trust do not. These elements are more outcomes of institutions and influences on institutions rather than acting as institutions in and of themselves. Competition is the outcome of a particular institutional structure, as are information flows and trust. Competition, information flows, and trust also shape existing institutions and influence enforcement. The extent to which they exist as outcomes is greatly influenced by enforcement of institutions.

Enforcement can be seen as a kind of machine with its own characteristics. Enforcement is characterized by uniformity, that it is applied equally to all parties. It is also characterized by reliability, that when violations occur it is always applied. Uniformity and reliability are the two fundamental elements in what we have referred to as consistency. As you will recall from Chapter 4, consistency in enforcement was a challenge for the Tanzanian Revenue Authority (TRA). Also, the sanctions for violating an institutional norm often vary in terms of their severity. Enforcement of a first time offender may be described as weak when the least severe of a range of sanctions is applied. Differences in severity of enforcement were witnessed in the enforcement of customs brokerage licenses in San Diego versus Dar es Salaam. In San Diego a customs violation typically incurred a fine, whereas in Dar es Salaam brokers faced a more severe sanction, typically having their license revoked. Hence, the strength of enforcement differed in the two institutional environments. These differences are partially a result of the level of development in the sector and broader political goals.

A key component of the institutional environment that accounts for variance in enforcement is the definition of the sanction supplied by the institution. Issues such as the cost of enforcement are partially determined by the formality and complexity of the institution itself. Naturally, the consistency of enforcement is affected by the level of formality of the institution.

The outcomes of enforcement and institutions, example here include competition, information flows and trust, in turn shape subsequent institutions and enforcement in a dynamic process. Figure 9.2.2.3 depicts this relationship. The process creates and is influenced by what we refer to as the institutional environment. The institutional environment influences the process of institutional formation, enforcement, and its outcomes in a variety of ways. Factors such as technology, politics, and economics are all factors that shape the institutional environment and hence the process of developing and enforcing institutions. The figure is, however, a much-simplified view of a complex process.
Thus, the theoretical implications of this research can be summarized as follows. First, this research created a bridge between NIE theories in demonstrating how institutions mitigate expectations for e-commerce based on TCE analyses. This supports the need for more coordinated use of the theories. Furthermore, we have provided an initial framework for characterizing institutions and their enforcement. Subsequent research that examines these characterizations and the influence of enforcement on outcomes will establish their value. In the following section we examine the practical implications, which are divided into observations and recommendations for policy makers as well as practitioners.

9.3 Practical Implications

The practical implications of this research as discussed below are relevant for various groups including policy makers, SMEs in B2B e-commerce, and managers of development programs. We begin by reviewing some observations of this research that are not directly related to the theories employed and we then turn to the recommendations these and other findings of this research suggest.

9.2.1 Observations

The first observation is concerned with intermediation. In the Trade Point program, UNCTAD assumed the role of 'market maker', the advantages of which are based on hypotheses by Benjamin & Wigand (1995). We observed that in addition to the role the market maker plays in the market, the market maker takes on the role of institutional designer. Market makers in e-commerce define the rules of participation. Through the use of technology market makers can establish criteria for inclusion, exclude parties as a form of punishment, and influence the economic impact of the market for the players. Furthermore, in this role of market maker, intermediaries also have the power to influence broader socio-economic effects. For example, U.S.-based market makers that exclude foreign participation
due to the complexity of enforcement, customs, and even delivery of goods, are in an incremental way contributing to the global pattern of accrual of benefits from e-commerce.

Who benefits from e-commerce will also be influenced by the transparency of institutions. In some cases, such as in customs brokerage, the lack of transparency of institutions creates value for the tacit knowledge of brokers. E-commerce is expected to negatively affect SMEs in that their market share will be eroded by large firms, who with their economies of scale, can offer better prices (Kleindl, 2000). However, the tacit knowledge required to traverse the local institutional environment, prevents the realization of this potential effect. Thus, differences in the complexities and enforcement of institutions that effect transparency will create differential effects of e-commerce on SMEs.

The potential e-commerce presents to SMEs is a combination of several factors. Conclusions based only on product characteristics are too general and institutional factors should also be taken into account when estimating the impact in a particular industry. Furthermore, as we have seen with the engineering consultants and the customs brokers there are many differences between industries in the potential uses of e-commerce. Some of these differences will exist even between countries, making some industry level characteristics more powerful in e-commerce adoption than the national commercial environment. The similarities in levels of automation between the U.S. and Tanzanian SMEs support this.

The following observations are specific to knowledge-intensive (KI) business services SMEs. In the first instance their use of e-commerce is limited by the issue of transmutability. This is a characteristic of information goods and was reported as a significant problem for engineering consultants. Resolving this issue will require a combination of technical and process innovations, and is a clear example of the need for 'best practices' for e-commerce. Furthermore, this research revealed that SMEs in B2B e-commerce, particularly in knowledge-intensive business services, might not be able to take advantage of the market expansion capabilities of the Internet due to licensing requirements.

9.2.2 Recommendations

Before embarking on a presentation of recommendations we would like to make a few disclaimers. The disclaimers are concerned with the realities of institutional change and some limitations of the research.

First, the policy recommendations present below are made without caveats that identify all of the complexities of institutional change. They are made as self-standing statements, to which the following reservations should be applied. As discussed in Chapter 2, institutional change is dependent on a variety of factors, including history, culture, religion, norms, etc. Institutional change is path dependent and realistic expectations require an understanding of how the institution evolved to its present state, and based on that assessments can be made of how likely it is to achieve its desired state. Institutional change also creates winners and losers, and agents of change must anticipate these parties will try to protect their advantages that current environment affords. We make these caveats in recognition of the great level of effort institutional change requires and that the following recommendations will not in any circumstance be easy to achieve.
A further necessary caveat is based on the limitations of this research. A broader discussion of the limitations is presented in the following section, however here we want to point out the limitation of scope. This research is based on three case studies. It has been impossible to establish the extent to which these cases are representative of a) a developing country, b) a developed country, and c) a development program creating an online market. Given this limitation, readers should refer to the cases to determine the degree of similarity between their situation and the basis for the recommendations presented here. Thus, these recommendations are written as broadly applicable statements and we leave it to the reader to establish their relevance for their particular circumstances.

9.2.2.1 Policy Makers

• Legal Issues

The widespread adoption of e-commerce will be greatly facilitated by legal reform. The legal issue found in this research to have the greatest significance on e-commerce is equal recognition of electronic versus paper-based information in a wide range of areas, including as legal evidence, tax filings, receipts, and fulfillment of reporting requirements. The lack of legal acceptance of electronic sources of information prevents firms from using the Internet to its fullest capacity in their business processes. These issues need to be resolved quickly. In Tanzania a report highlighting aspects of existing laws requiring changes to adhere to the UNCITRAL recommendations has been made. What is needed is political action to begin the process of making these changes.

Making legal changes is, however, only the first step. Practices and procedures in firms have developed over many years based on well-established principles. The desired outcome of legal institutional changes are changes in paper-based practices of governments and firms. Thus, once these legal changes have been made a wide ranging information campaign about how these changes affect firms will greatly facilitate the speed of adoption of electronic processes. Information about the changes will diffuse more rapidly with close government/industry association cooperation.

• Banking Reform

In addition to shaping the legal basis for e-commerce, developing country governments are working to establish macro institutional environments that favor a robust banking sector. Although many of these developments are focused on international issues, a greater emphasis needs to be placed on providing banking services that facilitate the use of e-commerce. This is a delicate issue however as banking services should be provided in the private market. Yet, as government and NGO supported micro-finance programs demonstrate, action from the public sector can help create new market norms. Furthermore, banking regulators may examine the fundamental reasons behind the inability of market mechanisms to produce an adequate supply of banking services. If, as many suspect, constricted supply is due to a lack of information such as credit histories, there may be a solution that is inexpensive but merely requires the coordinated solution. This coordination role could be taken up by banking regulators.

• Government Automation
Many of these recommendations, even the implementation of e-commerce laws themselves, will require greater levels of automation of government bodies. Revenue authorities cannot accept electronic documentation without the processes and computer systems in place to handle such submissions. Government automation not only enables e-commerce friendly laws to be implemented, but it can also act as a catalyst for firm-level adoption.

"The involvement of government agencies in purchasing through electronic channels can have a catalytic benefit on the local electronic commerce environment in a given country because Governments are often among the largest buyers of goods and services from the private sector. However so far only Tunisia and South Africa appear to have government tenders on the web." (UNCTAD, 2000, p.87)

This research, particularly in the area of customs brokerage, provides further evidence of the incentives for firms created by government automation. From this finding, however, we recommend a more specific approach to government automation. Although governments need general e-commerce plans that do not favor one sector over another, limited government resources requires that automation occur in gradually. Individual ministries and departments will likely be required to automate on a piecemeal basis, squeezing the resources out of existing budgets. Automation in this fashion is unlikely to make significant changes and in turn create significant incentives for any sector.

Based on our research, we believe that e-commerce would be greatly facilitated by a more focused automation effort. Governments should assess their interactions with firms, particularly small firms for whom the incentive is more important, and identify key areas in which the lack of government automation serves as a bottleneck to the rest of the sector. In our research we found that in the engineering consulting sector the government does not serve as an impediment to e-commerce adoption. There are even some cases in which government automation did provide an impetus for further integration of e-commerce into firms’ business processes. On the other hand, the customs brokers were hindered by the lack of automation in customs brokerage in Dar es Salaam and San Diego. Thus, automation is specific sectors such as customs can help facilitate the adoption of e-commerce by SMEs. By seeking other similar sectors, governments may be able to quickly remove barriers to e-commerce within their limited budgets.

- **Enforcement**

As discussed in the section on theoretical implications, enforcement is the factor that creates positive outcomes from institutional change. Without sufficient enforcement many of the institutional reforms to create a favorable environment for e-commerce will be ineffective. As our research in the customs brokerage and engineering consulting fields demonstrates, inconsistent enforcement creates uncertainty, which in turn creates challenges for e-commerce investment. Furthermore, we witnessed that enforcement does not stand alone and is greatly facilitated by competition and information flows.

Since enforcement is an issue that crosses government sectors, a more concerted dialog on issues of enforcement should begin. Initially, measurement of enforcement, which increase information flows, can serve as a first step. We recognize that measurement incurs costs and that trade-offs between further automation and measurement of enforcement may be required. However, measurement facilitates cross-sectoral dialog as it serves to identify success and failures. Furthermore, government agencies can in many cases cross check data to facilitate enforcement. A more aggressive approach may include organizational re-engineering of
government agencies with an eye toward shifting responsibilities that facilitates this data sharing. One example is the Tanzania Revenue Authority's (TRA) use of business license information in their tax collection process. This is greatly facilitated by business licensing now being under the TRA's jurisdiction.

Enforcement can also be facilitated by competition. Policies that affect the competitive nature of industries should be examined as part of these cross-sectoral efforts to promote enforcement.

• Local versus Global

The final recommendation from this research is to encourage developing country governments to simultaneously promote local and international e-commerce. There can be many positive spillovers to the economy even when a local strategy is pursued. In addition to local spillovers, what was observed first hand in this research is also echoed by UNCTAD. UNCTAD, a trade related organization, has recently put greater emphasis on the importance of self-confidence in developing country managers, particularly in SMEs, to the widespread adoption of e-commerce. E-commerce often requires localized solutions and processes and procedures to capture the efficiencies of the medium. An emphasis on local e-commerce, particularly among SMEs, will help develop this sense of self-confidence that provides the impetus to strive for solutions. As noted by UNCTAD:

"...the process of confidence building will be essential to the truly global development of electronic commerce. Building confidence starts at home, that is, in one's own country, enterprise or community. And it starts with self-confidence: the ability to use one's own language, and to display and promote one's own culture are necessary components of 'positive globalization.' Indeed, it is only if globalization promotes diversity and equity, rather than uniformity and the unchecked interplay of market forces that it will gather the popular and planetary support necessary to its sustainability." P.133

Naturally, one need not pursue the support of globalization to benefit from a local-oriented approach to e-commerce. Merely improving the lives of local people is an adequate goal.\(^{158}\)

9.2.2.2 Firms

• Get Started

As the Tanzanian and Trade Point cases demonstrate e-commerce is becoming an accepted part of the commercial environment in urban areas of less developed countries. In most capital cities the required telecommunications and Internet services are available. Despite this growing acceptance, some firms appear to be waiting for governments or other powerful members of their networks to act as leaders in the adoption of this new medium of exchange. Although such an approach may be pragmatic in the short-term as the necessary benefits may still be lacking, to be successful in e-commerce firms need to develop skills. In order to be able to take full advantage of government automation when it comes, firms should begin to develop these skills as soon as possible. Furthermore, on an economy-wide basis a process of

\(^{158}\) As the following quote reflects, the benefits of local networking for developing countries have been recognized from nearly the beginning of the use of ICTs for development: "Stronger local networks of communities will be able to participate more effectively in wide politico-economic relationships, a type of participation that is crucial to achieving equality and equity." (Samarajiva & Shields, 1990)p.99
parallel adoption by firms and governments will help develop a critical mass of users, speeding the accumulation of economic benefits from e-commerce.

- **Integration is the Key**

In this research we found that in some sectors, namely engineering consulting and customs brokerage, one of the greatest advantages of e-commerce, market expansion, is thwarted by licensing requirements. Although market expansion may provide an easy to imagine impetus for e-commerce adoption, efficiencies gained through process innovations within a firm may bring about similar economic benefits. Thus, in addition to market expansion potential, firms should be looking for ways to better integrate Internet use into their every-day business practices. Implementing simple online billing systems is one example. The lack of integration is a common problem of ICT adoption among SMEs and the pattern is continuing with Internet adoption. This focus on integration is particularly relevant for developing country firms, as access to foreign markets may eventually not bring anticipated benefits of selling in foreign markets. Exports based on e-commerce will in many cases face the same hurdles that exports faced in traditional commerce. By focusing on integration rather than market expansion, firms can build skills locally while institutional reforms in the area of international trade are being implemented.

- **Industry Associations**

This research has found that presently industry associations do little to support the adoption of electronic commerce. Their role as coordinators, however, makes them a potentially powerful force in this realm. To support further adoption of e-commerce among SMEs, firms should work together through industry associations to establish standard procedures and best practices. Industry associations can also put pressure on governments to automate systems that in turn help the industry as a whole in e-commerce. Furthermore, lobbying activities, particularly from grass roots organizations, will help governments establish which sectors are most prepared to take advantage of the benefits automation presents.

- **High Value Information Services**

This research examined the role of an intermediary, Trade Point, in the provision of information services. Although the recommendations provided here are targeted toward the Trade Point program, they can be generalized to all market makers that provide information services. First, commerce via the Trade Point ETO system would be greatly facilitated by the availability of validated information. This can be accomplished through a redesign of the system that takes into account the institutional structure being created. UNCTAD is presently undertaking such a redesign. The redesign is based on greater synergies between the ETO system operators and the Trade Point offices, which will in turn provide validation for posted information.

**9.4 Limitations**

The findings of this research, given its scope, are limited by the factors related to method, research design, and theoretical considerations. We consider the limitations resulting from the method first.
The generalizability of findings from this research is limited by characteristics of the cases and their samples. The limited number of cases reduces the validity of recommendations for policy makers and firms. Also without a broader investigation the characteristics of the U.S., Tanzania, and the Trade Point program that could skew the results are unknown. Using such distinctly different institutional environments may exaggerate the importance of institutions.

Within the cases, the limited number of industries studied makes it difficult to say exactly which aspects of a service created the observed effects. We have drawn conclusions about knowledge-intensive business service SMEs, but without comparisons to other service sector firms and firms of other sizes the findings are restricted in their generalizability. Also the limited number of firms in the sample overall may have skewed the perception of the commercial environments in the U.S. and Tanzanian cases. The limited samples may also have affected the descriptions of the customs brokerage and engineering consulting industries.

The second general limitation of this research is a result of the research design. This research is an exercise in comparative statics. Although institutions are often path dependent making a static assessment feasible, the technology for e-commerce is changing rapidly and thus warrants a more dynamic approach. The static approach is also an issue due to the dynamic nature of some of the fundamental elements, such as trust and networks. A time series analysis may have identified more robust relationships between the variables.

The third limitation of this research is the depth of the theoretical base. As Alston et al. (1996) observe "the study of institutions involves layers of analysis, and different layers often require different theoretical and empirical tools." (Alston, 1996, p.25) Thus, the use of several theories is not beyond the realm of accepted practice in the field. This is not to say, however, that it is without limitations. In this research the simultaneous examination of such a wide array of institutional factors has sacrificed depth. Furthermore, violating assumptions limits the ability to test theory, although as previously discussed this is seen as a necessary evil tolerated in order to test limits of the theories. Examining the limits, rather than testing theory is a more central goal of this research.

The general level also leaves unresolved the nature of these 'institutional elements.' Although elements such as competition and enforcement are fundamental elements in well-functioning markets and are related to institutions, their exact relationship with institutions has not been clearly described. Thus, the research may clarify the relationships between some institutional elements, while confusing relations between others.

### 9.5 Recommendations for Future Research

This research is broad in scope and therefore identifies several areas for future research. In this first section we address potential research in the area of institutional analysis. First this research has identified a need for further delineation of institutional levels and the ways they interact. Research is needed to test whether or not a multi-level analysis that includes macro, meso, and micro level institutions is feasible. In this research we found that micro level institutions that could be generalized were considered to be industry-wide variables. Whether or not this is appropriate needs further investigation. Also the meso level may need to be closely examined to identify the extent that sectoral and industry-level institutions differ.
Institutional research could also focus on the different roles played by formal and informal institutions. This call for greater research in this area is echoed by Alston et al. (1996) "Because the new institutional analysis is a rapidly evolving field, basic theoretical tools are still being shaped and important issues concerning institutional change, such as the evolution of informal institutions, are poorly understood." (Alston, 1996, p.25) Building on the research presented here, future research could examine the relative value of each type and the conditions under which formal versus informal institutions are desirable. Specific questions concerning the need for, advantages of, and costs of formalizing informal institutions need to be addressed. A specific topic in this area could be comparing the use of formal and informal contracts in B2B e-commerce between small firms.

Also more systematic methods of identifying the fundamental institutional elements of well-functioning markets is needed. The research performed here draws on a wide variety of theoretical perspectives, and further research into these essential elements could provide a bridge between these theoretical perspectives and possibly create a shared language and set of basic concepts. The practical implications of such research is that it would provide a more focused scope for institutional development, particularly for development agencies and developing country governments working to design and develop efficient institutional structures. Also, although volumes of research have made the concept of an institution clear, further research is needed to clarify elements related to institutions such as competition and enforcement.

Research that addresses the key institutional elements of well-functioning markets might also shed light on the role of risk. Although the research presented here does not explicitly deal with the issue of risk, it has come up time and again. The risk structure of an industry appears to be a significant factor in determining the use of written contracts. Also the willingness to take risks seems almost necessary for engaging in e-commerce. Thus research questions concerning the connection between risk preferences and e-commerce use could be investigated. Risk also plays an integral role in the power and performance of institutions. Since institutions shape exchange and reduce uncertainty, the need for adequate institutions is partly a function of the willingness of firms to take risks. Clients of GTPnet were seen to operate under very uncertain conditions with quite weak institutional arrangements.

Further research in electronic commerce could explore the role of government in the adoption process. Comparative analyses of various national governments’ roles in facilitating adoption could be instructive for national information society initiatives. Specific issues of interest are the power of the government to encourage adoption, such as the U.S. customs authority’s implementation of their EDI system in the 1980’s. How such a mass implementation works and the attitudes of firms toward such a plan at the time of implementation and later could inform governments of potential hurdles to implementation of e-commerce systems.

The research presented here investigated the role of institutions in shaping the potential for e-commerce. The opposite perspective, how e-commerce shapes institutions would also provide interesting insights as to one aspect of the impact of e-commerce on society. In terms of the specific findings of this research, further explorations into the interaction between networks and the information they provide and e-commerce is necessary. Such research could help identify the limits of e-commerce as well as potentially identifying specific needs for technological advancements.
Future research could also follow up on the research begun here concerning B2B e-commerce in the services sectors. Empirical research based on larger sample sizes could be used to challenge or support the findings of this research. Research in this area might compare knowledge-intensive versus non-knowledge intensive service industries to make clearer the implications of e-commerce for knowledge-based products. Furthermore, the role mutual recognition of diplomas and licenses plays in the ability of knowledge-intensive service firms to benefit from e-commerce should be explored. Such programs could serve as a first step in reducing the credibility gap that creates challenges for developing country firms wanting to take advantage of their labor cost differentials.
References


Appendix I: E-commerce Software Requirements

Some of the differences in business- and consumer-oriented e-commerce are reflected in their needs for Website software. Evidence can be seen in requirements such as contract management, business-focused personalization, content and application syndication, reporting capabilities, back-end connectivity, and bill presentation and payment (Huff, Meister, & Fenner, 2000). These features and requirements are highlighted in Table A1.1.

<table>
<thead>
<tr>
<th>E-Commerce Application Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business-to-Business Features</strong></td>
<td><strong>Requirements</strong></td>
</tr>
<tr>
<td><strong>Pricing and Payment</strong></td>
<td>Many sellers offer different contract pricing to different customers, based on factors such as minimum volumes, and replenishment schedules. In addition, many trading partners want to settle their accounts via methods other than credit-card payments.</td>
</tr>
<tr>
<td><strong>Relationship Management</strong></td>
<td>Business-to-business sites require a different flavor of personalization than business-to-consumer sites; for each customer, business-to-business sites should support unique pricing arrangements, contracts, and delivery logistics.</td>
</tr>
<tr>
<td><strong>Content and application syndication</strong></td>
<td>Many merchants need to syndicate content from multiple suppliers' catalogs. Likewise, some merchants need to syndicate application logic for dealers to use in their own Web sites, such as a hardware distributor allowing its retailers to use a centrally-developed configurator.</td>
</tr>
<tr>
<td><strong>Reporting</strong></td>
<td>Merchants need sophisticated sales and traffic reports to help improve sales and marketing practices. Buyers need the ability to report on their company's purchasing activity with the merchant.</td>
</tr>
<tr>
<td><strong>Back-end connectivity</strong></td>
<td>A merchant's E-commerce platform must be able to connect with the merchant's own business systems, as well as those of its customers.</td>
</tr>
<tr>
<td><strong>Bill presentation and payment</strong></td>
<td>Most companies still do business in the conventional way: issuing a purchase order, receiving an invoice, and processing the bill. Business-to-business E-commerce sites must be able to handle this interaction electronically.</td>
</tr>
</tbody>
</table>

Table A1.1: Business-to-Business E-commerce Software Requirements
(Source: Huff et al., 2000)
Appendix II : UNCTAD Disclaimer

The following is the UNCTAD ETO system disclaimer as found at their web site:
http://www.untpdc.org/untpdc/eto/info/about.html

Disclaimer:

We at the UNTPDC are doing our best to ensure that the information contained in the ETO files is updated, current and accurate, however, we accept no responsibility for actions resulting from information contained herein. The information contained on the ETOs referring companies and individuals, are believed to be of good integrity and reliable. We recommend that you personally check the individual company before transacting any business with them. Those informations is provided as is and with no warranty of any kind. Every effort is made to provide accurate and up to date information as supplied by our Trade Points and ETO senders. UNTPDC accepts no responsibility for typos or inaccuracies caused by editing and/or transmission of the information contained herein. Corrections and suggestions should be addressed to: helpdesk@untpdc.org
### Appendix III: City Comparisons

<table>
<thead>
<tr>
<th>Chamber of Commerce</th>
<th>Date of Salaries</th>
<th>Baltimore/Washington corridor chamber ~ 800 members (14,450 business); separate Balt. Chamb. But no info</th>
<th>Philadelphia</th>
<th>Richmond, VA</th>
<th>San Diego</th>
<th>Savannah</th>
<th>Wilmington, NC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Newly formed</td>
<td>1,700 members</td>
<td>Membership not given</td>
<td>Greater Richmond Chamber 2000 member</td>
<td>4,000 members</td>
<td>COC but no web site</td>
<td>Greater Wilmington Chamber 1500 members</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry Org. FF</th>
<th>TFFA</th>
<th>-----</th>
<th>-----</th>
<th>-----</th>
<th>-----</th>
<th>-----</th>
<th>-----</th>
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<table>
<thead>
<tr>
<th>Container Port traffic (TEUs)</th>
<th>98,000</th>
<th>476,012</th>
<th>143,948</th>
<th>112,000</th>
<th>52,000</th>
<th>7,186</th>
<th>734,724</th>
<th>106,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Cargo (capacity)</td>
<td>(2.5 million tons)</td>
<td>-----</td>
<td>15 million tons</td>
<td>-----</td>
<td>-----</td>
<td>1.8 million tons</td>
<td>2.1 million tons</td>
<td>-----</td>
</tr>
<tr>
<td># of ports in customs license district</td>
<td>Balt. +2</td>
<td>Bost. + 12 others incl. 4 in CT</td>
<td>Phila + 4 others include. Wil. DE</td>
<td>Norfolk + 3 others</td>
<td>SD + 3 others</td>
<td>Sav. + 2 others</td>
<td>Charlotte + 5 others</td>
<td></td>
</tr>
<tr>
<td>Exports/Imports</td>
<td>$462 million/$1.4 billion</td>
<td>-----</td>
<td>Cont. 309,000/810,000 tons Bulk 513,000/15,214,000 tons</td>
<td>-----</td>
<td>-----</td>
<td>$2 million/$4 million</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

| Per capita GDP 1997 | $800 | $29,900 (4) | $33,860 (4) | $22,785 (21) | $31,207 (6) | $24,965 (17) | $24,320 (8) | $23,977 (13) New |
|----------------------------------|-----------------------------------------------|--------------------------------|---------------------------------------------------|------------|
| Chatham cty                      | $27,770 (41)                                  | $23.1 billion                  | ---                                               | 1.5 million |
| Hanover cty                      | $31,808 (15) (includes Worcester)             | 153,797                        | 453 million (non res- & AARs Balt. County)        | 692,000    |
|                                  | $29,347 (31) (includes NJ cities)             | 221,009                        | Penn value of construction $33 billion            | 555,447    |
|                                  | $27,797 (40) (includes Petersburg)            | 339,940                        | ---                                               | 1.49       |
|                                  | $24,965 (89)                                  | 211,331                        | $160 million (city permit)                        | 762,000    |
|                                  | $23,054 (143)                                 | 1,033,016                      | ---                                               | 1.25 million |
|                                  |                                               | 229,473                        | New Hanover county $146 million in permits       | 150,000    |
|                                  |                                               | 218,888                        |                                                   | 70,000     |
|                                  |                                               |                                 | New Hanover county 120,000                       |            |

### Table A3.1: City Comparisons

Figures in this table are from the following Internet resources:

- City of Savannah -- [http://www.ci.savannah.ga.us/cityweb/index.html](http://www.ci.savannah.ga.us/cityweb/index.html)
- City of Richmond Virginia -- [http://www.ci.richmond.va.us/](http://www.ci.richmond.va.us/)
- American Consulting Engineers of Massachusetts -- [http://www.engineers.org/acec/acec-ma.htm](http://www.engineers.org/acec/acec-ma.htm)
- City of San Diego -- [http://www.sanmet.gov/](http://www.sanmet.gov/)
Appendix IV: Institutions -- Similarities, Differences and Effects

In the following three tables the process of the analysis between the Tanzanian and U.S. cases are presented. In Table 1 the categories of relationships, differences and similarities and whether or not they had an influence on Internet use are established and numbered. In Tables 2 and 3 the similarities and differences among the intermediate institutions, or results of institutions, are listed and then rated using the categories from Table 1. Whether or not the influence was expected is of less significance, but is used to flag unexpected events for possible further analysis. In Tables 2 and 3 two indications of whether an influence appears to exist are given. The second column uses a more strict criteria for analysis. The ambiguity here is not in determining actual influences, but potential influences. In a subjective analysis it is possible to interpret a wide range of issues as having potential influences on e-commerce. By using a two step process, the relations that clearly did not have an influences are eliminated. Next, the relationships categorized as having an influence are revisited with more strict criteria applied. The shaded rows are those that are noted as having an influence after the 'strict' analysis.

<table>
<thead>
<tr>
<th>Institutional Relationship</th>
<th>Observed or Potential Influence</th>
<th>Expected Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Difference</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Difference</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>3. Difference</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Difference</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>5. Similarity</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>6. Similarity</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>7. Similarity</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>8. Similarity</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Table A4.1: Categories

<table>
<thead>
<tr>
<th>Section</th>
<th>Institution</th>
<th>Relation</th>
<th>More strict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similarities 6.1.3</td>
<td>Courts</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>(General National)</td>
<td>Status for smes; local/minority-owned</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Competition among ISPs</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Digital signatures</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Similarities 6.1.4</td>
<td>Weak impact of contract law</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>(Industry Specific)</td>
<td>Use of contracts</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Industry associations more valued</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Industry associations and e-commerce</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Industry association foster information flows</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Industry association codes/standards</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Both vertical and horizontal industry associations</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Networks</td>
<td>6</td>
<td>6</td>
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<tr>
<td>Similarities 6.1.4.1</td>
<td>Spin offs</td>
<td>8</td>
<td>8</td>
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<tr>
<td>(Customs Brokers)</td>
<td>Work from parent</td>
<td>7</td>
<td>5</td>
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<tr>
<td></td>
<td>Use agents</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Little specialization</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Payment</td>
<td>6</td>
<td>8</td>
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<tr>
<td>Similarities 6.1.4.2</td>
<td>Indemnity clauses</td>
<td>6</td>
<td>8</td>
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<tr>
<td>(Engineering Consulting)</td>
<td>Trust in government procurement process</td>
<td>6</td>
<td>8</td>
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<tr>
<td></td>
<td>Government and private clients</td>
<td>8</td>
<td>8</td>
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<tr>
<td></td>
<td>Use of contracts and risk taking with size/age</td>
<td>6</td>
<td>8</td>
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<tr>
<td></td>
<td>Few employee problems</td>
<td>6</td>
<td>8</td>
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Table A4.2: Categorization of Similarities
<table>
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<th>Section</th>
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<th>Relation</th>
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<tr>
<td>Differences 6.1.1.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(General Commercial Environment)</td>
<td>Payment mechanisms</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Credit</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>IPR</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Informal sector</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Taxation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Tariffs</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Labor</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Regulation of ISPs</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Competition in telecoms</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Differences 6.1.1.2</td>
<td>Centralization of information flows</td>
<td>1</td>
<td>1</td>
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<tr>
<td>(Business Environment)</td>
<td>Social clubs</td>
<td>4</td>
<td>4</td>
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<tr>
<td></td>
<td>General business organizations</td>
<td>3</td>
<td>1</td>
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<td></td>
<td>Payment norms</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>Race</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Small business programs</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Differences 6.1.2</td>
<td>Diversity in industry associations</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>(General Industry)</td>
<td>Settling disputes: norms</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Specific Differences)</td>
<td>Taking on risky clients</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Advertising</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Motivations for using Internet</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Differences 6.1.2.1</td>
<td>Automation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>(Customs Brokerage)</td>
<td>Bureaucracy</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Licensing</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Brokers association</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Incentives for email</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Personnel</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Differences 6.1.2.2</td>
<td>Specialization</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>(Engineering Consulting)</td>
<td>Industry association</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Procurement</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Licensing</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Finding employees</td>
<td>3</td>
<td>1</td>
</tr>
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</table>

Table A4.3: Categorization of Differences
Appendix V: Mapping Intermediate Institutions

The following series of tables reflects the ‘mapping’ process by which intermediate institutions were associated with the appropriate fundamental institutional element. The institution is also ranked as having a high (H), medium (M) or low (L) level of influence on e-commerce adoption and potential. The mechanism by which this influence occurs is also identified. In this case uncertainty is broken into two categories: uncertainty in the market in general and uncertainty for a particular firm. Following these first rounds of classifications the institutions are coded based on whether or not they are associated with a fundamental element and the level of influence. Separate tables exist for macro, meso and micro level institutions.

Mechanisms
UM = uncertainty in market
UF = uncertainty for that firm
C = increased cost or other financial constraint to investment
PB = perception of benefits of e-commerce

- Light grey (5%) = no fundamental element, but e-commerce implications > L (medium or high)
- Grey (12.5%) = fundamental element with implications all > L (medium or high)
- White = fundamental element with at least one L (may have medium or high in other category but has at least one score of low)
- Dark grey (30%) = no fundamental element and at least one L

MACRO LEVEL INSTITUTIONS

National Differences

<table>
<thead>
<tr>
<th>Intermediate Level Institution</th>
<th>Fundamental Element</th>
<th>Mech</th>
<th>Ecom Adopt</th>
<th>Ecom Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Exchange rate stability</td>
<td></td>
<td>UM</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>-skills in the labor market</td>
<td></td>
<td>UM</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>-tight credit</td>
<td>Information flows; trust</td>
<td>C</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>-tax code enforcement</td>
<td>Enforcement</td>
<td>UF; C</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>-Internet market regulation</td>
<td>Property rights (Egg. 1990,p.143)</td>
<td>C</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>-telecom market structure</td>
<td>Competition</td>
<td>C</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>-higher tariffs</td>
<td>Competition; property rights</td>
<td>C</td>
<td>M</td>
<td>H</td>
</tr>
<tr>
<td>-IPR protection</td>
<td>Enforcement of property rights</td>
<td>UM</td>
<td>L</td>
<td>M</td>
</tr>
<tr>
<td>-formalization of the economy</td>
<td>Information flows; enforcement</td>
<td>UM</td>
<td>L</td>
<td>H</td>
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</tbody>
</table>

Business

<p>| | | | | |</p>
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<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-payment timing</td>
<td>Property rights</td>
<td>C; UF</td>
<td>M</td>
<td>H</td>
</tr>
<tr>
<td>-social clubs</td>
<td>Networks</td>
<td>PB</td>
<td>M</td>
<td>M</td>
</tr>
</tbody>
</table>
### National Similarities

<table>
<thead>
<tr>
<th>Factor</th>
<th>Ecom Adopt</th>
<th>Ecom Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitiveness of Internet market</td>
<td>C</td>
<td>H</td>
</tr>
<tr>
<td>Digital signatures</td>
<td>PB</td>
<td>M</td>
</tr>
<tr>
<td>Industry vs. general business orgs</td>
<td>PB</td>
<td>M</td>
</tr>
<tr>
<td>Industry assoc. create ethical codes</td>
<td>UM</td>
<td>M</td>
</tr>
<tr>
<td>Industry associations create standard contracts</td>
<td>UF; PB</td>
<td>M</td>
</tr>
<tr>
<td>Special status for certain groups</td>
<td>PB</td>
<td>M</td>
</tr>
<tr>
<td>Contract use varies by industry</td>
<td>PB</td>
<td>L</td>
</tr>
<tr>
<td>Contract use varies by firm size</td>
<td>PB</td>
<td>L</td>
</tr>
<tr>
<td>Implications of contracts and contract law</td>
<td>PB</td>
<td>L</td>
</tr>
<tr>
<td>Industry assoc. effect on e-commerce adoption</td>
<td>PB</td>
<td>L</td>
</tr>
<tr>
<td>Both horizontal and vertical industry assoc.</td>
<td>PB</td>
<td>L</td>
</tr>
</tbody>
</table>

### MESO LEVEL INSTITUTIONS

#### Industry Level Differences

<table>
<thead>
<tr>
<th>Factor</th>
<th>Ecom Adopt</th>
<th>Ecom Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability of tariffs</td>
<td>UM</td>
<td>L</td>
</tr>
<tr>
<td>Level of automation of customs</td>
<td>PB</td>
<td>H</td>
</tr>
<tr>
<td>Level of customs bureaucracy</td>
<td>UN</td>
<td>L</td>
</tr>
<tr>
<td>Payment of duties</td>
<td>UF</td>
<td>M</td>
</tr>
<tr>
<td>Licensing</td>
<td>UF</td>
<td>M</td>
</tr>
<tr>
<td>Managing employees</td>
<td>PB</td>
<td>M</td>
</tr>
<tr>
<td>Activity in the customs brokers' association</td>
<td>Networks; information flows</td>
<td>PB</td>
</tr>
<tr>
<td>Email use incentives</td>
<td>Networks</td>
<td></td>
</tr>
<tr>
<td>Financing client imports</td>
<td>Trust</td>
<td>C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engineering Consultants</th>
<th>Ecom Adop</th>
<th>Ecom Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Govt. contract awarding processes</td>
<td>UM; PB</td>
<td>L</td>
</tr>
<tr>
<td>Number of multinationals</td>
<td>C; PB</td>
<td>L</td>
</tr>
<tr>
<td>Internet use to find employees</td>
<td>Intermediation; trust</td>
<td>PB</td>
</tr>
<tr>
<td>Level of automation of govt. clients</td>
<td>Network</td>
<td>PB</td>
</tr>
<tr>
<td>Level of specialization</td>
<td>Network</td>
<td>PB</td>
</tr>
<tr>
<td>Licensing</td>
<td>Enforcement</td>
<td>UF; C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common Differences</th>
<th>Ecom Adop</th>
<th>Ecom Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>In U.S. firms were willing to dump troublesome client</td>
<td>UF</td>
<td>L</td>
</tr>
<tr>
<td>Differences in new entrants marketing (advertising versus using networks)</td>
<td>Networks</td>
<td>UF</td>
</tr>
</tbody>
</table>

**Industry Level Similarities**

<table>
<thead>
<tr>
<th>Brokers</th>
<th>Ecom Adop</th>
<th>Ecom Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used agents or had multiple locations</td>
<td>Networks</td>
<td>PB</td>
</tr>
<tr>
<td>Getting paid was a big problem</td>
<td>Prop rights</td>
<td>UF; C</td>
</tr>
<tr>
<td>Spin offs</td>
<td>Competitive</td>
<td>L</td>
</tr>
<tr>
<td>Branches get business from parent</td>
<td>Networks</td>
<td>L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engineering Consultants</th>
<th>Ecom Adop</th>
<th>Ecom Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger smaller firms more likely to take risks</td>
<td>Comp</td>
<td>PB</td>
</tr>
<tr>
<td>Few problems with employees</td>
<td>Trust</td>
<td>PB</td>
</tr>
<tr>
<td>All firms carry insurance</td>
<td>Contracts</td>
<td>UF</td>
</tr>
<tr>
<td>Indemnity clause problem for larger firms</td>
<td>Contracts</td>
<td>PB</td>
</tr>
<tr>
<td>Confidence in the contract awarding process</td>
<td>Trust; information flows</td>
<td>UM; UF; PB</td>
</tr>
<tr>
<td>Overall Similarities</td>
<td></td>
<td>Mech</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-----------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>-getting paid bigger problem for brokers</td>
<td>Property rights</td>
<td>UF</td>
</tr>
<tr>
<td>-personal networks really important for getting work</td>
<td>Networks</td>
<td>PB</td>
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**Program Level**

<table>
<thead>
<tr>
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<th>Fundamental</th>
<th>Mech</th>
<th>Adop</th>
<th>Pot</th>
</tr>
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<tbody>
<tr>
<td>Match making</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-open access (pros &amp; cons)</td>
<td>Property rights; information flows</td>
<td>PB</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>-limitations on number of postings</td>
<td>Property right</td>
<td>PB</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>-free postings</td>
<td>Property rights; information flows</td>
<td>PB</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>-lack of knowledge of validity of offers</td>
<td>Enforcement; information flows; networks; trust</td>
<td>PB</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-hesitancy to take on transaction related tasks</td>
<td>Intermediation</td>
<td>PB; UF</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>-acting as a certificate authority</td>
<td>Intermediation; information flows; trust</td>
<td>UF</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>-focusing on issuing certificates</td>
<td>Enforcement</td>
<td>UF</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>-sharing information about clients/trade opportunities</td>
<td>Information flows; networks; trust</td>
<td>UF</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>

**MICRO LEVEL INSTITUTIONS**

**San Diego / Dar es Salaam**

<table>
<thead>
<tr>
<th>Intermediate</th>
<th>Fundamental</th>
<th>Ecom</th>
<th>Adop</th>
<th>Ecom</th>
<th>Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letting employees have desktop Internet access</td>
<td>Trust</td>
<td>PB</td>
<td>M</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Helping Mexican clients learn to use computers</td>
<td>Trust; networks</td>
<td>PB</td>
<td>M</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Entering an alliance (CA broker)</td>
<td>Network;</td>
<td>PB</td>
<td>M</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Time requirement for working</td>
<td>Trust; networks</td>
<td>L</td>
<td></td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>together (woman owned firm)</td>
<td>Requirement to use headquarter's contract stipulations</td>
<td>Network; property rights; trust</td>
<td>PB</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Doing a credit check on new clients (CA brokers)</td>
<td>trust; intermediation (lack of)</td>
<td>PB</td>
<td>L</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Using family to collect debt (TZ)</td>
<td>Property rights; networks; enforcement</td>
<td>PB</td>
<td>L</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>

**TP (operators and their clients)**

<table>
<thead>
<tr>
<th>Intermediate</th>
<th>Fundamental</th>
<th>Ecom Adop</th>
<th>Ecom Pot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensuring clients using banks is ok</td>
<td>intermediation; networks</td>
<td>PB</td>
<td>M</td>
</tr>
<tr>
<td>Using banks</td>
<td>Trust; enforcement; past lack of respect for property rights (bankruptcies)</td>
<td>PB</td>
<td>M</td>
</tr>
<tr>
<td>Using ICTs</td>
<td>trust</td>
<td>UF</td>
<td>M</td>
</tr>
<tr>
<td>TP operators using other trade facilitators such as COCs for references</td>
<td>networks</td>
<td>PB</td>
<td>M</td>
</tr>
<tr>
<td>Use of L/Cs</td>
<td>intermediation</td>
<td>PB</td>
<td>M</td>
</tr>
<tr>
<td>Visiting clients location</td>
<td>Trust; intermediation; networks</td>
<td>PB</td>
<td>L</td>
</tr>
<tr>
<td>Prepayment</td>
<td>trust</td>
<td>PB</td>
<td>L</td>
</tr>
<tr>
<td>Short term orientation of some clients</td>
<td>trust</td>
<td>PB</td>
<td>L</td>
</tr>
</tbody>
</table>
Appendix VI: Institutional Elements -- Comparing Influences and Levels

This table was constructed from a review of the similarities and differences between the first two cases as well as the findings from the third case. Findings from the third case were considered in the meso level similarities column. The numbers in brackets are the level totals for each element.

<table>
<thead>
<tr>
<th>Institutional Foundations</th>
<th>Macro</th>
<th>Meso</th>
<th>Micro</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Difference</td>
<td>Similarity</td>
<td>Difference</td>
<td>Similarity &amp; Program</td>
</tr>
<tr>
<td>Property Rights</td>
<td>3 (3)</td>
<td>2</td>
<td>4 (6)</td>
<td>1</td>
</tr>
<tr>
<td>Contracts</td>
<td>2 (2)</td>
<td></td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Enforcement</td>
<td>1 (2)</td>
<td>1</td>
<td>2 (3)</td>
<td>1</td>
</tr>
<tr>
<td>Competition</td>
<td>2 (3)</td>
<td>1</td>
<td>1 (1)</td>
<td>4</td>
</tr>
<tr>
<td>Information Flows</td>
<td>0</td>
<td>1</td>
<td>5 (6)</td>
<td>6</td>
</tr>
<tr>
<td>Networks</td>
<td>3 (6)</td>
<td>5</td>
<td>4 (9)</td>
<td>4</td>
</tr>
<tr>
<td>Trust</td>
<td>1 (1)</td>
<td>2</td>
<td>3 (5)</td>
<td>4</td>
</tr>
<tr>
<td>Intermediation</td>
<td>0</td>
<td>1</td>
<td>2 (3)</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>7</td>
<td>12</td>
<td>21</td>
</tr>
</tbody>
</table>

Table A6.1: Comparing Influences and Levels
Summary in Dutch -- Samenvatting

Institutionele Activa:
Gestalte geven aan een potentieel voor e-commerce in ontwikkelingslanden

De mondiaal vooruitgang van informatie- en communicatietechnologieën (ICT) heeft aangespoord tot een snelle en onomkeerbare overgang naar een informatie- en kennis economie. Net zoals wij deze nieuwe werkelijkheid in toenemende mate accepteren, zo realiseren wij ons ook steeds meer dat de 'Digitale Kloof' tussen de ontwikkelde landen en de ontwikkelingslanden breder wordt. Dit onderzoek naar de oorzaken en de diepte van deze kloof, past de benadering van Nieuwe Institutionele Economie toe om de rol van instituties in de vormgeving van het potentieel voor elektronische handel (e-commerce) in ontwikkelingslanden te onderzoeken.

Instituties dienen als regels voor het handels spel, kunnen formeel of informeel zijn en bestaan op verschillende niveaus. Theoretisch gezien dienen institutionele elementen, zoals eigendomsrechten, concurrentie, contracten en bemiddeling, als basis voor goed functionerende markten. Deze theoretische institutionele elementen worden vaak waargenomen door wat hier als 'intermediaire instituties' beschreven worden. Intermediaire instituties nemen de vorm aan van overheidsregelgeving, industrieregelgeving en -praktijken, of simpelweg de voorwaarden van een bilaterale overeenkomst. De theoretische wortels van de intermediaire instituties worden onderzocht door hun invloed op e-commerce te analyseren.

Het onderzoek wordt gestaafd door drie cases, elk met een andere institutionele omgeving, waarin de nadruk ligt op 'business-to-business' e-commerce tussen midden en kleine bedrijven (MKB's). De eerste twee cases, die gesitueerd zijn in de VS en Tanzania, concentreren zich op de ingenieursadvies- en de douane-bemiddelingssectoren. De derde case onderzoekt het UNCTAD Trade Point Project, dat handelsinformatie verschaft aan MKB's in ontwikkelingslanden en gebruik maakt van zowel een op Internet gebaseerd koppelingsprogramma als een netwerk van plaatselijke handelsconsulenten.

De invloed van instituties op e-commerce is te zien in zowel ontwikkelde landen als ontwikkelingslanden. Netwerken tussen organisaties zijn het institutionele element met de meeste invloed op de adoptie van e-commerce door dienstenverlenende MKB's in de drie institutionele omgevingen. Aan de andere kant zijn het afdwingen van eigendomsrechten en meer algemene regels de beste verklaring voor de verschillen tussen ontwikkelde landen en ontwikkelingslanden met betrekking tot het potentieel voor e-commerce.

Theoretisch gezien, slaat het onderzoek bruggen tussen de vertakkingen binnen het Nieuwe Institutioneel Economisch denken. Het laat zien dat voorspellingen over e-commerce gebaseerd op Transactiekosten Economie analyses verbeteren als de bemiddelingseffecten van instituties in beschouwing worden genomen. Voor beleidsmakers suggereer de uitkomsten, dat dwangmechanismen vanaf het begin in beleid opgenomen dienen te zijn en vervolgens geïmplementeerd moeten worden door verbeterde informatie-uitwisseling tussen overheidsafdelingen. Praktische gezien, verduidelijkt dit onderzoek het feit dat de bedrijven in ontwikkelingslanden e-commerce wel adopteren, maar dat het gebruik van Internet meer in
bedrijfsprocessen geïntegreerd dient te worden. Betere coördinatie door brancheorganisaties en ontwikkeling van 'best practices' zouden dit proces kunnen faciliteren.
About the Author

Carleen Maitland was born on December 15th, 1965 in Pawtucket, Rhode Island. She is a graduate of Guilford High School in Guilford, Connecticut. Directly following high school Carleen attended Worcester Polytechnic Institute in Worcester, Massachusetts where she completed a bachelor degree with honors in electrical engineering. Subsequent to the completion of her studies Carleen joined Nynex, a regional telecommunications firm, where she served as an Outside Plant Engineer and a Network Cost Analyst. She left Nynex in 1991 to serve as a U.S. Peace Corps Volunteer in Malawi in southern Africa.

Upon her return to the United States, Carleen entered the Engineering-Economic Systems (EES) program at Stanford University. She graduated with a Master’s of Science in EES in 1993. Carleen then entered the Mass Media Ph.D. program at Michigan State University (MSU) in East Lansing, Michigan. After completing her course work and competency exams at MSU, Carleen joined the Economics of Infrastructure (EI) section at the Delft University of Technology as a visiting fellow. Following the fellowship Carleen was offered a position as a Ph.D. student in the EI section and it is there that she finished her doctoral program.

During her master's and doctoral studies Carleen also held a variety of internships. She was a network cost analyst for Pacific Bell, a government affairs intern at TCI, and a research consultant for Daimler Benz.

Carleen is currently an Assistant Professor in the Information and Communication Technologies section in the college of Technology, Policy and Management at Delft. Her research interests include institutional bases for Internet diffusion and use.