ADOPTION AND DIFFUSION OF
GROUP SUPPORT SYSTEMS
IN TANZANIA
Adoption and Diffusion of Group Support Systems in Tanzania
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Preface

*If I have seen far it is because I am standing on the shoulders of the giants.*

- Isaac Newton, *The great scientists*

The central theme of this thesis, the adoption of Group Support Systems (GSS) in Tanzania, may strike some as an extreme ambition. This dissertation presents the outcomes of an exploratory study into whether GSS can be assimilated and used in Tanzania.

In this study, I experienced support from many people. Their names should not go unmentioned. First of all, I was very fortunate to have Henk Sol as a visionary and inspiring supervisor. I thank him for his continuous motivation of my research efforts. Above of all, I am grateful for his consistent assessment of the intermediary results and his support given throughout the entire period of my research. I was also fortunate to work with Gert-Jan de Vreede, a combat man, who tirelessly drilled me through GSS research paradoxes. His relentless, cooperative and contribution efforts during my research I value extremely highly. In addition I would like to thank Noel Jones for his role as an illuminating ray of hope and for his continued support for the successful application of GSS in capacity building in Africa. My appreciation is also directed to the other GSS visionaries, particularly Doug Vogel, Robert Briggs and Robert Davison for their advice and support in this study.

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Furthermore, I am indebted to the many colleagues both from UDSM and CICAT whom I have learnt so much over the years and who were instrumental for my study. To list them all would be impossible, but a few deserve special mention: Verdiana Masanja, Hans Geers, Paul Althuis, Sylvanus Kitinya, Peter Letitre, Joost Geijer, Bakari Manja, Leonard Shayo, Assa Mshimba, Estomy Massawe and John Kyaruzi. I want also to thank the many individuals who participated in the GSS sessions and shared with me their working experiences, filled in questionnaires, and helped to bring this study to fruition. Their contribution can be found throughout this dissertation.

During my research I had the pleasure to closely work with a number of bright, hardworking colleagues. Bart Cornelissen was very instrumental in making the GSS research process move forward with vigour despite being in an alien culture and environment. I owe him a lot for his inspired efforts during the field study. I am very grateful to Deogratias Fuli for his excellence as the 'chauffeur' for most of the sessions. Bahati Sanga was an outstanding architect for designing pillars on the "how and where" GSS could take its wings through media promotion. I also wish to pay special gratitude to Daisy Seferina and Annelies van der Ham who played a crucial role during data coding and analysis.

I would like to thank my colleagues at the School of Technology, Policy and Management who took the time to take me out for R and R especially to the notorious beer-drinking place, whenever they felt I was bored. Nevertheless I have benefited greatly from their discussions and assistance whenever I was caught in the quagmire of despair. My greatest appreciation is also reserved for Sajda Qureshi who tirelessly inspired me and supported me with Kiswahili culture while in Delft.

I particularly wish to thank the individuals who were invaluable in the process of making this thesis a reality: Miranda Aldham-Breary whose extraordinary English communication skills helped turn an ambiguous mass into a coherent narrative. I also want to thank Rineke van der Woerd for her enthusiastic contribution to the Dutch summary; and Agnes Fowler and Helen van Dijk who have been incredibly patient in assisting me around their busy working schedules.

Finally, most of all, I wish to express my deepest gratitude to my lovely wife Christina who had to endure a solo labour delivering and a subsequent grief pain of the tragic demise of our shining daughter, Shani, as I laboured in the Netherlands to produce this thesis.
1. INTRODUCTION

One of the greatest pains to human nature is the pain of a new idea. It...makes you think that after all, your favourite notions may be wrong, your firmest beliefs ill-founded.... Naturally, therefore, common men hate a new idea, and are disposed more or less to ill-treat the original man who brings it.

-Walter Bagehot, Physics and Politics

1.1 Information Technology and Development

In recent years organisations have found themselves in more challenging and dynamic environments than ever before. Technology and practice have changed very rapidly. Technological developments and breakthroughs often give rise to varying productivity rates and standards of living [Toffler 1985]. Today's important issue in developing countries is how to make use of technology to create opportunities that add to community development.

In different countries, the differences in technology levels, national culture, economic stability and social priorities all influence the assimilation of technology [McFarlan 1986]. It is argued that differences in the application of technologies exist for several reasons; primary reasons being language, geographical distance, different organisational and institutional structures, culture, existing technology, labour cost trade-offs, and the "not invented here" syndrome [Palvia et al. 1990].

Whereas this technological development has been a catalyst for the economic development of the Western countries, it has raised many challenges for the developing countries of the South that need to be addressed in order to enhance their development [Mmari 1992]. It is urged that the South should strive to reduce the existing knowledge gap in Science and Technology (S & T) between them and the North. Furthermore, the political development agenda of the developing countries in the South and their national Research and Development (R & D) and the harnessing of Technology in the South have to be responsive to specific problems. The problems that need to be addressed include education and training, human resources, institutions to create manpower, environment e.g. forestry reserves, soil and water management [Mmari 1992; COSTECH 1993; Tindimubona 1992]. These issues have also been the main focus of many
multilateral and bilateral donors, such as the World Bank, Canadian Developing Agency and the Commonwealth Secretariat for African countries [see e.g. World Bank 1996] with respect to capacity building in Africa.

Information technology (IT) has long since been recognised as crucial to the economies of the developing world [see e.g. Palvia et al. 1990; Odedra 1993; Nidumolu et al. 1996]. It pervades literally every sphere of human endeavour, education, agriculture, health, manufacturing, mining, telecommunications, transport, etc. IT research, basic as well as applicative, is equally critical to the social-economic development.

dissertation In this regard, Information Technology (IT) has been presented as a strategic resource. While observers and forecasters describe and predict the oncoming of ‘An information society’ or ‘information economy’ or ‘post-industrial society’ [Alter 1996], firms and their management have been investing in information technology to seek strategic advantage. Literature supports the assertion that more substantial gains and improvements can be achieved by applying IT as a support for changing or reorganising the current way of working [Harmmer 1990; Davenport & Short 1990; Meel 1994; Alter 1996].

1.1.1 IT Threats of Exclusion

The introduction of IT into production and administration has several implications for productivity, the nature and size of labour force, the production methods, organisational structure and their mode of operation. For example, by the late 1970's it was estimated that more than 50% of the GNP in the United States, Western Europe, and Japan was derived from information related technological activities [Porat 1977]. Some developing countries [e.g. Korea, Malaysia, and India] are also making determined efforts to assimilate information technology as an important ingredient in their developmental structure. In such a view any attempt to exclude it will result into a greater impact of underdevelopment, taking into consideration the existing gap between the IT in developed countries and the IT in developing ones. It is from this basis that for example Spletsoeser [1995] and Tolero and Gaudette [1995] argue that developing countries need to reform their programs and policies to keep pace with the emerging information society.

The emerging information society is characterised by substantial differences from the industrial society, such as more competition, more democracy, less centralisation, etc. [Splettoesesser 1995; Tolero and Gaudette 1995]. In the information society, ‘trade and investments are global and organisations compete with knowledge, networking and agility on a global basis’ [Tolero and
Gaudette 1995]. To cope with these changes requires structural adjustments, including regulatory and institutional reforms in all countries. Many countries are still hesitant or opposed to such reforms. They may not realise that they ‘risk exclusion from the global economy and severe competitive disadvantages for their goals and services’ [Tolero and Gaudette 1995], if they do not accept the need to reform to their policies.

1.1.2 Focus of Research

In subsequent sections, we will describe the four areas that represent the focus of the research. These areas include Adoption of IT, IT in Developing Countries (DCs), Group Support Systems (GSS), adoption of GSS in Tanzania. Figure 1-1 shows the adoption linkages between these areas.

![Diagram showing the focus of research: Adoption of GSS in Tanzania](image)

*Figure 1-1 Focus of research: Adoption of GSS in Tanzania*

There are many linkages that can be explained from the figure. For example, GSS is a form of IT that is being applied in Tanzania, which is a developing country. The IT adoption, in general, and the level of IT development in developing countries have an impact on the application of GSS in Tanzania, the adoption of GSS in Tanzania will impact the global IT adoption and development of IT in developing countries; however, the major focus of this study will concern some issues on how the GSS technology, the (global) adoption of IT and the level of IT in developing countries may influence the adoption of GSS in Tanzania.
1.2 Concept of Adoption of IT

The early literature on adoption and diffusion as reported by Rogers (1995) starts with a study by Ryan and Gross [1943]. Since then there have been several studies in this area [e.g. Thompson 1965; Ozanne & Churchill 1971; Moch 1976; Zmud 1982; Kimberly & Evanisko 1981; Robertson & Gatignon 1986; Ziamou 1997].

The IT diffusion process translates from infrastructure investment to the provision of appropriate services and application; from such provision to user awareness; from awareness to adoption; form adoption to effective usage; and from effective usage to competitive advantage (figure 1-2) [Gillespie et al. 1995]. That is, a series of translations must be ensured before an IT diffusion policy stimulates competitiveness.

![Diagram](image)

Figure 1-2: IT Diffusion Translations [Gillespie et al. 1995]

Accordingly, adoption is part of the diffusion process [Rogers 1995] consisting of a series of translations [Gillespie et al. 1995] which communicates an innovation through certain channels over time among members of a social system.

There are many definitions that are related to adoption. According to Rogers [1995], adoption is the acceptance of innovations; it is a process which takes place in five steps: knowledge, persuasion, decision, implementation and confirmation. In relation to IT, it can be simply explained as a decision to make full use of an IT system as the best course of action available. A decision not to adopt the system is rejection. Rejection, for example, a discontinuation of the system may also take place after it has been previously adopted. This situation may occur during implementation or confirmation stages either because an individual becomes dissatisfied with the system or because the system is replaced with a superior one. It is also possible for an individual to adopt a system after a previous decision to reject it, see figure 1-3 [Rogers 1995].

Based on Rogers [1995] we may, therefore, classify adopters of IT systems in a social system as (1) innovators (first 2.5% of potential adopters) (2) early adopters (next 13.5% of potential adopters) (3) early majority (following 34% of potential adopters) (4) late majority (next 34% of potential adopters), and (5) laggards (last 16% of potential adopters). It may be argued that the majority of
developing countries, including Tanzania, fall in the fifth category of adopters because of the low level of IT development as discussed in section 1.3.

Early studies assumed that adoption research methods and the theoretical generalisations were cross-culturally valid; that is the adoption process in Third
Figure 1-3 A Model of Stages in the Innovation-Decision Process [Rogers 1995]

The innovation-decision process is a process through which an individual (or other decision-making actor) passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision.
World nations seemed to be generally similar to its counterparts in the developed countries [Rogers and Shoemaker 1971].

For example, it was assumed that the rate of adoption follows a familiar S-shaped curve over time in all countries; but the paradigm of development implies that the transfer of technological innovations from development agencies to their clients lay at the heart of the development process [Rogers 1995], influenced by culture and environment.

Lately, various types of adoption research have focused on different aspects [Rogers, 1995]. Research in adoption has typically looked at issues such as the individual adoption process, time pattern of adoption, and the categorisation of adopters [Ganley 1997]. In our research we study the adoption process of the same innovation (GSS) in Tanzania differentiated from other social systems. The focus is typically on the three stages of translation, i.e. provision, user awareness and adoption [see figure 1-2]. That is, we will consider issues related to the usage, acceptance and decisions to acquire GSS [see figure 1-3]. In a broader sense, we will use the term adoption frequently to generalise all the three stages.

The adoption process is not constrained by the timeframe (speed of innovation) but is limited to the likelihood that an organisation will adopt the innovation [Thompson 1965; Moch 1976; Zmud 1882]. The main reason being, the timeframe for the application of the technology in Tanzania (since imported from North American and Western Europe cultures in May 1997) has been relatively short to warrant further studies on adoption with respect to speed of innovation.

1.3 IT in Developing Countries (DCs)

The advancement in IT has lead to various countries being classified by the United Nations according to their Computer Industry Development Potential (CIPD) [Porat 1977;Kalman 1979] as advanced (developed) or less developed (developing) [Palvia et al. 1990]. Advanced include, for example, the United States, Canada, Japan, and Western European countries; less developed e.g. Argentina, Brazil, India, Mexico, Indonesia, Tanzania, Nigeria and Bulgaria. This classification however, is influenced very much by the socio-economic development of these countries. Thus, the terms developed or less developed (developing) countries will refer to the broader sense of socio-economic development.

Based on various studies, Palvia et al. [1990] make an analysis and comparison of key issues on the adoption of IT in developed and developing countries. It is
argued that IT issues in advanced nations appear to be driven by strategic needs, whereas, in less developed countries they are driven by operational and IT infrastructural needs. As such, as countries progress through stages of economic growth and IT adoption, the relevant issues change in a predictable fashion from basic structural concerns to those that are strategic in nature [Palvia et al. 1990].

The use of information technology (IT) for socio-economic development in developing countries (DCs) has received much attention in recent years [e.g. Bhatnagar and Bjorn-Andersen 1990; Lind 1991; Lewis and Samoff 1992; Nidumolu et al. 1996; Goodman 1991; Munasinghe 1989]. The extent of IT use and adoption, and the range of IT applications in these countries vary widely. The growth in IT applications in particular countries have been influenced by the characteristics of their individual economies, local infrastructure, education and training facilities, availability of skilled personnel and their existing IT policies, both explicit and implicit [Odedra 1993].

In many DCs, the state has a major role to play in the adoption of IT: it is usually the largest single user of computers and through its policies and regulations exerts the greatest influence on the diffusion of IT throughout the country [Moussa and Schwarze 1992; Lewis and Samoff 1992; Nidumolu et al. 1996]. For example, in the East Asian newly industrialised economies, IT is seen as a driving force in economic development and state policy as the means explicitly to facilitate its use and production. These countries have not only been able to enter the technologically sophisticated realm of IT, but have also learned from policy failures and have been able to adapt and change to meet the current global requirements [Porat 1977; Chepaitis 1992].

In the African context, in addition to the problems discussed in section 1.1 above, most application failures can be identified at two levels [Harindranath 1993; Barman 1992; UNESCO 1989]:

1. the policy level wherein the introduction of IT has not been co-ordinated with other efforts such as adequate information available about information technologies, financial resources, infrastructure; and

2. the organisational level wherein computerisation has taken place without an adequate understanding of the organisational culture and context such as organisational capabilities [Information Network 1990; La Rovere 1996; OECD 1995; Correa 1994]. The intensity of each problem depends on the country.

In cases where IT adoption is done concurrently with modification in management, productivity gains are increased [Correa 1994]. Development of IT-based applications that correspond to firm’s needs must also be supported. In addition, firms that use one IT application are more prone to use other
applications [Wynarckzyk et al. 1995] which suggests that awareness-building about IT is cumulative. An IT infrastructure is important for organisations since it enables firms to acquire scientific and technological information faster, which reduces barriers to entry into new sectors and enhances their potential to innovate [OECD 1993; OECD 1995].

While most African governments are aware of the necessity of fostering development in IT, given the vast amount of IT investments in world-wide developmental projects, they do not yet appreciate the dangers and risks associated with generalised or simplistic approaches towards use and adoption of IT. Therefore it is important that for successful projects in DCs, a clear relationship between the context and process of IT activity must be studied and understood for effective management of technological change, implementation and its subsequent use [Nidumolu et al.1996].

1.3.1 **IT Research and Development (R & D) in Tanzania**

IT Research and Development (R & D) also plays a big role in the development of a country. Different nations that have invested in development, use or adoption of information technologies are today at different levels of accumulated experience, and economic development depending upon national priorities and investment policies [Odedra 1993]. These nations are therefore looking at the new technologies as the life and blood of their economic policy and national prosperity. It is from this basis that information technology has accordingly attracted much funding, especially in the developed world. In the USA, for example, public funding for information technology is estimated at least at US $5 billion per year. In European countries about ECU 1.35 billion will be spent over the next five years on information technology research [Information Network 1990]. Governments find it absolutely necessary to fund research, they cannot afford not to.

Developing countries for various reasons have not been able to apportion as much of their budget to information technology research. Many countries have been exceptionally hesitant to commit at least one percent of their GDP to fund scientific researches in their respective countries. Africa spends less than 0.25% of GDP [Information Network 1990; COSTECH 1993] on information technology; however, with this little expenditure supplemented with donor funding, some research has been carried out.

The role of the government is an important factor in providing a favourable investment climate. Minimum regulatory controls and moral leadership may open doors to the new technologies. Since its independence (1961) Tanzania has recognised the importance of science and technology for socio-economic
development. Since then it has established a number of sectoral research and development institutions and strengthened those which were in existence before independence. For example, by 1992, there were 44 R & D institutions and organisations distributed across disciplines and sectors of the economy, see e.g. table 1-1 [Kayumbo 1992]. In 1995 all taxes on the importation of IT products were abolished. These were commendable efforts by the government at pushing the science and technology agenda to the forefront of socio-economic development plans of the country [ESRF 1995].

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Research Institute</th>
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<tbody>
<tr>
<td>COSTECH</td>
<td>Tanzania Commission for Science and Technology</td>
</tr>
<tr>
<td>UDSM</td>
<td>University of Dar es Salaam</td>
</tr>
<tr>
<td>ESRF</td>
<td>Economic and Social Research Foundation</td>
</tr>
<tr>
<td>ESAURP</td>
<td>Eastern and Southern African Universities Research</td>
</tr>
<tr>
<td>Programme</td>
<td></td>
</tr>
<tr>
<td>IPI</td>
<td>Institute of Product Innovation</td>
</tr>
<tr>
<td>TIRDO</td>
<td>Tanzania Industrial Research Development Organisation</td>
</tr>
<tr>
<td>TBS</td>
<td>Tanzania Bureau of Standards</td>
</tr>
</tbody>
</table>

Table 1-1 Some R & D Institutions in Tanzania

Despite efforts being made by the government to promote science and technology for economic and social development, there are a number of impediments to its realisation. The budget allocated by the government for R & D is insignificant. For example, during 1992/93, 1993/94, 1997/98 and 1998/99, only 2.73% (182m/-), 3.06% (261.5m/-), 2.9% (644.4m/-), 2.6% (712m/-), respectively, of the total budget for the Ministry of Science and Technology and Higher Education was allocated for R & D [Daily Mail, November 09 1998]. Implementation of science and technology in Tanzania has been poor partly because of many problems that have not yet been addressed. These include: lack of a national research and technology development workshop and laboratory facilities, lack of adequately trained scientific personnel at all levels, limited technological infrastructure, the underdeveloped socio-economic environment, and low level of private participation. As a result, Research and Development (R & D) of IT in the country is highly influenced by foreign donors [ESRF 1995; Baker 1993]. Many organisations do not put much effort into research on IT.

Moreover, it has been observed that there are other problems that undermine R & D in Tanzania [Kayumbo 1992]. The absence of inter-connection between the different R & D institutions has resulted in a situation where linkages between science, technology production and education are weak. Most of the R & D institutions in the country have policy frameworks for sector-wise operations. They operate with express accountability to the parent institution or Ministry; there are very limited horizontal or inter-sectoral relationships, and they are not related to any national policy. R & D institutions in Tanzania are largely in the
service sector i.e. education, health, agriculture (training), industry and trade (training) and as such they have no direct impact on production. Industry has been generally reluctant to involve itself in the development and commercialisation of ideas developed by Tanzanian research efforts.

Studies on the trends of IT development in Tanzania [e.g. Odedra 1993; Baker 1993] show that despite a significant increasing use of IT in Tanzania, the IT infrastructure is still in its formative stage. There is every indication of ‘traditional’ work processes in many sectors in the country that may undermine efficient and effective decision making at all levels. For example, in traditional meetings, a lot of time and costs (see section 2.1) are wasted. Moreover, most data such as personnel and other inventory records are processed and stored manually which may lead to either misleading (wrong) or delayed information for decision making. Such modes of working undermine efficient and effective decision-making.

Traditional means, i.e. telephone or fax, of communication dominate as a means of information provision, and these are concentrated in urban areas only. The existing telecommunication facilities in some institutions are: Telephone, Fax, E-mail, data transmission networks, Local Area Networks (LANs), mobile telephone services, Virtual Area Networks (VANs), and Internet service [Baker 1993; Mgaya and Twaakyondo 1996].

The major areas of application of IT in Tanzania are: administration, finance and accounts management, and education. Many of these applications can be classified as data and transaction processing systems, and operational and management control systems [Odedra 1993]. Generally, where applications of IT have been accepted their benefits can be seen.

Despite the increase in people’s awareness of IT, there is every indication of an indigenous shortage of skills at all levels in Tanzania. IT illiteracy in Tanzanian schools is very high because the national educational curriculum does not favour IT related courses from elementary levels. This manifests itself in many ways e.g. recruitment of IT professionals is problematic because of high demand and consequently there is a high rate of staff turnover. Currently, the University of Dar es Salaam is the only known institution in Tanzania that is involved in offering academic programs up to a degree level in Informatics using an approved national curriculum. A number of private institutions offer IT training that is accredited to other different foreign examining institutions e.g. the National Computer Center (NCC) of the United Kingdom (U.K.), which makes it difficult to evaluate the competence and level of computer literacy in the country.
Some of the problems discussed above are reflected in the agenda for capacity building in Tanzania. This study also tries to look at how GSS can be used to solve some of these problems; before doing so, we first describe capacity building in the following section.

1.4 Capacity Building

Before we discuss capacity building with respect to Tanzania, we have to define what we consider to be capacity and capacity building.

1.4.1 Definition of Capacity Building

Capacity refers to people, institutions, and practices that enable countries to achieve their development goals [World Bank 1996]. This forms a firm threshold for developing countries to formulate effective capacity building programs. Therefore, capacity building requires investment in human capital, institutions and practices encompassing many areas in the public sector, private sector, civil service, and education and training [World Bank 1996; Mmari 1992; Tindimubona 1992].

1.4.2 Capacity Building in Tanzania

Currently, the main development agenda of African countries as well as multilateral and bilateral donors, such as the World Bank, is capacity and capacity building. Specifically, the main thrust for African countries is to develop their capacity and capacity building in [World Bank 1996]:

- Legal and economic reforms
- Human and institutional capacity
- Agriculture, population and environment
- Infrastructure services
- Women development
- Regional cooperation
- Governance
- Urbanisation and HIV epidemic

Each of the African countries has priority areas. In Tanzania, for example, the current main concern in capacity building is governance issues and the development of social and economic infrastructure such as education and training, human resources, agriculture, health, environment and institutions to create manpower [Daily Mail, August 27 1998]. As African countries embark on economic, political, and social reforms, the major emphasis is self-reliance, that is, there is a shift from doing things for or to African countries towards assisting or empowering those who need to develop things for themselves.
1.5 Culture and Social Environment

As interest in the diffusion of information technologies shifts to an international arena, research on the contextual antecedents of information technology adoption must be broadened. Attention to context is essential to interpret patterns in the use and adoption of technologies among organisations. GSS is certainly no exception. Much of the adoption-research consists of the search for contextual factors that may play a role in determining who adopts earlier, later, or not at all [Rogers 1983], and with what outcomes [Van de Ven 1993].

There are various types of factors that have been considered to influence adoption behaviour of organisations [Brummons 1998]. Some of these issues include characteristics of individual members or (decision) group of members of the organisation [e.g. Robertson and Wind 1980], organisational (structure and process) characteristics [e.g. Thompson 1965; Robertson and Wind 1980], environmental factors of the firm [Premkumar and Ramamurthy 1995; Zaltman et al. 1973], cultural dimensions [e.g. Hofstede 1980], communication behaviour [e.g. Martilla 1971; Cohen and Levintahl 1990], and innovation characteristics [Tornatzky and Klein 1982; Rogers 1995].

Considering the context of the global application of IT, while our research concerns the adoption of a specific IT (Group Support Systems (GSS)) in Tanzania, we need also to understand some issues on the global IT environment. It is necessary because the study focuses on the application of GSS in a social-cultural environment different from other environments where it has been either imported or used and assimilated. This exploratory study links Tanzania's cultural and environmental factors to the adoption of GSS and looks into similar processes taking place in other countries.

1.5.1 Culture

The word culture has several meanings in social sciences. It is regarded as one of the most complex and difficult concepts. As a result, different researchers have come up with different definitions of culture, particularly, with respect to organisational or national culture. For example, definitions may be derived from Hofstede [1991] who defines culture as "the collective programming of the mind which distinguishes the members of one group or category of people from another", and Wallerstein [1990] who defines culture as "the sense of summarising the ways in which groups distinguish themselves from other groups. It represents what is shared within a group, and presumably simultaneously not shared (or not entirely shared) outside it".
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Both definitions imply that it is the social environment in which a person lives but not something that is inborn that creates culture. Both definitions could be considered almost similar and stress the importance of groups and culture. The fact that groups are such an important element regarding culture indicates that culture will have a major influence on the design and use of systems supporting group work and in this case GSS.

Different authors point out that GSS technology is now widely used [see e.g. Nunamaker et al. 1997; Briggs and Vreede 1997; Watson et al. 1994; Rahman and Wei 1992; Griffith 1998; Mejias et al. 1997]; however, most of its conceptual and theoretical foundations have been based on North America cultural perceptions of groups working together [Watson et al. 1994]. Many GSS studies have been conducted in Western Europe, the United States and Canada with few exceptions in Bulgaria, Mexico, and South East Asia [Rahman and Wei 1997; Griffith 1998; Mejias et al. 1997].

From the perspective of theory development, identifying the contingent effects of national differences will undoubtedly be important in explaining variations in the pattern of technology adoption across countries [Lynn 1990]. From the practical perspective, agents hoping to introduce information technologies to newly industrialised and developing countries will have to distinguish potential barriers and paths of opportunity that vary nationally. This will be the case whether technology transfer is the focus of national policy initiatives [Gurbaxani et al. 1990] or the subject of exercises in internal use and adoption across units in a multinational corporation. In the latter situation, the change agent will need to have an excellent understanding of international variations in the context, foundations, and traditions of business and management and their implications for the challenges embodied in ostensibly attractive technological innovations.

There are indications that considerable differences exists in the way in which technologies are used and adopted across cultures see e.g. [Straub 1994; Griffith 1998; Chung and Adams 1997]. Lynn [1990: 175] provides a useful characterisation of the dimensions of national difference that call for attention:

"....cross-national differences in how organisations use technology can occur because of national differences in the economic or political environment, in the social or institutional environment, or in the norms and values held by organisational members."

The cultural values of a country have significant influences on organisational designs and practices. These include effects on hierarchical structures, work relationships, communication, executive values, and many different facets of management [Adler 1992; England 1975; Laurent 1983; Slocum & Lei 1993].
Hence, understanding technology use in other cultural environment is becoming highly relevant, especially considering the increasing global nature of organisational work and mobility of organisational working [Nunamaker et al. 1997].

In this dissertation we report on a field study on the application of GSS in various situations in Tanzania. As we will explain in section 2.3, the cultural context of this country is significantly different from those in which GSS research has been done so far.

1.5.2 Social Environment

In addition to the aspect of culture, our research focuses on other environmental factors that influence the adoption of IT, in particular, Group Support Systems. Raman and Wei [1992] define in this context environment as "the social setting in which the application of GSS takes place and is not part of the culture of a country". This definition could be considered as very general, and the distinction between culture and environment is not always very clear; but the main purpose of the notion of environment is to look at factors that could influence the adoption of GSS besides the already mentioned cultural factors.

As we will discuss in section 2.4, the environment in Tanzania is quite different from other areas where GSS have been used. Thus, both the environmental and cultural factors represent a unique setting in which to investigate the application of GSS in capacity building in Tanzania.

1.6 Application of GSS in Tanzania: Needs and Opportunities

There have been several developments in the field of collaborative or group work technologies to support the growing amount of teamwork. The development of these technologies has been initiated by the increasing occurrence of networked computers and communication technology [Vreede 1995].

The technology that is used to support working in groups is often referred to as groupware [Johansen 1988]. Examples of groupware are video conferencing, e-mail facilities, workflow management systems and intranets. The specific example of groupware that will be used in this research, is Group Support Systems (GSS).

Group Support Systems (GSS), a subset of Groupware, concerns IT that is used to make group meetings and group decision making more productive. A GSS is a computer based information system used to support intellectual collaborative
work [Jessup and Valacich 1993]. Intellectual collaborative work refers to work that takes place in a meeting [Vreede 1995]. A further, more detailed, description of GSS is given in section 2.2

There are a number of reasons why a decision was made to employ GSS for specific tasks in Tanzania [Vreede et al. 1998]. Below a distinction is made between practical and academic reasons.

1.6.1 Practical Short-term Reasons

The experiences from the field show that the implementation of a participatory approach to development issues is not always straightforward [Jones and Miller 1997]. While it is observed that there are some benefits of using approaches, such as surveys, interviews, or focus group meetings, to involve stakeholders or beneficiaries at various stages of a development assignment (agriculture, education, etc.), there are also downsides [Jones and Miller 1997]:

- Inadequate coverage. For example, in Tanzania, four weeks were required to get about 59% stakeholder feedback from a questionnaire that was distributed.
- In one-on-one interviews, the interviewee may not speak freely, fearing attribution.

It is anticipated that the application of GSS may help to overcome these problems, also, in organisational studies there have been reports of labour cost reductions averaging 50% and reductions in project calendar days of up to 90% [Nunamaker et al. 1989; Post 1992; Vreede and Wijk 1997]. Other positive findings relate to issues such as [Vreede and Muller 1997]:

- Higher participation satisfaction
- Higher and more equal participation opportunity
- Improved meeting outcome quality
- Anonymity separating status, authority, and roles from ideas, resulting in little evaluation apprehension
- Less emotional discussions, more negotiation

1.6.2 Practical Long-term Reasons

Enhancement of Sustainable Development

Decision making in the context of development is concerned with political, economic and social progress in developing countries [Splettsøess 1995]. Significant differences in problems and decision processes, depending on the political framework and socio-cultural background, exist in these countries; however, in general, there seem to be increasing difficulties in achieving development progress.
Many African governments have yet to reform decision-making processes that were devised under post-colonial, rather authoritative regimes [Splettscoesser 1995]. In contrast to developed countries, the same inherited work processes are used in many sectors of development regardless of the development of new, efficient and effective decision-making approaches that provide for maximum involvement and participation of stakeholders. These techniques and tools to enhance a participative culture are important for sustainable development.

Tanzania is undergoing a process of rapid socio-political, economic, and institutional transformation. After nearly 40 years of socialist and single party rule, the country has, in the past few years, successfully transformed from a one-party system to pluralism, from a centralised economy to a market economy, and from a centralised state to a decentralised and participatory system of government. These changes have all been attempts to create sustainable development in Tanzania.

Sustainable development is development that meets present needs without affecting the ability of future generations to meet their own needs [Oxford University Press 1987]. Sustainable development includes the linkages between the environment and the economy. Culture in sustainable development supports living and material culture as key elements in poverty reduction, social inclusion and environmental protection [World Bank 1997]. Other issues related to social and human welfare and development, and to the human environment in general, are also important and cannot be seen separately from sustainable development. Priorities for sustainable development in Tanzania are addressed in the relevant national plans. The major thrust for sustainable development is directed at issues of developing capacity and capacity building, governance, and the development of social and economic infrastructure [Daily Mail, August 27 1998]:

- **Capacity Building.** Group Support Systems (GSS) is one of the new areas of interest to researchers and practitioners that may help to enhance the capacity for open and participatory decision making processes, and could have a role in encouraging local and community based involvement in sustainable development. It may also have a role to play by encouraging greater communications between the actors in the economy of the country. The major areas in capacity building where GSS may provide support for decision making in Tanzania are shown in figure 1-4. For example, GSS may assist in enhancing ‘good governance’ in work groups. ‘Good governance’ which in essence means democratic decision-making, respect for human rights and the rule of law, efficiency, accountability, transparency in government and public administration is also essential for development.
[Splettstoesser 1995]. While there is no one best way to 'good governance' and sustainable development [Blunt 1995], there are good practices, like
Figure 1-4: GSS Support Capacity Building for Sustainable Development
participative approaches to policy making and decentralisation, that deserve to be pursued.

- **Cross-hierarchical Communication Support.** In Tanzania, the public sector is characterised by tall hierarchies and decisions are centralised in the government and corporate organisations. From our experience, hierarchical systems have proved unsuitable for rapid adaptation to changes required in a more competitive business environment. They cannot respond quickly enough to change because of the long time that communication takes up and down the chain of command. Communication between work groups, particularly, managers at different levels of a hierarchy can be problematic because of the differences in information, perspective, social context, and understanding that exist between superiors and subordinates. According to Tyran et al. [1991], this circumstance is a common organisational phenomenon referred to as “semantic-information distance.” The presence of semantic-information distance can have an unfavourable impact on the work process. For example, during data collection, making appointments with people was cumbersome; at best it took two weeks or more to get a response, and at the worst no reply was received from many organisations.

- **Structural Adjustment.** Empirical research has indicated that, in terms of discussion content, there exists a bias in favour of shared information [Clapper and Massey 1995]. An item of information that is shared by group members is more likely to enter the group discussion than an unshared item. In the context of sense-making, unshared information may be ultimately critical to understanding the problem. Underlying all conceptualisation of group effectiveness in the view of what information individuals have, and what information they share with others, is key to the success of the group. Yet in spite of these problems, to our understanding, little technological support is available in Tanzania for meetings given the ubiquitous nature of IT in modern organisations. In recent years, however, more and more organisations have realised that obvious changes in development and human behaviour require adequate structural adjustments [Splettstoesser 1995]. In such circumstances, GSS may be a valuable tool directly to impact and change the behaviour of groups and enhance structural adjustment.

Generally, therefore, the role of GSS would be to promote sustainable development by helping to inform decision making on priority issues. GSS may also enhance the capacity of members of the public to participate in the development of these plans and their implementation. This empowerment of the actors or stakeholders for development and sustainable development, is key to the study.
Experience from other African Countries
Where GSS technology has been used in Africa, it has been accepted and has shown good results. The World Bank's experience with stakeholder consultations in two Southern African countries, Malawi and Zimbabwe, indicate that the evaluation of sessions using GSS show that there was 100% support in Zimbabwe (compared to 97% for Malawi) for recommending this technology to other groups. The rating given for the use of this technology for stakeholder consultations was 4.2 out of a maximum of 5 (this was the same result as for Malawi) [Jones and Miller 1997]. These results form a good basis for the introduction of GSS in Tanzania. It is anticipated that GSS may have a great role to play in the country's development process as experienced in the other two African countries.

1.6.3 Academic reasons

As discussed in section 1.5, GSS are widely used when studies, theories and organisational behaviour are based only on Western culture [see e.g. Briggs and Vreede 1997; Nunamaker et al. 1997; Raman and Wei 1992; Hofstede 1980; Watson et al. 1994]. It is therefore necessary to be cautious about concluding that 'Western' GSS findings are transferable to other cultures.

In other words, from a research perspective, we do not know a lot about the application of GSS in other cultures apart from a few exceptions in the Asia-Pacific region, see e.g. [Rahman and Wei 1992] and Mexico, see e.g. [Mejias et al. 1997; Morales et al. 1995]. As far as we know, there have been few studies [see e.g. Splettstoesser and Splettstoesser 1998] that report on the actual application of GSS in an African context. This research, therefore, capitalises on the potential benefits of the technology, and the need to design better ways of employing it in the public and private sector across national and cultural boundaries of Tanzania.

1.6.4 Opportunities: Where may GSS be used?

There are different sectors of the economy, in which GSS may be used in Tanzania, some of which have already been discussed in some sections above. Many of these are related to capacity building, which is the current agenda for development.

Tanzania is a member of many (about 150) international organisations [World Factbook 1996]. At the regional level, Tanzania is integrated via a number of political, social and economic organisations. Most of these organisations have their offices in Tanzania and they are key players in the country's development. Hence, at the macro level, GSS may be used by other similar organisations.
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within and outside the country, particularly, in neighbouring eastern and central African countries with which Tanzania is associated.

In summary, we propose that field experiences with GSS so far indicate sufficiently that employing the technology in Tanzania would be potentially beneficial. The development arena that we introduced above consists of people from various backgrounds, with various status levels, and often with conflicting goals. Yet, there is a motive or urge to collaborate. GSS may improve the effectiveness and efficiency of this collaboration.

1.7 Research Scope and Objective

Field research into group support systems is still in its infant stage. Since its appearance in 1980s, GSS have grown to become a popular area for researchers in a variety of disciplines [Nunamaker et al. 1991; Bostrom et al. 1992; Vreede 1996]. While most studies found GSS use improves effectiveness, efficiency, and satisfaction, they have also found different effects in different situations [Nunamaker et al. 1991]. Many issues, however, are still not clear at this moment and need further research [Nijhuis & Vreede 1996].

A review of literature on group research has shown that environmental and cultural differences among nations have important implications for group and organisational behaviour. Theories in psychology, sociology, group behaviour, organisational behaviour, and related disciplines that deal with people and organisations are ethnocentric and culturally specific [Davison and Jordan 1998]; a theory that applies to one culture need not necessarily apply to another [Bostrom et al. 1992]. Because GSS technology has a direct impact on the behaviour patterns and communication processes of people in groups, as discussed in section 1.6, very little is known about the applicability of GSS in Tanzania's capacity building [see e.g. Splettstoesser 1995; Splettstoesser and Splettstoesser 1998].

GSS is a new information technology being introduced in Tanzania and there is still much to be learnt about how best to apply and adopt it. The experience of GSS use is so different from traditional experience that often, people cannot visualise its usefulness immediately even after thorough demonstrations. They may, therefore, both accept and adopt the system or reject it completely. This assumption leads us to the focus of our research, which is summarised in the following problem statement.
Problem Statement

Little is currently known in Tanzania about how GSS can be used to increase productivity of work group teams. We do not yet know how GSS can successfully contribute to capacity building in the Tanzanian context. Almost nothing is known about how GSS can improve participatory approaches as opposed to ‘traditional’ group decision making in Tanzania. Little or literally nothing is known about how GSS will be perceived and accepted by work groups. Above all, nothing is known about its potential impact. In short, very little is known about the applicability of GSS for capacity building in Tanzania’s environment and culture. Hence, there is a need to know about the application of GSS in Tanzania.

The research area outlined in the previous sections presents a unique and challenging environment for doing research into the organisational application and adoption of GSS. The basic questions to be addressed in the research are:

1. How do work groups in Tanzania perceive GSS?
2. Will GSS be accepted and adopted in Tanzania?
3. What are the perceived impacts of the application of GSS in capacity building in Tanzania?
4. How can GSS be used to improve participatory processes in capacity building?

To answer these research questions we will pursue the following research objective: To explore the use and adoption of Group Support Systems (GSS) in work groups in Tanzania in order to facilitate effective and efficient participative decision making in capacity building.

Our specific goals for this study are fourfold. First, the study is aimed to further the knowledge about the perceived value of GSS by organisations. Second, it will attempt to give practical considerations for the application and adoption of GSS in capacity building in Tanzania, and thus further the knowledge about IT adoption in developing countries. Third, it will explore the potential of electronic meeting technologies in non-western cultures and environments, and provide examples for other developing countries in which similar circumstances are present. Finally, it is intended to identify a number of issues that are in need for further research on GSS in Tanzania.

In the next section, we will elaborate on the research approach that was followed to answer the basic research questions.
1.8 Research Approach

A lot of studies conducted on work groups take a different perspective and follow a different research approach [Vreede 1995; Nijhuis and Vreede 1996]. Each of these approaches has its own characteristics and requires a particular strategy (steps to be carried out during research) and research instruments (manner of data collection and analysis). To investigate research issues we need to choose a research strategy and research instruments. In this section we will describe the research strategy that was followed, and the methods and instruments employed in the research.

1.8.1 Research Strategy

A research strategy provides an outline of the plan, which must be carried out to conduct the study to meet the research objectives. The choice of a research strategy depends on the nature of the research problem and on the status of the theory development in a research field. Studies of GSS in non-Euro-American culture concern cross-cultural issues that are difficult to address in a purely deductive way. It is necessary inductively to identify and explore the cross-cultural application using an inductive-hypothetic research approach [Vreede et al. 1998]. The inductive-hypothetic research approach [Churchman 1971; Bosman 1977; Sol 1982] has been often applied successfully to study problems which require new theories [De Jong 1992; Van Meel; Vreede 1995; Van Eijck 1996]. Sol [1982] advocates an inductive-hypothetic model because it meets the following requirements:

1. It stresses the inductive specification, testing, and expanding of a theory.
2. It allows the generation of various solutions for problem under investigation.
3. It emphasizes learning by considering analysis and synthesis as interdependent activities.
4. It offers possibilities for interdisciplinary research.

Following Sol [1982] and Vreede et al. [1998], figure 1-5 shows the inductive-hypothetical approach consisting of five activities:

1. First, a number of initial theories with respect to group work, regardless how rudimentary, are identified. Using these theories, a number of empirical situations in which group work is carried out are investigated. The results are described in one or more empirical models.
2. Second, the essential aspects, especially perceived problems, of the empirical situations are abstracted into descriptive conceptual model of group work.
3. Third, from a descriptive conceptual model a prescriptive, or normative, conceptual model of group work is derived in the form of a theory on
supporting group work. This theory should be capable of solving the problem observed.

4. Forth, to test and validate the prescriptive conceptual model, the model is implemented in one or more prescriptive empirical situations. Finally, the results of the prescriptive empirical situations are evaluated.

5. Additional requirements for improving the prescriptive conceptual model of group work may be identified. In order to further test and expand the theory on supporting group work, the model may be used (in combination with other theories) as an initial theory in a number of new empirical situations.

Figure 1-5. The inductive-hypothetical research approach [after Sol 1982]

As discussed in sections 1.5 and 1.6, little is known about the application of GSS in non-western cultures, specifically, Tanzania. A review of past cross-cultural research [Vreede et al. 1998; Cornelissen 1998] shows that descriptive empirical studies are rare and thus needed. This is why our research in the Tanzanian context focuses on the descriptive approach given in figure 1-5 above.

1.8.2 Research Instruments

Although the strategy above describes the order and interdependence of the steps in the research project, it does not offer research instruments, that is, guidelines to carry out individual steps [Vreede 1995]. The instruments of a given research concern the means with which data on the phenomenon studied are collected and subsequently analysed. There are a variety of instruments available to conduct research on organisational phenomena and information systems [Yin 1989; Zubert-Skerrit 1991; Vreede 1995 and 1996; Reijswoud 1996]. Following Morgan [1983] and Orlikowski and Baroudi [1991] we argue
that applying *multiple instruments (pluralism)* is suitable to conduct research in the area of GSS application in Tanzania. This enables the researcher to compare and contrast the different sets of data and create a great exposure of the phenomenon being studied, and the combination of these instruments may counterbalance their respect weaknesses and strengths.

In our study, a number of GSS sessions were pre-planned, conducted and evaluated. In addition, we investigated the perceptions of individual participants to these sessions. During the study, both quantitative and qualitative data was collected from various sources to enable a rich representation of the phenomena under investigation, and to permit comparison and contrast of the collected data. Following Tyran et al. [1992], Briggs and Vreede [1997], Vreede and Wijk [1997] and our own experience the following data collection instruments were used:

1. **Questionnaire (Survey):** Two questionnaires were used:
   a) *GSS Meeting-Feedback Instrument.* A questionnaire based on a satisfaction instrument [Briggs and Vreede 1997] was used in this research. Additional questions were added to the original questionnaire to accommodate the different cultural dimensions and environmental factors that were focused in this research. At the end of the meeting each of the participants in a GSS session was asked to fill out a questionnaire to obtain their perceptions on a number of issues and get insight into cultural and environmental issues. The English version questionnaire was also translated into Kiswahili to facilitate good communication and response from stakeholders who had problems with the English language. The Kiswahili questionnaire was only used when a meeting was facilitated in Kiswahili.

   b) *Individual Attitudes Instrument:* Stakeholders who participated in any of the GSS sessions were selected at random (after a lapse of time) and were asked to fill out the questionnaire. The objective of this questionnaire was to get more organisation information with respect to cultural dimensions and environmental factors and individual attitudes towards the use of GSS in work places in Tanzania. The questionnaire was accompanied with a standard letter explaining the study in more detail, assuring confidentiality and providing contact information. Most of the respondents willing to be interviewed expressed significant interest in the study and the results. A letter of acknowledgement was sent to each respondent who provided a contact address.

2. **Interviews:** A group leader and a number of participants from each group were interviewed before and immediately after each session. Prior to the GSS session, the meeting owner was interviewed to get the background information about the organisation and objective of the meeting. Again after the meeting, a few individual participants were interviewed to get
immediate insights into how they perceived the technology and the whole processes of an electronic meeting. Then after a certain period a group leader and a few selected participants were interviewed again to make a follow-up of the session. The purpose of the follow-up interviews was to get more insights into the perceived impacts of GSS.

3. **Direct observations**: During the pre-planning and execution of each session, observations were made and notes were taken on incidents, remarks, and other events that, were considered to convey critical information.

4. **System logs**: The results of each session are stored electronically, and these files were used to trace the flow of information exchange during the session, typical meeting behaviour, and other events.

Based on these sources of data, detailed case descriptions were developed and these are presented in chapters 3 through 5.

**Instruments evaluation criteria**

As indicated in the research methods (section 1.8.3) many different variables were to be assessed in this study using different constructs. Various researchers [see e.g. Vreede and Muller 1997; Herik 1998;] have suggested different approaches that can be applied to evaluate GSS meetings. The operational procedures followed in this study are based on a number of individual constructs which have been previously applied successfully in GSS and other group research. After the meetings, questionnaires offered an efficient means to survey a group using predefine questions. The instruments used, in particular, were most commonly a single question [Appendix 2] and multi-item [Appendix 4] 5-point Likert scale measure, which had been employed in other studies elsewhere [see e.g. Ishman 1996; Briggs and Vreede 1997]. The Ishman instrument was validated using Straub's [1989] validation approach for information systems research. The Briggs and Vreede’s satisfaction instrument was validated using a causal model of individual meeting satisfaction effort [Briggs and Vreede 1997]. In some cases assessment was based on informal comments and/or formal interviews with participants rather than anonymous, formal questionnaires. Interviews with the problem owners provided additional evaluation of information on participant satisfaction and meeting impact. So the results should be considered valid and reliable in this study.

**1.8.3 Research Methods**

GSS researches can be classified into those studies investigating technology, examining methodologies, studying different applications, exploring various behavioural aspects of GSS, and some considering appropriate research methods for GSS [Pervan 1994].
When doing research, one has to define which method to follow. The research method gives the different steps used to retrieve and analyse data in the research. There are three types of research methods according to the setting in which the inquiry into a phenomena being studied takes place [Vreede et al.1995]: natural settings (case studies, field studies and field experiments), contrived and constructed settings (lab experiments), setting independent studies (surveys).

In this study we follow an action research method. Action research is ‘an inquiry into how human beings design and implement action in relation to one another [Argyris et al. 1982]. It is intended to have the dual outcomes of action (or change) and research (understanding) [Dick 1993]. Action research can also be used for theory building, and theory testing and theory expanding [Galliers 1991]. Action researchers participate or intervene in the phenomenon studied in and evaluate its worth [Argyris and Schon 1989; Checkland 1981]. We actively participated to facilitate the GSS meetings studied.

Action research, seen as a subset of case study research [Galliers 1991], is appropriate when there is [Benbasat et al. 1987; Yin 1989]:

- **A need to study the phenomena in its natural setting.** There is a great need to study the application of GSS in natural, non-constructed settings

- **An emphasis on interest in the ‘how’ and ‘why’ questions.** In our study we were more interested in exploring the application of GSS than the technological processes

- **A need to study contemporary events: A lack of previous studies, and elaborate theoretical understanding.** According to our understanding, little is known about the application of GSS in capacity building in Tanzania

In carrying out action research a researcher goes through cycles of action and research consisting of four major phases: plan, act (execute), observe, and reflect [Checkland 1991; Dick 1993; Zuber-Skerritt 1991]. The plan includes problem analysis and a strategic plan; action refers to the implementation of the strategic plan; observation includes an evaluation of the action using appropriate methods and techniques; and reflection means reflecting on the results of the evaluation and on the whole action and research process [Zuber-Skerritt 1991]. Each of these phases is discussed in the relevant sections to follow.

**1.9 Outline of this dissertation**

This dissertation is subdivided into seven chapters. The theoretical path that was followed in the research is described in chapters 1 and 2. A general overview of IT and development, theoretical aspects of adoption of IT, environment and culture is given in chapter 1. Then some insights on application of GSS in
capacity building in Tanzania are given. Finally, a focus of a research is established. Chapter 2 starts with the description of theoretical aspects of Group Support Systems (GSS), specifically, GroupSystems for Windows, a tool used during the research to facilitate electronic meetings. The chapter concludes with a discussion on experiences of GSS cross-cultural research.

The application of GSS in Tanzania is explored in chapter 3 using a grounded theory approach. Using grounded theory, theoretical frameworks for the study of acceptance and adoption of GSS are established. Some of the theories are then used to describe preliminary results of electronic meetings conducted in Tanzania. An in-depth research on the acceptance and adoption of GSS in Tanzania with respect to environmental cross-cultural factors is presented in chapter 4. More insights of the analysis using data from the ex-post questionnaire are given in chapter 5. Research questions are answered and a practical experience of the application of GSS in Tanzania is given in chapter 6. Based on the theories and results of the study described in chapters 1 through 6, the research questions are also answered in the epilogue, chapter 7. Also reflections on the study as whole are summarised and an agenda for future research is proposed.
2. GSS RESEARCH CONTEXT

2.1 Meetings Support

Most people are members of numerous groups, and most groups hold meetings. Teams or work groups are pervasive and nearly universal in organisations around the world. Groups communicate, deliberate issues, share information, generate (alternative) ideas, organise ideas, draft policies and procedures, collaborate on the writing of reports, share a vision, build consensus, make decisions, negotiate, solve problems, plan and so on [see e.g. Nunamaker et al. 1991]. All these processes are undertaken through meeting processes that serve single or multipurpose. Despite undertaking these diverse meeting processes, groups are often perceived to be inefficient and ineffective. Frequently, they fail to utilise the full resources of their members because of process losses as a result of problems involving communication, teamwork and work group efficiency [Bostrom et al. 1992; Davison and Jordan 1998].

Various studies [see e.g. Mintzberg 1973; Mosvick and Nelson 1987; Monge et al. 1989; Panko 1992] have shown that various work groups spend a tremendous percentage of their working time in meetings, but that this time is unproductive [Davison and Jordan 1998]. For example, table 2-1 below highlights some of the various types of work groups and time spent in meetings in various areas.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Work Group</th>
<th>Time in Meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hymowitz (1988)</td>
<td>Business People</td>
<td>35 to 70% of their working hours</td>
</tr>
<tr>
<td>Hymowitz (1988)</td>
<td>Managers (US)</td>
<td>25 to 50% of working hours</td>
</tr>
<tr>
<td>Klemmer and Snyder (1972)</td>
<td>Managers</td>
<td>55% for face-to-face, 70% for executives</td>
</tr>
<tr>
<td>Panko (1992)</td>
<td>Work groups in general</td>
<td>35% for face-to-face</td>
</tr>
<tr>
<td>Mosvick and Nelson (1987)</td>
<td>Professions and industries</td>
<td>25 to 80% of their work time</td>
</tr>
<tr>
<td>Nunamaker et al. (1991)</td>
<td>Managers (US)</td>
<td>30 to 80% of a day</td>
</tr>
</tbody>
</table>

*Table 2-1: Time spent in meetings by work groups*

The ineffectiveness of many meetings is attributed to many problems or shortcomings including poor planning and preparation, lack of agenda or goals, irrelevant information, starting late, too lengthy, disorganised, domination by few individuals, ineffective leadership, time wasting, lack of follow-up, etc. [Sprague and Mcnurlin 1993]. These attributes are also common in Tanzania, where traditional meeting processes are predominant. Usually in such meetings, for example, discussions and preparation of meeting minutes take quite a lot of
time and in some cases another similar meeting may be convened without prior minutes. Even if the minutes are made available, they are likely to reflect the recorder's understanding of the meeting. Sometimes meetings end without a clear understanding or record of what was discussed. In such a working environment, few individuals may influence decisions.

This poor meeting productivity accounts for huge financial losses in virtually all major government, business, and professional organisations. For example, it is reported that losses due to meeting processes alone in a US Fortune 500 company amounted to $71 US million a year [Mosvick and Nelson 1987].

Meetings constitute an almost universally accepted component of the way organisations do business [Davison and Jordan 1998]. Problems in organisations are becoming more complex and can no longer be solved by individual managers or specialists. Teams may be formed since no one person has enough knowledge, experience or information to solve such problems. Work groups may remain the major means through which people have to design problem solutions, take decisions and accomplish certain basic tasks in work environment to meet organisational goals. These needs may require the development of urgent and implementation of new technological approaches for making meetings more efficient and effective. This support must be flexible enough to facilitate any process quickly and efficiently so as to reduce time and the overall cost being spent by organisations in participatory decision making processes.

Group Support Systems (GSS), that enable and facilitate various forms of communication, have been suggested as a tool to improve meeting productivity and participant satisfaction of meeting processes. GSS improve meetings by
1. encouraging better planning and better preparation of those meetings that must be held, and
2. improving the effectiveness as they are held [Sprague and McNurlin 1993].

As a result, it reduces overall costs of time and money [see e.g. Dennis et al. 1991; Nunamaker et al. 1991; Benbasat and Lim 1993]. GSS field studies have shown average labour savings of 50 percent to 70 percent and reduction in project cycle time (days elapsed from start date to finish date) up to 90 percent [Nunamaker et al. 1989; Vogel et al. 1989; Post 1993; Vreede and Wijk 1997]. GSS is the form of group support that this study focuses on, and a description of GSS follows in the next section.
2.2 Group Support Systems (GSS)

Electronic meetings may take place in various environments constrained by time and space. Before we advance some concepts on GSS, we will briefly describe the environment (time-place matrix) in which electronic meetings may take place.

2.2.1 Time-Place Meeting Matrix

Not too long ago, people who worked on a joint project, were almost always members from the same organisation and they even had their work place physically at the same location. Increasingly, however, members of work groups are no longer confined to working at the same location [Nijhuis 1996]. They work together to reach a decision or complete their cooperative work by use of mediated communication over a period of time, each person working at whatever time and place is convenient [Bostrom et al. 1992]. This can be achieved through electronic meetings.

An electronic meeting is a socio-technical systems change process. In other words, an electronic meeting is an interaction that transforms a group’s present problem into its desired future (accompanying specific outcomes) through a series of action steps (agenda) utilising a set of resources (people and technology) [Anson and Bostrom 1992]. It is viewed as a goal- or outcome-directed interaction between two or more people (teams or groups) that can take place at a stated time and place and for a known purpose. This implies that an electronic meeting can take place in any of the four environments - same/different time and place as presented in the matrix, see figure 2-1 [IFTF 1992].

One dimension deals with time, the other with location. The two values on each dimension, same or different, designate whether the members of the group are interacting over time or distance. The resulting four cells help to classify the environments that are evolving to support groups. Each of these environments creates different conditions that affect GSS design and usage. The “same time, same place” cell in the upper left, for example, includes electronic copyboards, team building tools, etc. The “different time, different place” cell in the lower right incorporates communication-oriented systems such as voice mail, electronic mail, work flow, etc.

The centre of the matrix consists of the four “platforms” that constitute the technology infrastructure to support the development and use of GSS. These include the local area networks (LANs), advanced workstations, operating systems, and integrated office systems. Details of these environments and
Platforms have been covered in various publications [see e.g. DeSanctis and Gallupe 1987; Johansen 1992; Sprague and Mcnurlin 1993; Vreee 1995].

Most research and discussion has focused on the face-to-face environment (same time, same place) because they are the “low-tech”, most natural form of team communication for most people and comfortable [Sprague and Mcnurlin 1993]. Pervan [1994] also reports that most of the papers published on GSS so far, about 75%, are devoted to the study at the same time/same place meetings.

*Figure 2-1 Groupware Options [after IFTF 1992]*

### 2.2.2 GSS Development Overview

For the last 12 years of GSS research, GSS practitioners and researchers have amassed a lot of experience on groups' interacting with technology [Herik 1998]. As a result, several GSS products taking various platforms have been developed and used in the USA and Europe to support group work in face-to-face meetings. Some of the products from the USA include GroupSystems (Ventana Corporation), MeetingWorks (Western Washington University), SAMM
(University of Minnesota) and VisionQuest (Execucom Corporation). Alongside, the development and use of alternative approaches of GSS in Europe, e.g. Decision Explorer (previously known as 'COPE' or 'Graphics COPE') [Ackermann and Eden 1999] has been going on.

Several application areas have been identified and have received special attention by using these two approaches consisting of products with different tools. The "American" products, for example, GroupSystems, provides a suit of tools to support the group activity for generating lists of items (ideas, goals, alternatives, etc.), organising the lists, and voting anonymously. For the "European" approach, various tools, such as multi-attribute resource allocation and modelling tools, dynamic simulation modelling and decision tree analysis tools are used in supporting groups. In addition, for the "European" approach, interpersonal (verbal and other non-technological) communication is fundamental. With this approach, the facilitator uses also manual techniques to collect issues, concerns, opinions, scores, etc. from a group and then this information is entered into chauffeur's workstation for further processing [see e.g. Wagner et al. 1996].

2.2.3 GSS Facility

GSS are typically based on a network of personal computers and software designed to co-ordinate group work, usually one for each meeting participant. Participants can use the system to support the work even if they are in different rooms. The GSS facility may be setup in a fixed (dedicated) group decision room (GDR) or mobile one (see figure 2-2). A dedicated GDR is especially designed for electronically supported meetings and a central focus is provided at the front of the room in the form of a large public display unit. Other facilities that are necessary in a meeting room are a laser printer and a copier to provide immediate hard-copy printouts. In a mobile facility, laptop computers are arranged on tables, in a standard meeting room on which participants begin their work.
**Figure 2-2 Mobile and Fixed GSS facilities used by the University of Dar es Salaam**

Each of the two options described above has positive and negative impacts. According to Mittleman [1996] and our own experience, the following is an example list of the pros and cons of mobile and dedicated GDR:

Next to these facilities, there are also two persons involved, the facilitator and the chauffeur. During a meeting in the GDR the facilitator is responsible for the meeting-process, but he is also responsible for the preparation and rounding off the meeting as well as working out of the results. Hence, he is familiar with the task, which is defined prior to the meeting. The chauffeur’s responsibility is the technical equipment and as such he controls the technical aspects of the meeting.

<table>
<thead>
<tr>
<th><strong>Dedicated facility – Technical / Costs</strong></th>
<th><strong>Mobile facility – Technical / Costs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware is less expensive</td>
<td>Meetings can take place everywhere</td>
</tr>
<tr>
<td>Hardware is less vulnerable</td>
<td>Fewer constraints on meeting room</td>
</tr>
<tr>
<td>Room is usually more presentable</td>
<td>Meeting table is usually less expensive</td>
</tr>
<tr>
<td>Shorter session preparation time</td>
<td>Saves travel time for participants</td>
</tr>
<tr>
<td>Room can be a show case for the host</td>
<td>Facility is easier to use “sell” to external</td>
</tr>
<tr>
<td>organisation</td>
<td>groups</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Dedicated facility – Social / Behavioural</strong></th>
<th><strong>Mobile facility – Social / Behavioural</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Having participants in different environment</td>
<td>Participants meet in environment they are</td>
</tr>
<tr>
<td>can help them focus</td>
<td>used to</td>
</tr>
<tr>
<td>Interruptions during the session are less</td>
<td>Oral discussions are easier (closed laptops)</td>
</tr>
<tr>
<td>likely</td>
<td>Experts from the organisation can be</td>
</tr>
<tr>
<td></td>
<td>invited to attend during the meeting if</td>
</tr>
<tr>
<td></td>
<td>need is felt</td>
</tr>
</tbody>
</table>

*Table 2-2 Example of pros and cons of mobile and dedicated GDR*

2.2.4 **Description of GSS: GroupSystems for Windows**

There are various products for group support systems that are used in work groups [Nunamaker et al. 1991; Anson et al. 1992; Bostrom et al. 1992; Tyran et al. 1992; Watson 1992; Coleman et al. 1995]. A GSS consists of a collection of **computer-based meeting tools** specifically designed to make creative problem solving by teams more productive [Vreede and Briggs 1996]. The purpose of these tools is to provide process structure, process support, task structure and task support for group interaction [Nunamaker et al. 1991]. Table 2-3 summarises the tools in one of the most widely available products, GroupSystems, which represents the current state of the art in GSS design, developed by researchers at the University of Arizona [Vreede and Briggs 1996].

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In chapter 1, we discussed various factors that underscore the need for the application of GSS in capacity building in Tanzania. In the remainder of this section we will demonstrate that GSS is a very promising technology to provide a more broad form of support. Various tools of GSS described above (table 2-3) can provide support in a variety of activities in organisations. Some of these areas are discussed below.

**Electronic Brainstorming** allows rapid generation of a free flow of ideas.

**Topic Commenter** permits people to generate ideas and assign them to "file folders" or topics.

**Categorizer** gives structured methods for generating, synthesising, and categorising ideas.

**Group Outliner** allows a group to explore issues and develop action plans using a tree or outline structure.

**Alternative Analyser** compares a set of alternatives against a set of group-developed criteria.

**Vote** helps to evaluate ideas, measure consensus, and make choices using several voting methods.

**Survey** allows the group to respond to a questionnaire.

**Briefcase** provides a set of personal productivity tools, including Calendar, File Reader, Notepad, Calculator, Clipboard and Quick Vote.

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**Table 2-3** A summary of tools in GroupSystems for Windows (version 1.1e)

2.2.5 Activities that GSS can support

**Research activities**

Within organisations throughout the world people at times work in groups to accomplish tasks. Over the course of a project, a group may accomplish its work through parallel individual efforts and/or through collaboration where group members communicate findings and options, monitor progress, to render decisions, and to raise questions. For different reasons, sometimes these processes have not been executed and accomplished successfully, particularly in developing countries. Organisations in developing countries have various projects’ activities that need to be researched to improve productivity. Research activities are activities carried out by an organisation that involve studying a phenomenon of interest to build, test, or expand a theory. GSS can provide a variety of benefits to researchers, e.g. in developing elements of a research project, electronically recording data from subjects, performing data analysis, and integrating information and data across the entire research project.
Anson et al. [1992] outline and illustrate the potential application of GSS during research projects, using the model for performing a research project as suggested in Jenkins [1985]. The research activities and potential support from GSS are summarised in table 2-4 in terms of the three basic group activities that are supported by GSS (Generate, Organise, and Evaluate information) [Vreede 1995 p.134].

Use of GSS is not equally beneficial to all research activities. Though useful, GSS have limited added value in activities 4, 6, and 7, as these activities normally include a lot of activities that do not require a group meeting and/or require special applications, such as data analysis applications; however, GSS technology has proved to be especially powerful in supporting activities 1, 2, 3, 5, and 8. A few examples:

<table>
<thead>
<tr>
<th>Research activity</th>
<th>Potential GSS support</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Generate ideas for research project</td>
<td>Generate ideas with respect to research areas, topics, methodologies, variables, tasks, survey questions, subjects etc. Evaluate ideas by prioritising them, using criteria such as potential contribution, feasibility, cost, and subject availability.</td>
</tr>
<tr>
<td>2. Conduct library/literature research</td>
<td>Generate list of relevant references Generate list of information sources Generate list of relevant contacts</td>
</tr>
<tr>
<td>3. Refine research topic</td>
<td>Organise and manipulate information from previous activities electronically to define the focus of a study, the research questions, the research objectives, and hypotheses.</td>
</tr>
<tr>
<td>4. Select appropriate research strategy</td>
<td>Evaluate potential research strategies and instruments using criteria such as appropriateness, feasibility, risk, and experience. Determine sources of information on selected research strategy</td>
</tr>
<tr>
<td>5. Develop study design</td>
<td>Generate information with respect to the unit of analysis, theories to be tested or build, measurement instruments, and methods of analysis. Generate survey questions, criteria for site selection, experimental procedures and instructions, qualitative and quantitative data sources. Generate information on limitations of the study design and how to handle these.</td>
</tr>
<tr>
<td>6. Collect data</td>
<td>Collect both qualitative and quantitative information from groups using the GSS, e.g. for opinion research, group feedback analysis, focus groups, Delphi groups, critical success factors, and assessment methodologies</td>
</tr>
<tr>
<td>7. Analyse data</td>
<td>Evaluate data using the voting tools “Code” data by organising them into a number</td>
</tr>
</tbody>
</table>
8. Publish results

<table>
<thead>
<tr>
<th>of categories</th>
<th>Generate and evaluate potential publication outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generate an outline of a publication</td>
<td></td>
</tr>
<tr>
<td>Generate and organise information to fill in the outline of the publication</td>
<td></td>
</tr>
</tbody>
</table>

Table 2-4 Potential GSS support for various research activities, after [Anson et al. 1992].

1. GSS were used to set up and carry out a study to compare electronic and paper survey instruments [Anson et al. 1992].
2. GSS were used to carry out a study to determine critical success factors for design and development of management expert systems [Anson et al. 1992].
3. GSS were used to set up, carry out, and evaluate a study to develop a gaming environment and applied it to teach students the concept of participative design in a joint effort by Delft University of Technology and The University of Arizona.

In conclusion, after Anson et al. [1992], the main benefits of applying GSS to support institution research are threefold. First, just as in other meetings, GSS enhance the efficiency and effectiveness of the interactions of researchers setting up and working on joint projects. Second, GSS support the electronic recording of data on subjects or phenomena being studied, reducing data entry errors and data entry times, and facilitating data analysis. Third, GSS facilitate the analysis of qualitative data by allowing for electronic manipulation, organisation, and evaluation of recorded data.

Service to the society
A GSS is an instrument that an organisation can apply for a large variety of activities. Over the past few years, GSS has been moving out of the laboratory settings into a variety of real world application areas [Vreede 1995], some examples are listed in table 2-5.

<table>
<thead>
<tr>
<th>Application Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business process redesign</td>
</tr>
<tr>
<td>Case analysis</td>
</tr>
<tr>
<td>Process quality assessment and improvement</td>
</tr>
<tr>
<td>Strategy planning and strategy creation</td>
</tr>
<tr>
<td>Information planning, policy formulation</td>
</tr>
<tr>
<td>Information system development</td>
</tr>
<tr>
<td>Criminal investigation</td>
</tr>
<tr>
<td>Banking</td>
</tr>
<tr>
<td>Insurance</td>
</tr>
</tbody>
</table>

Table 2-5 Examples of GSS application areas [after Vreede 1995]
According to Huber [1984, p.198] "a critical frequency of use must be attained in order for the system [GSS] to survive in any given organisational environment". Hence, one can argue that in order to become adopted and successfully used in an organisational setting, a GSS has to be used frequently and support almost all tasks that need collaborative decision making. This implies that potential users of GSS cut across almost all levels of groups in institutions: operatives, and middle managers as well as chief executives.

2.2.6 GSS Characteristics

The three main characteristics of GSS that bring about their added value compared to 'traditional' group settings are parallel (simultaneous) input, anonymity, and group memory [Sprague & McNurlin 1986; Bostrom et al. 1992; Nunamaker et al. 1995; Hengst & Sol 1995; Vreede 1995].

- **Parallel input**: GSS permits all participants to enter information into the system at the same time by typing their ideas without missing what others have said. Participants type their ideas, comments, and questions on their workstations and the system distributes their input to all stations for viewing, eliminating a common bottleneck in traditional verbal meetings. Simultaneous input allows for more equal participation (i.e., reducing dominance) and contributions directed to areas of expertise and interest. This simultaneous input characteristic has an added advantage over what Tyran et al. [1992] refer to as production blocking. When a group member "has the floor," he or she may block the generation or communication of opinions and ideas of others. Blocking has been identified as the most important factor in poor performance during exploration and idea generation activities [Diehl and Strobe 1987].

- **Anonymity**: GSS also allows a group member to enter ideas anonymously. It enables members of a group to express their views anonymously, without apprehension of evaluation. Ideas are entered into the system, discussed, and prioritised without attaching author's names to ideas or votes. Hence, all ideas are argued on their contents. Compare this to traditional meetings, where studies see e.g. Kirkpatrick [1992] have shown that in traditional meetings 20% of the people do 80% of the talking because some group members are shy, of less status, intimidated or too polite. This lack of participation among group members may lead to lower overall productivity or less critical evaluation of ideas. It is thus assumed that the GSS anonymity feature encourages those members who may be reticent about communicating their views verbally, and leads to balanced involvement among group members. Consequently, better group decision outcomes may
be achieved in a group discussion. These attributes overcome common
dysfunctional behaviours (e.g., impossibility for all to talk at the same time).

- **Group (organisational) memory and display**: GSS store and display all
  ideas, comments, and votes that are entered during a meeting electronically.
  In contrast to 'traditional' meetings, the results of a meeting can be used
  immediately when required or when another group tackles a similar
  problem. The electronically generated group memory gives an objective
  account. Traditional minutes often do not describe the participants’
  preferences and their positions and may contain a bias in favour of a
  'strong' subgroup or the person taking the minutes.

Other positive attributes of GSS meetings include **process structuring, and expanded information-processing capacity** [Bostrum et al. 1992].

- **Process structure** refers to process techniques or rules that direct the
  patterns, timing or content of electronic communication [DeSanctis and
  Gallupe 1987], such as an agenda. Process/agenda structuring that provides
  framework and process structures to improve topic focus, and to facilitate
  agenda control and completion. Process structure may be general for the
  meeting (e.g. having a general agenda to perform the task) or internal for a
  specific activity (local process structure) i.e. determining who will talk first
  (e.g. talk queues) [Nunamaker et al. 1991]. Process structure has been found
  to improve, impair, or has no effect on group performance [Nunamaker et al.
  1991].

- **Extended information processing capacity** automates complex tasks and
  creates easy accessibility to information. This feature enables a GSS to
  process all the ideas or votes much faster and hence assist the group to
  better understand and analyse the task information for decision making
  faster than would be possible in normal non-GSS supported meetings.
  Group performance may be improved by reducing losses due to incomplete
  data analysis or increasing process gains by synergy, encouraging more
  information to be shared, promoting more objective evaluation. For
  example, groups may benefit from electronic access to information from
  previous meetings.

The GSS features described above lead to a number of efficiency and
effectiveness benefits for the meetings. In summary, the principal benefits of
GSS most cited in literature can be summed up in the following six main topics:
group memory, task focus and process focus, broad and active participation,
objectivity, automation of complex tasks, and more efficient task execution
[Herik 1998].
Regardless of the positive results for productivity that the attributes of GSS (meetings) may contribute, in some cases it may have negative effects [see e.g. Nunamaker et al. 1991; Vreede and Muller 1997; Herik 1998] such as reduction of communication intimacy. If all communication is electronic, some team members may free-ride on the contributions of others [Davison and Jordan 1998]. Parallel communication may result in information overload [Dennis 1994] and this may require a great amount of effort to organise the generated information.

 Whereas the results and assumptions with regard to the above attributes may be valid in other nations, it remains to be seen whether they are in Tanzania. National and organisational cultures influence decision environments, which in turn determine the nature and support required from a GSS.

2.2.7 GSS Decision Making Support Needs

GSS for problem solving
GSS is a tool that supports rational decision making in problem-solving of policy making [Herik 1998]. That is, it supports decision making where policy plans or products are constructed in a series of policy making activities, e.g. budget allocation, policy development on tax revisions, strategic planning, policy analysis, business process re-engineering, total quality management, information systems design, information systems planning, classroom support. GSS can be used to structure the information gathering and analysis process, to speed the information gathering, and to support the analysis through decision making technology with complex models or information intensive calculations.

GSS for social interaction
GSS may facilitate social interaction between the participants who aim to build trust, find a consensus, or strive for productive work relations. In view of this, GSS can be regarded as a means to confront opposing parties with their viewpoints, interest and knowledge. In addition, GSS meeting enhance exposure of hidden opinions and ideas, facilitate a divergent discussion in a heterogeneous group. In this way, social interaction is directed at finding arguments for and against a certain view of parties in a meeting.

The study on the application of GSS in capacity building in Tanzania was essentially aimed at evaluating if GSS could be used and accepted by various stakeholders in various major sectors of the economy [see figure 1-4 and table 4-1]. In this research, we focused mainly the application of GSS on different policy issues [Herik 1998]: major issues e.g. evaluation of national capacity building portfolio; secondary issues e.g. identification of strategies to increase investment income of an organisation; functional issues e.g. departmental
income generating opportunities; and minor issues e.g. improvement of staff welfare [see Appendix 1].

2.3 Cross-Cultural experiences with GSS

Social structures, their development and influence on the behaviour of actors are important when investigating electronic meetings [Qureshi 1996]. Structures of leadership, executive powers, communication, and domination that manifest themselves in relations among stakeholders create patterns in their behaviours [Giddens 1984]. A realignment of status, power, and working habits which can accompany the adoption of new technologies may violate some of the group’s shared values and meanings, and result in culture-based resistance [Cooper 1994]. For example, when interacting using electronic medium, members of the group bring with them their own perceptions and cultural background. In this case GSS may present as a somewhat alien environment in which an attempt is made to amalgamate these norms and perceptions. In addition, the electronic medium presents as a new environment in which different ways of working, communicating and cultural norms are expected to be reconciled.

While many studies have been directed toward understanding the application and adoption of GSS in Western firms, there have been few studies that have specifically examined the adoption processes with regard to national culture [Straub 1994]. GSS researchers [see e.g. Ho et al. 1989; Vogel 1992; Watson et al. 1993] argue that national culture may influence differences in GSS usage by groups. There is such a variety of cultural conditions in a country that may have an effect on the application of GSS, that it is not possible to analyse all of them. This means a framework used in one culture may not necessarily be equally applied in another. It is from this basis that several studies on cross-cultural issues [Haire et al. 1966; England 1975; Hofstede (1980, 1991); Ho et al. 1989; Raman and Wei 1992; Mejias et al. 1996] have used different frameworks.

<table>
<thead>
<tr>
<th>Cultural dimension</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power distance</td>
<td>Extent to which power within organisations is unequally distributed and extent to which this is expected and accepted by the less powerful members of these organisations</td>
</tr>
<tr>
<td>Individualism/collectivism</td>
<td>Extent to which people act solely in their own interest or towards the goals of the group or organisation they are part of</td>
</tr>
<tr>
<td>Masculinity/femininity</td>
<td>Extent to which assertive behaviour is desired over modest behaviour</td>
</tr>
<tr>
<td>Uncertainty avoidance</td>
<td>Extent to which people feel uncomfortable with uncertainty</td>
</tr>
<tr>
<td>Confucian dynamism</td>
<td>Extent to which people tend to focus on short-term gains rather than long term gains</td>
</tr>
</tbody>
</table>

*Table 2-6 Cultural dimensions from Hofstede [1991].*
Hofstede’s studies [1980, 1991] on cultural dimensions provide a theoretical foundation for exploring cultural differences regarding the acceptance and adoption of GSS (see table 2-6). Hofstede's [1991] framework uses five value dimensions to characterise cross-cultural differences. The attributes include power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, and confucian dynamism.

These dimensions are based on research done in over fifty countries and regions; because of its unique systematic analysis and comprehensive coverage, Hofstede’s framework has been accepted by many scholars [see e.g. Allen et al. 1988; Adler 1992; Slocum & Lei 1993; Alvin and Ramiller 1997] as an effective framework to describe a national culture and for examining how cross-cultural differences influence work values and behaviours. Some of these aspects are discussed below with respect to various cross-cultural GSS studies.

In chapter one, it was noted that GSS are now used on all continents ‘except for Antarctica’ [Nunamaker et al. 1997]. The various studies, theories and descriptions of organisational behaviour are based on Western culture with a few exceptions in the Asia-Pacific region e.g. Raman and Wei [1992] and Mexico e.g. Mejias et al. [1997] and Morales et al. [1995]. The above studies serve as valuable source of information in dealing with cross-cultural issues. We present an overview of some of the GSS research in non-western cultures in table 2-7.

2.3.1 Research in Mexico

Various cross-cultural studies have been conducted in Mexico and US, see table 2-7. Although Mexico and US are both in the Americas, numerous differences exist between their cultures, see e.g. [Kras 1987; Hofstede 1980]. Kras [1987], for example, notes cultural differences in family, religion, pedagogical approach, nationalism, emotional sensitivity, etiquette, grooming, status, aesthetics, ethics, managerial differences in work/leisure, direction/delegation, theory versus practice, control, staffing, loyalty, competition, time, and planning as well as training and development. Hofstede [1980] states that Mexican cultures have a higher sense of power distance than US groups and rate higher in terms of collectivism while US groups tend to be more individualistic.

In an exploratory study, Niederman [1997] made a comparison between Mexican and US facilitators in their roles of managing meetings using GSS. Based on the four cultural dimensions [Hofstede 1980], it was found that some differences between the facilitators in the two countries could be attributed to culture. For example, the facilitators in Mexico differed from those in the US.
regarding skills, level of experiences with GSS technology, and how they measured meeting success. From Niederman’s [1997] perspective, cultural differences as defined by Hostede [1980] can provide some insight into different adoption of GSS. This is in line with Ho and Raman [1994] who compared cross cultural GSS adoption and found differences in understandings and preferences based on cultural background.

Mejias et al. [1997a] used Hofstede’s cultural dimensions in a study of the effects of “national culture” (of Mexico and US) upon group consensus levels and perceptions of participation equity and satisfaction within GSS environments and non-GSS (manual) environments. The results indicate no significant differences in consensus levels between GSS and manual treatment
<table>
<thead>
<tr>
<th>Reference</th>
<th>Country</th>
<th>Research type</th>
<th>Subjects</th>
<th>Research focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davison [1996]</td>
<td>Hong Kong</td>
<td>Theoretical / Argumentative</td>
<td></td>
<td>Cultural and organisational implications for the implem. of GSS</td>
</tr>
<tr>
<td>Davison and Jordan [1996]</td>
<td>independent</td>
<td>Theoretical / Argumentative</td>
<td></td>
<td>Impacts of culture on use and adop. of GSS</td>
</tr>
<tr>
<td>Davison and Jordan [1998]</td>
<td>Hong Kong</td>
<td>Theoretical / Argumentative</td>
<td></td>
<td>Barriers to adoption of GSS in a cross-cultural setting</td>
</tr>
<tr>
<td>Ho et al. [1989]</td>
<td>Singapore and US</td>
<td>Experimental</td>
<td>Singaporeanan and US students</td>
<td>Cultural differences and their effect on the application of GSS</td>
</tr>
<tr>
<td>Mejias et al. [1997a]</td>
<td>Mexico and US</td>
<td>Experimental</td>
<td>Mexicanan and US students</td>
<td>Effects of culture on group consensus, perceptions of participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>equity and satisfaction (with and without GSS)</td>
</tr>
<tr>
<td>Mejias et al. [1997b]</td>
<td>Mexico</td>
<td>Experimental</td>
<td>Mexicanan students</td>
<td>The impact of GSS on productivity, consensus, and participation equality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>in the Mexican culture</td>
</tr>
<tr>
<td>Morales et al. [1995]</td>
<td>Mexico and US</td>
<td>Field study</td>
<td>Mexicanan bus. and govern. employees</td>
<td>The use of GSS for regional development in Mexico</td>
</tr>
<tr>
<td>Raman and Wei [1992]</td>
<td>Japan, Singapore, and Taiwan</td>
<td>Project overview</td>
<td>Various student and organisational groups</td>
<td>Cultural differences and implications for GDSS design</td>
</tr>
<tr>
<td>Spletstoesser [1996]</td>
<td>Tanzania</td>
<td>Field study</td>
<td>Tanzania Marine conservation vistionists</td>
<td>Use of GSS in Development Decision Centres</td>
</tr>
<tr>
<td>Spletstoesser &amp;</td>
<td>Tanzania</td>
<td>Theoretical / Argumentative</td>
<td></td>
<td>Use of GSS in Environmental Planning</td>
</tr>
<tr>
<td>Spletstoesser [1998]</td>
<td></td>
<td>Argumentative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tan et al. [1993]</td>
<td>Singapore, US and Finland</td>
<td>Theoretical / Argumentative</td>
<td></td>
<td>Underst. GSS appl. to improve meeting quality in various cultures</td>
</tr>
<tr>
<td>Tan et al. [1998]</td>
<td>Singapore and US</td>
<td>Experimental</td>
<td>Singaporeanan and US students</td>
<td>The use of Computer-Mediated Communication (CMC) to reduce status effects</td>
</tr>
<tr>
<td>Watson et al. [1994]</td>
<td>Singapore and US</td>
<td>Experimental</td>
<td>Singaporeanan and US stud.</td>
<td>Effect of culture on equality of participation and consensus</td>
</tr>
</tbody>
</table>
Table 2.7 Overview of past research into the application of GSS in non-western cultures.

within both the US and Mexican cultures; however, both US and Mexican groups generated significantly greater relative changes in consensus levels using GSS technology versus manual process. Comparison between cultures shows that Mexican groups generated higher levels of consensus than US groups with main effects due to culture and GSS support. Another study in Mexico [Mejias et al. 1997b] concerned experimental investigation of group productivity, consensus levels and perceived participation equity of Mexican participants within GSS and non-GSS environments. Comparing the GSS-supported and manual groups, it was found that there was a difference in generation of ideas, levels of consensus and participation. The GSS-supported groups generated more ideas of higher quality, and had greater levels of participation equality than manual participants. Manual groups generated higher consensus levels, but GSS groups generated greater changes in consensus levels.

Morales et al. [1995] examined the use of GSS in regional development in Mexico and a comparison was made with US experiences. The overall results of this study suggest that Mexican participants can indeed benefit and feel comfortable with GSS and the methodology employed in regional development; however, from the researchers’ experience with both cultures, there existed some differences between application of GSS in the Mexican and in the US context. It is noted that GSS application in the Mexican context is often more flexible than with US groups. For Mexican groups, a combination of approaches and methodologies may be applied during facilitation with less emphasis on GSS tools when setting an agenda; also, because of high power distance in Mexican culture, participants can be less comfortable in an anonymous GSS contribution situation as they are more used to recognising others and being recognised in a meeting context.

2.3.2 Research in the Asia-Pacific Region

Some cross-cultural GSS studies have been carried out in Hong Kong, Korea, Japan, Singapore, and Taiwan in the Asia-Pacific region.

Davis’s [1996] and Davis and Jordan’s [1998] studies report on implications and barriers for the implementation and adoption of GSS in Hong Kong. Based on two of Hofstede’s dimensions, power distance and uncertainty avoidance, Davis and Jordan [1998] examine reasons for the failure of organisations to adopt GSS across various countries including Hong Kong. One of the important conclusions noted in the research is that in many of the organisations studied, executives intentionally avoid participative decision making and were always ‘right’, hence they could not be contradicted. In this context, a GSS may be seen
as a threat to the existing status quo and to the structure of authority present in
the organisation, since it would encourage the distribution of information over
which managers would have no direct control.

Chung and Adams [1997] made an exploratory study to understand the group
decision-making behaviour in Korean firms and then made a comparison with
the US firms. The *input-process-output model* [Dennis et al. 1991; Nunamaker
et al. 1991] for electronic meetings systems research was used and adapted with
some minor modifications based on additional literature. The model describes
the group decision-making culture in terms of the organisational characteristics, size
of the group, cohesiveness of the group, nature of the problem, function of the
leader, group decision-making process and dysfunction. The study provides
similarities and differences of group characteristics of the two cultures and the
implications of GSS design and strategies for its use. Although Hofstede has
characterised Koreans as having lower individualism, higher power distance,
higher uncertainty avoidance and lower masculinity than Americans, no clear-
cut differences in group behaviour according to these dimensions were found.

Tan et al. [1998] report on some laboratory experiments that were conducted in
Singapore and the US to investigate whether computer-mediated
communication (CMC) can reduce status effects during group communication
in both national cultures. Three independent variables were studied: national
culture (Singapore versus US), task type (intellectual versus preference), and
communication medium (unsupported versus CMC). It was found that, although
Singapore and the US differ on all Hofstede's characteristics, their differences
on power distance and individualism-collectivism dimensions were more
germane to this study. Status influence appears to be more sustainable in
Singapore groups than US groups, and Singapore groups appear to be more
conscious of the presence of status influence than US groups during group
communication. Lower-status individuals in Singapore groups and US groups
yielded to the influence of higher-status individuals, particularly when they were
working on the preferred task. The study shows that the use of CMC appears to
be able to reduce status influence where excessive status effects are harmful,
irrespective of the national culture.

An important assumption in GSS theory and design practice is that addition of
an anonymous electronic communication medium to verbal information
exchange in a group leads to a more balanced involvement among the group
members and better group decision outcomes [Raman and Wei 1992].
According to Raman and Wei [1992], this theory makes three implicit
assumptions that may be specific to American culture. First, the theory assumes
that it is important for each group member to have an equal opportunity,
regardless of status, to express an opinion in a group, and that each group
member derives satisfaction from an equal opportunity to influence or present information to the group. Second, the theory assumes that each group member prefers open and direct communication to indirect communication to resolve conflict or disagreement in a group discussion. Third, the theory assumes that group discussions and decisions should maximise organisational objectives rather than preserve group harmony. It is thus hypothesised that, whereas these assumptions may be valid in the American culture, they may not be in the many of the Asia-Pacific cultures. Based on this hypothesis, Raman and Wei [1992] conducted a number of studies on cultural differences and implications for GSS design in Japan, Taiwan and Singapore. They found that differences in cultural attributes and decision environments have important implications in the design of GSS for different cultures. For example, in Japan and Taiwan, a series of co-ordination meetings are held before a decision is made. Therefore, a GSS for Japan or Taiwan would be required to support the co-ordination phase of group decision making. Whereas for Singapore, where “belongingness” may rank above ego needs, a GSS that provides more structure may be more appropriate because workflow and procedures are not codified and prescribed to the same extent as in Japan or Taiwan.

Watson et al. [1994] argue that because GSS design is often based on the customs of the particular culture in which it was developed, both technical and social facilities may need modifications for successful adoption in another culture. Therefore, it is important to understand the effect of culture on GSS design and implementation. The study focuses on cultural GSS research and its effect on GSS supported meetings. Their study compares the findings of experimental GSS investigations in two very different cultures: the U.S. and Singapore. The study’s results are significantly different in the two national cultures. For example, it was found that, because of the collectivism of Singapore’s culture, participants had greater agreement before the meeting compared to U.S groups who are rated as individualistic. U.S. groups, however, demonstrated a higher capacity for accommodating differences and made a larger agreement shift than Singaporean groups.

2.3.3 Research in Eastern Europe

Griffith [1998] reports in Eastern Europe, on the effectiveness of implementation strategies for Bulgarian versus US users, highlighting cultural differences regarding construction processes and transplanting of GSS technology from one culture to another. The focus of the research was on Bulgarian culture and its idiosyncratic and historically based challenges for implementers. The study uses a cross-cultural frame-based model to test the implementation of GSS [Griffith and Northcraft 1993], using groups of Bulgaria and US university students. Using Hofstede’s [1980] dimensions, Bulgaria is
rated to have high power distance compared to US. Hence, it was assumed that Bulgarian users of GSS will be less likely to challenge the frames put forth by technology experts than will US users, and therefore will be less successful in adapting to the technology. It was found, however, that the Bulgarian students may in fact be more likely to challenge authority on the implementation of new technologies than their US counterparts.

2.3.4 Country independent research

Robichaux and Cooper [1998] employed the Technology Acceptance Model (TAM) [Davis et al. 1989] to examine the impact of culture on GSS participation. Based on this framework, a research model was developed to help identify effects of cultural settings using Hostede’s cultural dimensions as example settings, and parallel and anonymous attributes as example of GSS functionalities. The research model’s usefulness was then illustrated by generating research propositions focusing on interactions of these settings and functionalities. It is argued that group participation in face-to-face meetings is affected by, among other things, social norms, which may differ across cultural settings. Therefore, the ability of GSS to reduce participation barriers may depend on culture in a given context. Moreover, different cultures require different kinds of information [Tricker 1988], process information differently [Thompson and Wildavsky 1986], and have different degrees of satisfaction with information systems [Kendall et al. 1987]. Therefore, there may be culturally based resistance and consequent technology failure in the process of adoption [Cooper 1994; Romm et al. 1991]. Hofstede’s cultural dimensions were used in studies under Western (North America and Western Europe) cultures and non-Western cultures in Asian, African, Latin America, and Japanese groups. Using TAM, three of Hofstede’s cultural dimensions were found to impact significantly the ability of GSS to increase participation. These three cultural dimensions were power distance, individual-collectivism and masculine-feminine; however, it is observed that due to the Western bias of TAM, the propositions generated should be viewed as highly tentative, and regarded as opportunities for further theoretical and empirical investigation.

2.3.5 Conclusions

Although the studies discussed above were done in different cultures, some similarities can be distinguished between most of the conclusions. From the studies presented in this overview, it appears that group decision making is always strongly influenced by both the cultural and environmental norms surrounding the process. Culture and environment seem to affect the satisfaction and participation equity of groups from different cultures, primarily because they affect the perception levels of the participants. For example, Watson et al. [1994] found that Singaporean groups have higher pre-meeting consensus and
less change in consensus than US groups. This is consistent from a cultural perspective because Singaporean groups are more likely to be collectivists than US groups and hence value and strive for consensus independent of GSS use. Therefore, the ability of GSS to increase consensus will be diminished when employed by collectivists. Similarly, Mejias et al. [1997b] found that non-GSS groups obtained higher consensus than GSS-supported groups in Mexico, while it was different in the US. Again, this finding is reasonable given the more collectivistic culture of Mexico.

Given the relatively small number of studies, it is not surprising that no mature theory has emerged yet to encompass the various environments and cultural dimensions and their effect on the use of GSS. Most studies offer theoretical/argumentative discussions or concern laboratory experiments with student subjects. In other words, from a research perspective, we do not know a lot about the real application of GSS in other cultures. If we are to capitalise successfully on the potential benefits of GSS technology and design better ways of employing it, we have to build this knowledge [Nunamaker et al. 1997; Raman and Wei 1992]. As far as we know, there are no in-depth GSS investigations in non-EuroAmerican environments, especially in Africa where the exploration of GSS is still in its infancy and has been little studied.

We describe the disparate geosocial environments in which GSS has been used in East and Central Africa in the following section. Then we discuss the experiences that present an encouragement for the exploration of the adoption of GSS in capacity building in Tanzania. This section sets the “initiation” stage of the research as shown in the inductive-hypothesis strategy described in section 1.8.

2.4 First GSS experiences in East and Central Africa

In chapter 1 we discussed the pivotal role that GSS can play to enhance capacity building in Africa. The World Bank and other donor communities are increasingly supporting actions and possible strategies to improve decision-making processes through such collaborative technologies. The first reported studies on the practical application of GSS in Africa involved three countries [Spletstoesser (1996, 1998); Jones and Miller 1997; Jones and Vreede 1997]: Tanzania, Malawi and Zimbabwe located in East and Central Africa [see figure 2-2]. All countries are former British colonies that use English as one of the official languages. Tanzania and Malawi rank among the poorest ten countries in the world. Zimbabwe is slightly better off, with a national product per capita twice that of Tanzania and Malawi (1,500 US$ vs. 750 US$; in 1994). The economies largely depend on agriculture. Table 2-8 presents some demographic data for these countries [US-Africa 1997].

52
**Figure 2-2 The geographical location of Malawi, Tanzania and Zimbabwe.**

<table>
<thead>
<tr>
<th></th>
<th>Malawi</th>
<th>Tanzania</th>
<th>Zimbabwe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>9,800,000</td>
<td>28,700,000</td>
<td>11,100,000</td>
</tr>
<tr>
<td>Languages</td>
<td>English, Chichewa</td>
<td>Swahili, English</td>
<td>English, Shona, Sindebele</td>
</tr>
<tr>
<td>Literacy</td>
<td>48%</td>
<td>59%</td>
<td>78%</td>
</tr>
<tr>
<td>Labour force</td>
<td>Agriculture 43%, ICS(^1) 57%</td>
<td>Agriculture 90%, ICS(^1) 10%</td>
<td>Agriculture 74%, ICS(^1) 26%</td>
</tr>
</tbody>
</table>

*\(^1\)Industry, Commerce, Services

**Table 2-8 Some demographic data on Malawi, Tanzania and Zimbabwe.**

In total there are 4 reported projects in which GSS meetings were organised. The setting up of a meeting room and arrangement of participants, the design of agenda and structure of processes, the use of different tools and the facilitation techniques varied in accordance with the context and the objective of the meeting. For example, round table discussions were used in many of the meetings held in Malawi and Zimbabwe because of the large number of participants, while in Tanzania each participant had a dedicated workstation in each session. Table 2-9 below summarises the background information of the first GSS meetings conducted in Tanzania, Malawi and Zimbabwe.
Spletstoesser [1996] proposed the use of GSS in Development Decision Centres (DCC) in Tanzania. He reports on the establishment of a prototype fixed facility, running on MeetingWorks for Windows [Enterprise Solutions 1994] to support a maximum of 8 participants situated at the University of Dar es Salaam in Tanzania. The author explains how using GSS in DCC can improve decision-making in various work groups such as a university community, government agencies, and public and private organisations. It is argued that GSS may substantially improve development decision-making by supporting 'good governance' through ensuring accountability, transparency and participation; productivity and competitiveness; structural adjustments and reforms.

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Country</th>
<th>Length</th>
<th>Group size</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malawi</td>
<td>5</td>
<td>120²</td>
<td>To develop a World Bank Country Assistance Strategy, describing the Bank’s strategy in a country and indicating the level and composition of assistance to be provided.</td>
</tr>
<tr>
<td>2</td>
<td>Malawi</td>
<td>3</td>
<td>46-50</td>
<td>To develop an Environmental Strategy for Malawi, describing and discussing the key environmental issues in the country including an action plan for each issue.</td>
</tr>
<tr>
<td>3</td>
<td>Zimbabwe</td>
<td>2</td>
<td>70</td>
<td>To prepare for the annual World Bank consultations.</td>
</tr>
<tr>
<td>4</td>
<td>Tanzania</td>
<td>1</td>
<td>?³</td>
<td>To develop an environmental plan for marine conservationists</td>
</tr>
</tbody>
</table>

¹ In days  
² These participants did not meet at the same time but in subgroups over the course of the project.  
³ Number of participants not known

Table 2-9 Application of GSS in Africa.

In a later publication, the Spletstoesser’s illustrate the application of GSS in Environmental Planning by Tanzania Marine conservationists [Spletstoesser and Spletstoesser 1998]. The participants in the sessions consisted of small groups of marine conservationists who had never used GSS before. Some of the major observations drawn from the outcomes of the sessions include: the technology assisted in enhancing group productivity because the results generated using GSS exceeded the group’s expectations; parallel input increased the team’s efficiency because the number of original ideas produced during a span of time was generally higher compared to traditional meetings; and the GSS’ anonymity feature enforced transparency in the decision making process. These findings are mainly based on the analysis of the outputs generated from the System logs and thus focus more on the quality of the technology and processes rather than on (culturally informed) perceptions of the participants.
Jones and Miller [1997] report on the World Bank experience with GSS in Africa. The first electronic meetings in Malawi and Zimbabwe were conducted using GroupSystems V on a mobile facility that was brought over from the World Bank's headquarters in Washington. All sessions in both countries were held for the same purpose i.e. focused on the same national project. The first Malawi project was to develop a Country Assistance Strategy (CAS) in which 120 stakeholders participated. The second project concerned a 2-day roundtable discussion to help develop an environmental strategy for Malawi in which 46 – 50 people participated on each day. In both of these meetings different stakeholders participated from the government, private sectors, community leaders, donor groups, NGOs and religious groups. The participants included government ministers, government departmental permanent secretaries, tribal chiefs, regional and district officers, and civic and religious leaders. The 2–day sessions in Zimbabwe involved 70 stakeholders from all-relevant sectors and institutions to give the input for the annual consultations between the Government of Zimbabwe and the World Bank.

Various levels of computer literacy were encountered during the sessions. For many Malawians and Zimbabweans, it was the first time they had even seen a computer although some had developed some keyboarding skills from the use of typewriters. The meeting set-up in Malawi and Zimbabwe consisted of a number of tables with one computer, with a small number of participants taking their seats in a random manner around the computer. This arrangement gave sufficient opportunity for both oral and electronic communication. In many cases it left time for discussion and consensus building before entering data. Only one person per group did the typing after a consensus had been reached, thus lessening the need for keyboard skills. This setup is rather uncommon in the Western meetings where usually (1) more workstations are available, and (2) meeting owners are often more inclined to break the group into several subgroups that meet at different times so that everyone has an equal chance to participate.

In the Malawi and Zimbabwe meetings results were achieved in terms of action plans of which a number had been implemented at the time the study was written up. Participants appeared to be very satisfied. Over 97 percent of the participants in the Malawi and Zimbabwe meetings said they would recommend this technology to other groups. In these meetings, the usefulness of the technology for this type of consultation was rated on the average at 4.2 out of 5, 5 being most positive. The effects of their satisfaction on the acceptance of the technology could for example be seen in meetings that ran over the course of more than one day. During these meetings, the participants voluntarily chose to continue to use the technology although they had the opportunity to reject and use traditional methods.
2.4.1 Conclusion

Studies in Malawi and Zimbabwe report high satisfaction of participants with GSS although participants did not fill out a satisfaction questionnaire. Participants’ satisfaction with the technology was evaluated (via an on-line discussion) at the end of each session. In Tanzania, Splettstoesser’s [1996, 1998] studies illustrate the usefulness of the technology and how it can enhance productivity in organisations; but they do not indicate how participants perceived GSS and no observation is made of some other factors that may have impacted the application of GSS. Although some conclusions have been made in each case with regard to the usefulness, productivity and participants’ satisfaction with GSS, we observe that none of the studies provides a prior theory or framework to guide the analysis and hence explain the adoption of GSS in Africa. The study approaches employed are based mainly on the perceptions of the authors. There is little structured data collection and analysis.

The studies are worthwhile, however, in that they describe real experiences and indicate that GSS application has potential. From a research perspective, a more detailed and structured investigation is clearly needed. We present Phase I of the exploration the application of GSS in Tanzania in the next chapter.
3. Phase I: Exploring the Application of GSS in Tanzania

3.1 Introduction

In a comprehensive review of IT components in the World Bank lending, Hanna and Boyson [1993] concluded that there was a critical need to develop analytical frameworks for studying investments in information technologies in an international context. It is argued that IT implementation efforts in developing countries (DCs) suggest that functional, political, symbolic, and social factors exert considerable influence on the outcomes of the implementation. While these factors are prevalent even in developed countries, they appear particularly important when studying computerisation efforts in DCs. Unfortunately there is little in the literature on IT implementation, such as GSS, in DCs directed at developing these types of frameworks [Nidumolu et al. 1996]. The experimental work in GSS has dominated, and continues to dominate, though there is an increasing awareness of the importance of field studies, as well as other methods such as case studies and action research [Davison et al. 1998]. The overview of past cross-cultural GSS research presented in chapter 2 (table 2-7) shows that descriptive empirical studies (informing theory development) are rare and thus needed.

The lack of theoretically grounded research [Rao and Jarvenpaa 1991] has led to some inconsistencies between published GSS studies [see e.g. Jessup et al. 1990], making it hard to draw firm conclusions about the use of the technology [Davison et al. 1998]. Other explanations that have been suggested for these inconsistencies include: insufficient replication of experimental conditions to make anything more than the most tentative of generalisations about GSS performance [Pervan 1994a]; the prevalent use of students as subjects; and the formation of groups for the purpose of the task studied [Pinsonneault and Kraemer 1990] as well as using groups designed to suit the experimental design [Gallier and Land 1987]. To avoid such inconsistencies, this study aims to develop and apply analytical frameworks to explain and analyse the adoption Group Support Systems (GSS) in Africa in general and Tanzania in particular.

To develop such a framework, we followed the inductive-hypothetic research strategy [Sol 1982] described in chapter 1. Although the overall strategy presented describes the order and interdependence of the necessary research activities, it does not offer guidelines for the individual activities. Hence, we also need a strategy on a lower level of abstraction. For phase 1 of our study, which covers the descriptive research initiation and abstraction activities (i.e. activities 1 and 2 in figure 1-4), we use a grounded theory approach [Glaser and
Strauss 1967]. This approach aims to develop inductively derived grounded theories about a phenomenon [Strauss and Corbin 1990].

3.2 Grounded Theory Approach

Research problems are initially ill-structured, and "a basic task of scientific inquiry is to better structure research problems by building in the various required constraints as research proceeds" [Haig 1996]. On the other hand, qualitative research generates large amounts of non-standard data that makes analysis problematic. The grounded theory method has been advocated as a way of handling these problems; however, grounded theory is much more than that. This section presents an overview of grounded theory and explicates the key analytic procedures of the methodology.

Grounded theory approach is a general methodology for developing theory grounded in data systematically gathered and analysed. It is most commonly employed on naturalistic field data, but has also been used on historical and documentary data [c.f. Star 1989; Clarke 1990]. The methodology was initially developed by Glaser and Strauss and outlined in The Discovery of Grounded Theory [1967]. Grounded theorists start with a set of experiences they wish to explore. They begin with general research questions rather than tightly pre-conceived hypotheses [Bürcu and Loughlin 1996]. Using a grounded theory approach the problem is allowed to emerge from the data and is thus defined by the actors in the situation. A grounded theory is not built before-hand. Rather it emerges during a study as data collection, analysis, and theory development occur in parallel.

The core of grounded theory relies on several components [Star 1997]:
1. An empirical, iterative approach to the collection and analysis of data. That is, data are collected, analyzed, and revised cyclically as checked against empirical findings;
2. a constant comparative approach to the development of theory. Similarities across disparate domains are sought in order to illuminate the dimensions present in a situation;
3. an approach to sampling which is theoretical, rather than site or population driven. That is, emphasis is put on making theories as richly complex as possible, rather than on proving instantiations of hypotheses or application of previous theories; and
4. theory development which works from substantive (close to descriptive) through to formal (abstract) levels as constant comparison proceeds over time.
The novelty of grounded theory lies not in the mode of investigation associated with it, but in the manner in which the information is collected and analysed. The grounded theory method is distinguished from other approaches in that data collection and analysis proceed simultaneously. By analysing data from the lived experience of the research participants, the researcher can, from the beginning, attend to how they construct their world. At the heart of grounded theory analysis are the coding and categorising processes [Stern 1980]. A coding process may consist of three types: open, axial, and selective. Open coding is the initial process in grounded theory which involves breaking down, analysis, comparison, and categorisation of data. In open coding, incidents or events are labeled and grouped together via constant comparison to form categories and properties.

Axial coding represents a more focused coding process [Glaser 1978] by developing main categories and their subcategories. As categories of incidents or data emerge, the researcher begins thinking in terms of properties of the category: its dimensions, its relationship to other categories, and the conditions under which it is pronounced or minimized. This process includes a continual returning to the data until the categories are theoretically saturated.

Selective coding can be described as the process of integration of categories that have been developed to form the initial theoretical framework. The researcher has to decide whether a conceptual category reflects a significant process, relationships, event, or issue. Selective coding continues until the categories the researcher is developing are exhausted. When the researcher is satisfied that the theory is satisfactorily integrated, the theory is presented, either in a discussion form or as a set of propositions. The emerging theory enables the researcher to select comparison groups on the basis of their theoretical relevance. The researcher samples whatever groups or events will provide the relevant material for the category. Hence, the researcher actively shapes the research process. The researcher is throughout active in collecting theoretically relevant data as he or she identifies the central variables of the emerging theory. As a result, selective coding has both deductive and inductive aspects to it. The conceptual framework developed from the conceptual categories is tested by collecting data that will provide support (or not) the framework hypotheses.

In the following sections, we first expound how we collected and analysed data based on the grounded theory approach using an open coding process. Thereafter, we present an overview of data sources (i.e. sessions) and an account of the meetings held. Then we discuss the data analysis and outcomes. Thereafter, we describe the Technical Acceptance Model (TAM), a model that was used to guide our assumption on acceptance of GSS. Finally we will describe an input-process-outcome model [Nunamaker et al. 1991] that will be
used as the basis to discuss the cross-cultural and environmental context variables in chapter 4.

3.3 Data Collection and Analysis

3.3.1 Sources of data

During the field setting, we collected data using various qualitative and quantitative techniques as outlined in chapter 1. It was anticipated that the combined use of the techniques, (1) would counterbalance their respective weaknesses and strengths, and (2) support the creation of a rich representation of reality. We used both open and semi-structured approaches to interview participants and meeting owners before, during and after electronic meetings. The electronic logs of the meetings were also studied. In addition, participants filled in satisfaction questionnaires after each meeting, consisting of open questions and questions on a 5 point Likert scale [Briggs and Vreede 1997]. These sources were augmented by our own observations during the group meetings and other interactions with the stakeholders involved. These observations concerned subjective interpretations of events. This subjectivity is often pointed out as a disadvantage of qualitative approaches. One way to counterbalance researcher bias is to use various data collection techniques, as we did in this study. Another way is to use research teams to collect and analyse the data [Hartley 1994]. Reduced researcher bias can then be sought in combining the subjective interpretations of different observers [Churchman 1971]. In our study, several observers kept notes. Comparison resulted in additional insights.

In general, data collection activities may be guided by using relevant existing theories; however, by using the grounded theory approach, we avoided using pre-structured data collection efforts derived from using existing theories such as the cultural theories of Hofstede [1980]. Having too much a priori theoretical guidance can block a researcher from seeing what is really significant and what is not [Strauss and Corbin 1990]. Using this approach we avoided a standard way of thinking about the phenomenon observed. We wanted to experience the unique reality of applying GSS in Tanzania unconfined by a certain theory. We followed what we may call a ‘acquisition’ approach, a systematic revelation of deep reality, to probe beneath the surface of data. That is, we did not fish in muddy depths for the meaning; rather, we attempted to purify the depths so that the self-evident truth emerged. In this way, we remained open to the data and what the data tells us.
3.3.2 Data analysis

The specific technique we used for analysing the collected data was open coding [Strauss and Corbin 1990]. This means that we closely examined all collected data, broke them into discrete parts, and labelled these parts. Comparing these labelled parts (called "concepts") for similarities and differences, they could be grouped to the extent that they seemed to address the same phenomenon. In the end, a number of categories could be identified, which eventually represented the main constructs of the theory that emerged.

3.3.3 Roles of various stakeholders

We can define the roles of the different persons mentioned in our study as follows [Herik 1998]:

- **The problem/meeting owner**: consists of one or more persons from the organisation who initiates and organises a GSS meeting.
- **Researcher**: The researcher investigates and evaluates GSS meetings. For action research, he helps to prepare the agenda, assist participants to use the technology, analyse intermediary results
- **Facilitator**: The person who chairs the GSS meeting and guides participants through the prepared agenda.
- **Participant**: a stakeholder who participates in the meeting and contributes his or her ideas, comments, and opinion on the meeting issue.

Some roles were performed by one person. In our action research, the facilitator is often the same person as a researcher. The problem owner is often one of the participants as well.

Our role in the study was an active one as an action researcher, see e.g. [Galliers 1991; Zuber-Skerritt 1991]. We acted as a facilitator for the GSS meetings. This role covered various activities. We helped the meeting owners to prepare an agenda. We trained the participants in using the technology. We operated the master console, i.e. we acted as technographers, and we moderated the meetings. Finally, we carried out some post-meeting activities, such as preparing reports, data analysis and interpretation, as and when desired.

3.4 Summary of meetings held

During the first phase of the study in Tanzania, in total 8 GSS sessions were organised. Table 3-1 summarises the background information on these meetings.

To provide a context for the interpretations that we will present in section 3.5, we will explore further our experiences in relation to these meetings. The 8 sessions held in Tanzania covered a variety of public, private and university
groups that addressed a number of strategic and operational issues. Only one session among these focused on a national issue that of reviewing the capacity building portfolio of Tanzania. The objective of the meeting was to gain insight into the causes of problems frustrating capacity building efforts in Tanzania and to identify a prioritised list to handle the most important problems. The session included a variety of stakeholders (14) holding different positions in the government, the private sector, and the World Bank.

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Country</th>
<th>Length</th>
<th>Group size</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tanzania</td>
<td>0.5</td>
<td>14</td>
<td>To identify and prioritise income generation opportunities for a university department.</td>
</tr>
<tr>
<td>2</td>
<td>Tanzania</td>
<td>0.5</td>
<td>5</td>
<td>To take a decision on the migration path for a large computer system in a financial organisation.</td>
</tr>
<tr>
<td>3</td>
<td>Tanzania</td>
<td>0.5</td>
<td>12</td>
<td>To identify and prioritise a number of strategies to increase investment income for a financial organisation.</td>
</tr>
<tr>
<td>4</td>
<td>Tanzania</td>
<td>0.5</td>
<td>12</td>
<td>To evaluate and re-focus the existing training project portfolio for a financial organisation.</td>
</tr>
<tr>
<td>5</td>
<td>Tanzania</td>
<td>0.5</td>
<td>5</td>
<td>To plan the implementation of a large computer system in a client organisation.</td>
</tr>
<tr>
<td>6</td>
<td>Tanzania</td>
<td>0.5</td>
<td>5</td>
<td>To take a decision on the adoption of a costing method for an organisation in the food industry sector.</td>
</tr>
<tr>
<td>7</td>
<td>Tanzania</td>
<td>0.5</td>
<td>5</td>
<td>Identification and prioritisation of income generation opportunities for an educational institution.</td>
</tr>
<tr>
<td>8</td>
<td>Tanzania</td>
<td>1</td>
<td>14</td>
<td>To evaluate the World Bank capacity building project portfolio in Tanzania.</td>
</tr>
</tbody>
</table>

*In days*

**Table 3-1 The first set of meetings in which GSS were employed in Tanzania.**

The general procedure that we followed in most of the meetings was first to make formal introductions and explain the objective of the meeting. Participants were then introduced to the GSS and how to use it in the brainstorming exercise. The exercise normally lasted not more than 20 minutes. In most cases easy application instruction techniques were introduced to participants through the use of simple modules such as Group Outliner or Categorizer followed by the Vote tool.

Depending on the structure of the meetings, what followed was either building on a list of predefined ideas or generating new ideas using Group Outliner or Categorizer. Thereafter, groups cleaned up the list to eliminate redundancy by merging similar ideas. During the cleaning exercise, if even one person objected to a proposed merger it was not carried out, even if no reasons were given. We followed this procedure to show the participants that they owned and controlled the process. We felt it would be harmful to the process if they got the impression
that outside facilitators exercised influence on the agenda. This procedure is a bit different from the experiences with Western groups that have more discussion on merging topics. If someone disagrees with merging, he or she is expected to provide the rest of group with arguments which can, and often will, be challenged. Eventually the cleaned list was exported to the voting tool where the groups prioritised it for further deliberations. Again, depending on how the meeting was organised, oral discussion was encouraged where and when it was desirable. At the end of every meeting, a report was produced and handed over to the meeting owner.

3.5 Observations

Our assumption was that to enhance the use of GSS in capacity building processes, GSS have to be adopted by the stakeholders involved in capacity building exercises. The data we collected was analysed using the grounded theory techniques described above. During data analysis, a number of concept categories emerged. These factors were identified by comparing data and observations to results and insights from previous research such as management in Africa in general [Kiggundu 1988; Nath & Sadhu 1988], adoption and diffusion of information technology in different countries [Straub 1994].

![Diagram](image)

*Figure 3-1 Factors influencing the application of GSS in Africa*

From our data, five factors emerged that appeared to influence the acceptance of the GSS technology by the African participants. We, however, wish to point out that we did not intend to determine the relationship between contextual factors or the impact of the acceptance of GSS on either of the factors because it was
not the objective of this study. As we have pointed earlier, we used grounded approach that provided data with limited relationship of the contextual factors. The resulting theory, therefore, on the acceptance of GSS is depicted in figure 3-1. The data suggested that GSS acceptance would be stimulated by computer literacy, endorsement of GSS by top management and satisfaction with use. Whereas, referent power issues with preference for verbal communication appeared to have a negative impact on the acceptance of the technology.

3.5.1 Computer Literacy

In developed countries, information technology has been used to effect (positive) changes in organisations [Davis 1990]. It is used to alter relationships in organisations, change jobs, effect organisations' power, and modify job social interaction.

In contrast, the technology infrastructure in Africa is too underdeveloped to effect conceivable changes to many organisations [see e.g. Odedra et al. 1993]. The general level of training in technology and educated personnel is relatively very low. Higher education systems follow traditional education topics with negligible exposure to new technology e.g. computer literacy. In Tanzania, for example, the introduction of new technologies has resulted in some problems in the past due to the relatively low number of computers and a lack of computer skills [Baker 1993; Mgaya 1994; Mgaya and Twaakyondo 1997]. The first departments to be most affected were finance and accounting followed by personnel. The introduction of computerised personnel, payroll and accounting packages in many organisations created some problems as a result of anxiety regarding job displacement or retrenchment on behalf of some clerical workers.

With regard to electronic meetings, it is argued that people being familiar with using computers will benefit from the successful adoption of GSS. These people adapt easily to the GSS technology processes and will have increased speed in contributing to the meeting activities due to experience with using a keyboard. People lacking basic skills will have a hard time contributing to the electronic meeting activities, also, too much technology may even scare meeting participants.

From our experience, organisations in Africa do not easily adapt to new technology that requires new procedures. Many organisations have old procedures either due to a poor technological infrastructure or the fear of job replacement or retrenchment when new procedures are introduced. It was, therefore, expected that the level of computer literacy in Africa would affect the successful adoption of GSS.
Results
The Tanzanian sessions involved groups that were familiar with computers and
groups that had never had to type. Each participant had a dedicated workstation.
Very few had mouse experience. In all sessions, participants needed to be
trained to use the GSS for at least 20 minutes before starting the real session.
During the course of sessions the facilitators and other assistants helped people
with any difficulty that they had, but as many participants became more familiar
with the system, minimal assistance was needed. More often, neighbouring
participants helped each other. Generally, participants used short descriptions of
their ideas that focused on quality and seemed not to affect either the discussion
or the participants’ satisfaction with the meeting. Furthermore, based on the
feedback of some of the participants it appeared that the ability to communicate
in parallel compensated for lack of typing skills.

Based on our observations and feedback from participants, the facilitators’ roles
to strike the balance between groups with different keyboard skills and the
ability of participants to communicate in parallel appeared to counterbalance
computer literacy effects, and hence did not hinder the use of GSS in Tanzania.

3.5.2 Endorsement by Top Management

Most African organisational structures and management have been inherited
from the colonial systems (e.g. French, British, German, etc.); however, during
the post-independence era such systems have been, to some extent, distorted or
modified due to, among other things, the influences of two major political
systems based on capitalist (Western Block) and socialist (Eastern Block) modes
of production. The continued military upheavals and excessive decline of
economies in these countries have also contributed significantly to these
changes. As a result, there are either some strong hierarchical relationships or
conservatism, or a mixture of structures in an African culture and management
situation, for example, regarding decision making processes and the adoption of
technologies [Kiggundu 1988; Nath & Sadhu 1988].

From our own experience and based on a cross-cultural study [Davison and
Jordan 1998] there are various factors that may lead management to resist the
introduction of GSS in Africa. Some of these include fear of eroding or losing
their power, lack of vision to introduce new IT, and lack of or the unwillingness
of IT personnel to promote and support GSS. Furthermore, justification of
cost/benefits would be hard if management is not committed to the adoption of
GSS. It was anticipated that if the top management does not support the
application of the new technology then the subordinates probably would be
afraid to use it.
The support of top management will be needed for the successful application of GSS in capacity building processes. Before introducing GSS in Tanzania, we were sceptical about the perceptions and attitudes of top management towards the usefulness and acceptance of GSS.

Results
During the meetings that were organised, numerous top officials and top managers participated. The meetings included, for example, department heads, company directors and CEOs, project managers and co-ordinators, and deputy principal secretaries and commissioners from ministries. All but one of these “top” participants, including the chairmen of the meetings, openly endorsed using the technology.

At the meetings, hierarchical issues were clearly present. It was, for example, very noticeable that the oral discussions were very carefully carried out. Participants did not seem to address each other directly. They kept focusing on the facilitator. If there was criticism it was most often addressed to the facilitator. We believe that this was mainly to avoid the chance of facing the owner of the idea that was challenged. The electronic discussions, however, showed a different picture. Reactions to ideas were very straightforward, very much to the point. Nevertheless, nobody seemed to become or feel personally insulted.

Our interaction with, and observations of, key participants and meeting owners suggested that they liked the GSS technology very much. One meeting owner in Tanzania stated that he was very happy with the potential of the system and would definitely consider using it again (which happened at a later stage). Other chairmen conveyed similar sentiments. The only unsatisfied chairman also came from a Tanzanian meeting. This was found to be due to a discrepancy between his own meeting objective and that of the group. The chairman prepared a decision on a key issue and wanted a short, cursory electronic discussion to have it approved, which would be normal in a traditional meeting; however, the group seized the opportunity during the electronic discussion. They felt the approach was wrong, they were not involved earlier on, and the decision outcome was wrong, their preferences were not accommodated. The ensuing electronic and verbal discussions helped the group and the chairman to reach consensus in this matter. Despite the chairman’s dissatisfaction with the meeting, he still intended to have more electronic meetings.

We propose that there are two main reasons that explain why the top managers and other high level participants accepted the technology so well:
1. It may be that the top managers were happy that they did get feedback on their ideas. Even if feedback was critical, it did not matter, because they did
not have to take it personally. One chairman remarked that it was nice that one could be open toward every idea.

2. It seemed that the top managers quickly recognised the potential danger of the technology to their way of running a meeting, but they also realised how to handle that danger. A few examples illustrate this. In one meeting, only the chairman of the meeting initiated the deletion of ideas; the other participants never made any suggestions in this respect. Another meeting demonstrated an interesting power play by the chairman. Right before the group was ready to vote on a list of strategic issues, the chairman suggested deleting two of them, because he "couldn't see how these two ideas addressed the issue." Apparently, he wanted to prevent the group from selecting them. Of course, nobody in the meeting was going to object at this point. A final example comes from a meeting in which each issue in a list was discussed verbally after being submitted electronically. When the group was ready to address one of the issues, a chief executive pointed out "I wrote this..." and went on to elaborate. After that there was no further discussion on the issue.

In conclusion, given the ease with which top managers and other high officials can determine a course of action in the organisations we visited, it can be expected that they would not want to surrender that power. This would especially be true if hidden agendas are in play and they want to push things through their way. Although GSS may promote more open exploration and decision making, allowing all participants to reflect on proposals and carefully investigate issues from multiple perspectives, most top managers endorsed the GSS technology without notice able hesitation and were eager to continue to use it for other issues; however, some managers quickly became quite sly at still being able to steer the course of the discussions and activities.

3.5.3 Referent Power

There are indications that in African organisations referent power is rather common [World Bank 1996]. Usually, leadership revolves around one person or a small group of people. May be this has been adopted from the traditions of clan and family where the chief or father, respectively, dominates everything. Based on this type of leadership, it is not uncommon to find some people at certain positions in organisations as a result of who they know rather than what they know, their merit or skills. This means that the people who are in power do not always have the necessary capabilities for the position they are holding and they are mainly focused on maintaining or improving their positions. In this environment, it seems that decisions are not always based on information, or even rational interests. More often, they are based on personal relations, on favours that have to be returned, on a fear of displeasing someone [Kiggundu
1988]. In such an environment, participation in meetings is normally position oriented.

The prevalence of this phenomenon in Africa leads to erosion of the available capacity in a country, because it becomes more important to focus on establishing relations with powerbrokers than with colleagues from own or other organisations to handle a problem [World Bank 1996]. When using GSS to support the decision making process it is assumed that all people participate and that they also participate anonymously without looking at their own positions, and as such referent power could undermine the successful application of GSS in Africa. It could be also possible, however, that GSS supported meetings may be rather welcomed because they could decrease the influence of personalisation of power in meetings and decision making processes.

Results
Although there are indications that this phenomenon is rather common [World Bank 1996], we did not observe many events that indicated referent power issues during the GSS meetings. In the electronic discussions, we observed that the level of criticism and open communication on various issues and submitted ideas did not suggest that participants were too careful or unwilling to share information. Even in meetings where high government or organisational officials such as Permanent Secretaries or CEOs were present we did not witness any overt expressions of concern regarding the need to protect their power. There was one situation in a meeting where a referent power issue surfaced. The chairman of this group was not able to attend a meeting and appointed his assistant to assume that role. (This was not the meeting mentioned earlier where the chairman cancelled his participation at the last minute). Feedback suggested that the rest of the group did not completely accept the assistant because he was still very junior and only had a BSc whereas all others had an MSc. Only when the real chairman was there, was the vice-chairman allowed to function. During the GSS meeting, the group electronically turned down and argued extensively about everything the assistant suggested (orally) in the meeting.

Still, based on some informal post meeting interviews with participants, and discussions with various other Tanzanians, we believe GSS may not be easily accepted in situations where issues of referent power are abundant. Interviewees suggested that people are mostly concerned about maintaining or improving their positions and the power that comes with them. They may be unwilling to share information in GSS meetings for fear of upsetting relations that have to be nurtured. The anonymity of GSS facilitated communication prevents the identification of participants that “do favours”. Therefore, in view of the above
we can only make a tentative conclusion with respect to the negative effect that referent power may have on the acceptance of GSS.

3.5.4 Oral communication preference

Communication is a complex phenomenon that can be considered from different perspectives and at different levels [Reijswoud 1996]. For example, in the area of informatics, communication implies the exchange of information for the purpose of co-ordination [Vreede 1995]. Communication can be verbal or non-verbal. Verbal communication consists of oral and written messages; however as Davison [1995] discusses, in verbal communication, group members can also avail themselves of a wide range of paralinguistic communication techniques, such as accent, tone of voice, loudness, speed, eloquence, etc. [Cook and Lalljee 1972; McGrath 1984]. Group members may also use diagrams, graphs, flow charts, etc. to illustrate their communications. Non-verbal communication may be in a form of virtually 'attractive' techniques such as gestures, signals, visual orientation, facial expression, pictures, arts, music, etc.[Rutter et al. 1978; Sprague and Mcnulin 1986]. The appropriate manipulation of these features can significantly enhance the ability of one or more group members to influence the course of a meeting and so the outcome.

The ways people communicate vary according to the culture and level of technological development [Straub 1994]. In some countries, like western countries, email and fax are very popular, while in African countries, like Tanzania, face-to-face or oral communication is predominant. From our experience, during face-to-face meetings in Africa, members use authority, status structure, and power to help express ideas. These three factors are limited in GSS (through anonymity) and this helps to generate a free flow of ideas. Moreover, most top executives, especially men, do not prefer written communication, particularly where some basic typing skills are needed, for example, the use of a keyboard, because of a lack of proficiency, and traditionally typing is regarded as a secretarial skill and is for women. This means that because the common form of interaction is not written communication but oral communication, there could be problems concerning the use of technologies primarily focused on written communication. It is argued that when people are not used to that kind of communication [Straub 1994] their participation and hence also their satisfaction will be less.

In African culture verbal interactions are very important. During meetings, the physical presence and the way people present/express themselves matters very much to influence decision making. In this respect, the preference for oral communication could override the acceptance and adoption of GSS.
Results
The amount of oral communication varied in the Tanzanian meetings: In some meetings the technology was used about two thirds of the time, in other meetings as little as one third of the time. Participants spent most of the oral discussion on clarifying ideas, on cleaning up lists, and on voting results.

It was obvious in all meetings that most of the participants had a strong desire to discuss issues orally, especially after identifying the issues electronically. The arguments made electronically before the vote were exchanged again orally. Most participants stated they were impressed by the technology's capability to resolve conflicts by voting, but they also appeared to pursue oral consensus.

Some participants remarked that the technology forces people to present their ideas in writing. For some people this may prove to be an extra threshold. They may find it easier to explain something while talking. Others may lack the skills to write clearly; however, other participants remarked that this effect was counterbalanced by the fact that some people are better at writing than at talking.

From our observations we propose that the electronic communication was especially appreciated in meetings where there was disagreement on issues. Communicating electronically (anonymously) allowed the participants to get on with the discussion right away. Participants did not have to be overly careful as they were during oral discussions (see also the discussion on top management endorsement). They immediately presented their own position and explored the positions of their colleagues.

In conclusion, it appeared that oral communication was an important aspect for the participants to feel comfortable with the meeting setting and the technology. At the same time, electronic communication was appreciated and accepted easily, especially to explore consensus on issues and discuss issues on which disagreement existed. Finding the appropriate balance between oral and electronic communication therefore seems to be key.

3.5.5 Satisfaction with use

User satisfaction is a measure that represents the recipient's appreciation of the technology, meeting processes, and use of the output of GSS. In other words, it refers to the positive affective orientation that individuals have towards GSS or how good they feel about it [Ishman 1996]. User satisfaction measure for GSS has been used in several studies [see e.g. Pervan 1994; Briggs and Vreede 1997]. The manner in which stakeholders may perceive the GSS technology and processes is key to the acceptance or rejection of the technology by group members. Dissatisfied GSS meeting participants are less likely to accept the
technology during the meeting or future meetings [Briggs and Vreede 1997]. Meeting participants may reject the technology, even if it is robust, if they become dissatisfied with the processes provided by the facilitator. User satisfaction provides a measure that help to indicate the likelihood of the acceptance and adoption of GSS. Given the discussion on the previous four factors, African participants may have various reasons to be dissatisfied with GSS meetings and ultimately not to accept GSS.

**Results**

Our data suggested that on the whole, the participants were very satisfied with the meeting process, the technology, and the outcomes of the meetings. Their feedback suggested that this was because they felt they could now meaningfully function in the meetings. They identified the system's anonymity as the key asset because it gave them the ability to express their opinions on an idea without having to say it up front. A number of observations and feedback from participants substantiates their satisfaction. In the meetings, participants filled out satisfaction questionnaires [Briggs and Vreede 1997] that comprise the following quantitative attributes: *interest accommodation, product value, product satisfaction, and process satisfaction*. A representative summary of the results is depicted in table 3-4. This data confirms the observations we made and personal feedback from interviewees.

<table>
<thead>
<tr>
<th>Question</th>
<th>Avg</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Interest Accommodation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Today, my interests were accommodated</td>
<td>4.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Thinking about what I needed from this meeting I got it</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td>In this meeting I personally gained</td>
<td>4.4</td>
<td>0.8</td>
</tr>
<tr>
<td>The outcome of today's activities meets my personal needs</td>
<td>3.9</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>mean 4.1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B. Product Value</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The work we accomplished today was the effort</td>
<td>4.5</td>
<td>0.7</td>
</tr>
<tr>
<td>The results of this meeting are worth the resources it cost to produce</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td>them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The value of the meeting's outcomes justifies our efforts</td>
<td>4.1</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>mean 4.3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C. Product Satisfaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The product of this meeting met my expectations</td>
<td>4.2</td>
<td>0.8</td>
</tr>
<tr>
<td>The outcome of today's activities meets the meeting's objectives</td>
<td>4.1</td>
<td>0.9</td>
</tr>
<tr>
<td>With respect to the outcome of today's meeting, I have no complaints at</td>
<td>4.2</td>
<td>0.9</td>
</tr>
<tr>
<td>all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The outcome of today's meeting is satisfactory</td>
<td>4.2</td>
<td>0.7</td>
</tr>
<tr>
<td>The results of today's meeting are adequate</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>mean 4.2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D. Process Satisfaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was satisfied with the way we did things today to achieve our goals</td>
<td>4.4</td>
<td>0.8</td>
</tr>
<tr>
<td>The meeting methods we used today met my expectations.</td>
<td>4.2</td>
<td>0.8</td>
</tr>
<tr>
<td>Today's meeting process was adequate to meet our goals.</td>
<td>4.0</td>
<td>0.8</td>
</tr>
</tbody>
</table>
How satisfied were you with the work process we used today? 4.2 0.8
The group used its time well, devoting enough attention to the important issues 4.4 0.7
How satisfied are you with the design of the session in the sense that the agenda items followed one another logically? 4.3 0.7

mean 4.2

N=67 participants. All values on a scale of 1 to 5, 5 being most positive.

Table 3-4 Questionnaire results from Tanzania.

Briggs and Vreede [1997] argue that satisfaction of the participants may be evaluated based on: interest accommodation, product value, process satisfaction and product satisfaction. Looking at the summary of the results, we notice that the scores of all the questions on interest accommodation can be characterised as quite high. The aspects of product value and process focus on the worth of the product and process of the meeting, respectively. This aspect underlays the satisfaction of the participant concerning the product and process of the meeting. The more a participant values the product and process of a meeting, the more satisfied he will feel with the product and process, respectively. When we look at the output of the product value and process related questions we can see that the value of the meeting product and process is considered to be high. We can say that the participants were satisfied with both the product and process of the meetings.

In conclusion, our data suggests that participants were very satisfied and that there was a high level of participant acceptance with respect to the use of the GSS technology. Notwithstanding some critical notes, the participants liked the meeting process, the outcomes, and the efficiency of using a GSS. There are also indications that acceptance may go beyond these first meetings. This was especially the case during the meetings. First, a number of stakeholders expressed their satisfaction by scheduling a number of additional meetings on different topics soon after they got acquainted with the technology. Other groups were planning to use GSS in a more long-term fashion to support strategy formulation and restructuring of their organisation. Second, there was interest in acquiring the technology on a permanent basis. Individual participants in the meeting expressed a desire to have the technology and methods implemented in their organisation.

3.6 Technology Acceptance Model (TAM)

Our assumption was that to enhance the use of GSS in capacity building processes, GSS have to be adopted by the stakeholders involved in capacity building exercises. Management information systems researchers often study the acceptance and adoption issues by use of the Technology Acceptance Model (TAM) [Straub et al. 1997], see figure 3-2. After analysing our observations,
Further insight was pursued by positioning our findings in the context of the Technology Acceptance Model (TAM) [Davis et al. 1989]. The five factors presented in figure 3-1 represent 'external factors' construct in TAM; 'GSS Acceptance' represents an abstraction of the other constructs in TAM. These external factors are important in the study of adoption of technology because they provide information about predictive acceptance [Straub et al. 1997] in a local setting that does not depend on the pre-determined theories.

TAM posits that user's behaviour intention and attitude towards using the technology can predict the actual use and acceptance of the same depending on its perceived ease-of-use and usefulness [Davis et al, 1989]. TAM was derived by Davis [1986] from a general social psychology model, the Theory of Reasoned Action [Fishbein and Ajzen 1975]. TAM employs the constructs of “perceived usefulness” and “perceived ease of use” to determine user intent to utilise an information system. When developing TAM, Davis chose the constructs of perceived usefulness and perceived ease of use because of the body of literature identifying them as determinants of attitudes towards, and usage of, information systems. Davis defined perceived usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance” and perceived ease of use as “the degree to which a person believes that using a particular system would be free of effort.” Studies by Davis [1986, 1989], Davis et al. [1989], and Mathieson [1991] have shown that TAM scores correlate significantly with actual usage of a system; therefore, the constructs of perceived usefulness and perceived ease of use are considered indicators of rejection or acceptance of a system.

![Figure 3-2 The Technology Acceptance Model [after Davis et al. 1989]](image)

Davis argues that usefulness is the most important predictor of use, explaining significantly more variance than ease of use ratings by users. TAM has been widely applied across a number of different application types in both laboratory and field settings [e.g. Mathieson 1991; Adams et al. 1992; Davis 1993; Hartwick and Barki 1994; Taylor and Todd 1995]. TAM, however, is usually
focused on the use of IT over a single longer period of time e.g. email or word processors. If perceived usefulness and perceived ease of use are measured early in the adoption process, it will be possible to diagnose problem areas and take corrective action at that time when risk and expense are lower [Steinber and Riggle 1999].

The Technical Acceptance Model (figure 3-2) is designed to predict IT adoption on a short period of initial contact. TAM also provides an explanatory framework as an aid in identifying reasons why the system under consideration succeeds or fails to win acceptance by end users who are formally introduced or trained in using it [Davis 1986; Davis et al. 1989].

Our study on adoption of GSS involved one-time meetings, lasting at most one day. In other words, the actual GSS use in all meetings was one hundred percent. We could not investigate GSS acceptance and use over a longer period of time. It was not possible to shed light on how the actual use of GSS was influenced by the participants’ behavioural intentions to use GSS. So our study was not constrained by time but on the likelihood that organisations will adopt GSS (refer section 1.2).

**General conclusion**

From a substantive standpoint, the meetings we observed were a success. The participants’ feedback and our observations suggest that useful results were achieved that carried the endorsement of the participants. The meetings in Tanzania also resulted in concrete plans, decisions, and options for further investigations. Based on the above acceptance model, the above findings suggest that there was satisfaction with the technology and the adoption of GSS in Tanzania is to be encouraged.

**3.7 Discussion**

The activities carried out in Phase I represent, as far as we know, the first in-depth analysis of the use of GSS in East and Central Africa and one of the few non Euro-American field studies. Its aim was to give a detailed account of the application of GSS in a number of real Tanzanian groups, and to shed light on some factors that appear to have an impact on the acceptance of a GSS technology that was developed based on a different set of cultural assumptions than those of the participants.

Having gained insight into some of the external factors that appear to have an impact on the acceptance of GSS, it seems worthwhile to study these factors in relation to the cultural background of the research setting. The cultural factors also appear to influence the other factors discussed above. Using other
constructs, such as Hofstede’s [1980, 1991] cultural dimensions, that have been tested and used in other cultural environments different from the African context may be one way of explaining certain behaviour by the groups and individuals studied. For example, what effect does the amount of power distance and uncertainty avoidance have on the endorsement of GSS by managers? To what extent do the various cultural dimensions explain why participants will be less or more satisfied with using the technology? Looking into these cultural aspects may help us better to understand the mechanisms behind GSS acceptance and compare our findings with those in other cultures. In the end, this may lead to the development of theories to improve the application of GSS technology across various cultures.

Another promising way of studying how groups use technology is to examine how GSS use and various situational characteristics may affect a group to produce different outcomes [McGrath and Hollingshead 1994]. Nunamaker et al. [1991] argue that as information technology has the ability profoundly to affect the nature of group work, it becomes dangerous to generalise the outcomes or conclusions from research with non-supported groups to the GSS environment.

3.8 The GSS research model

In view of the above, we introduce the input-process-outcome model [Nunamaker et al. 1991]. The input-process-output model [figure 3-3] hypothesises that process and outcomes depend upon the interaction of four sets of characteristics: context, group, task and GSS.

![Figure 3-3 Research Model for GSS meetings (after Nunamaker et al. 1991)]
The group process and the outcomes consist of mainly dependent variables, while the other elements of the model consist of only independent variables. For this research we considered the variables environment and culture that form the attribute context. These two variables can be seen as a generalisation of the variables which have been identified to influence context attribute. Examples of context variables are shown in table 3-5.

This, however, does not mean that environment and culture do not influence the other attributes of the model. For example, as has been described by Raman and Wei [1992], the decision environment and culture influence the design and use of GSS. This means that both aspects will influence the attribute GSS. In view of this, the model provides an instrument to categorise the variables that are relevant in a meeting supported by GSS. The model may help us to understand and explain further some of the context variables, identified using grounded theory, that may influence the group process and process outcomes on the acceptance and eventual successful application of GSS to enhance capacity building efforts in Tanzania.

| Context Characteristics | Organisational culture in which the group operates e.g. individual incentive and rewards systems; national cultural attributes (e.g. individualism, masculinity) that impact group work processes; industry sector; mode of conducting meetings; how decisions are made; environmental factors that may impact group work processes e.g. level of computer literacy or typing skills |

Table 3-5: Some examples of context aspects

For our study, this model is useful for two reasons [Vreede and Wijk 1997]. First, it is a descriptive model and our study is a descriptive study. Second, it is used as a basis for new GSS research projects in different cultures as discussed above, and it can be used to guide the conduct of research on work groups. Applying the same model in various research projects, the results of these projects can be much more meaningfully compared.

In chapter 4 we further discuss the principal environmental and cultural factors, that are considered to give more insights into the acceptance of GSS [Straub et al. 1997]. All these factors are considered to have an influence on the adoption of GSS in Tanzania.
4. Phase II: Focused in-depth analysis of adoption of GSS in Tanzania

4.1 Introduction

In Phase I of the study we built a first picture of the GSS adoption process in Tanzania. A theory emerged that explains the influence of environmental factors on the adoption process. It was, however, concluded that cross-cultural factors were also interesting to research. During Phase II of the study, we explored further the application of GSS in capacity building activities by groups in Tanzania. Our aim was to confirm and elaborate some of the Phase I findings on environmental factors, and also to find some new insights related to cross-cultural dimensions. Data gathering was more focused on some environmental and cross-cultural factors. We carried out this exploration by looking at the national level of GSS application.

We first describe an overview of GSS meetings held during Phase II of study, the data sources and data analysis. Thereafter, we present data analysis on environmental and cultural factors, followed by concluding remarks.

4.2 Overview of GSS meetings in Tanzania

During Phase II, a total of 25 GSS sessions were conducted within a diverse group of 11 organisations. In addition, two demonstration sessions were held, one for the members of the Tanzanian Parliament and the other for the public attending the Dar es Salaam International Trade Fair 1998 (DITF 1998) (see Appendix 1). A summary of organisations by sector is given in table 4-1.

| Education/training          | 1. Ministry of education (MOE) |
|                            | 2. University of Dar es Salaam (UDSM) |
|                            | 3. College of Business Education (CBE) |
|                            | 4. Institute of Finance Management (IFM), |
|                            | 5. Tanzania School of Journalism (TSJ), |
|                            | 6. National social Welfare Training Institute (NSWTI) |
| Financial/social security  | 1. The World Bank (WB), |
|                            | 2. National Social Security Fund (NSSF) |
| Social welfare             | 1. WAMATA |
| Industrial/Production      | 1. Tanzania Bureau of Standards (TBS) |
|                            | 2. BP Tanzania Ltd. |

*Table 4-1 A summary of organisations involved in Phase II by sector*
Several other organisations were approached but they either did not respond or could not facilitate meetings despite responding. Making appointments with people and getting responses were cumbersome. Whereas a few institutions were very transparent and co-operative, many were most reserved, offering little or no co-operation to the researchers. Generally, Government offices were inaccessible and very bureaucratic. It was easier to get responses from The President’s and Prime Minister’s Offices than from most of the Ministries and public organisations. Journalists in Tanzania equally share this problem when searching for information. The general impression was well summarised by one media reporter: “There is no transparency at all in public offices in this country. You either have personal contacts, or you have to be lucky to get a disgruntled person to give you information, unless of course, it is for the purpose of image building” [The Daily Mail January 06, 1999].

Three approaches were used to establish contact with organisations and hence organise meetings. One, the major approach was for the researchers to contact and visit several organisations. Two, the Office of the Vice Chancellor (UDSM) made official contact with some public institutions, including The President’s and Prime Minister’s Offices. Finally, third parties, for example, Institutions (e.g. WAMATA and TBS), and students were used to establish other contacts and organise meetings.

4.3 Data collection and analysis

4.3.1 Sources of data

At all the research sites, data were collected through a variety of methods: observation, questionnaires, and interviews were used, see section 1.8. During the course of Phase II we focussed data collection to build on insights from Phase I of this study. A questionnaire based on the research instrument designed by [Briggs and Vreede 1997] was used in this research, however, to adapt it for Phase II we added a number of questions focused on environmental factors and cultural dimensions [Appendix 4]. The questionnaire included a series of quantitative as well as open-ended questions on environmental and cultural issues that were the main focus of the research in the Tanzanian context. In addition, during a meeting, an observation instrument [Appendix 5] was used to gather data on the process and the interaction between the participants.

The research methodology followed was that of grounded theory [Glaser and Strauss 1967], with an aim of elaborating a descriptive and exploratory theory of adoption of GSS in capacity building. Following Glaser and Strauss’ [1967] technique of theoretical sampling, organisations were selected for their similarities as well as their differences. Theoretical sampling requires paying
PHASE II: FOCUSED IN-DEPTH ANALYSIS OF ADOPTION OF GSS IN TANZANIA

attention to theoretical relevance and purpose [Pandit 1996]. With respect to relevance, this selection process ensures that the substantive area addressed, here, the adoption and use of GSS, is kept similar. Thus, all organisations covered in this study had not implemented GSS for group work processes, and mandated their use in capacity building activities. In addition, the GSS tools used in all organisations were the same, GroupSystems for Windows.

Differences were sought in organisational conditions, as one of the objectives of the research was to generate a theory applicable to various organisations in the Tanzanian context. As a result, the institutions selected also differed on their organisational dimensions such as industry, location, size, structure and culture. These differences in organisational conditions allowed useful contrasts to be made during data analysis, and these were used to challenge and elaborated on the emerging concepts.

4.3.2 Data analysis

The initial concepts generated during Phase I of our study guided the second phase of research, allowing the process of data collection, coding, and analysis to be more targeted. Data collection, coding, and analysis proceeded iteratively [Glaser and Strauss 1967]. The data were analysed within each organisation as well as across all organisations to detect similarities and compare differences. For the study as a whole, data collection, data ordering, and data analysis were interrelated.

The generated data were examined and the concepts were further organised by an integration theme, selective coding [Strauss and Corbin 1990]. Categories from Phase I were used to inform this process. This iterative examination yielded a set of broad environmental and cultural categories and associated concepts that describe the salient conditions, events, experiences, and consequences associated with the adoption of GSS in capacity building in Tanzania. The observations and outcomes of the analysis associated with each of the categories are described in the following sections.

4.4 Environmental (external) Factors

The five environmental categories that emerged in the grounded theory (figure 3-1) during phase I of the research (chapter 3) seemed to be the major, equally relevant, factors for further analysis on the adoption of GSS in Tanzania. These factors are endorsement by top management, computer literacy, referent power, satisfaction with use, and oral communication preference. Other factors that emerged during Phase II are centralised decision making, computer operating and typing skills. Besides the observations made during the meetings, we
present the results of an analysis of data from qualitative and quantitative sources.

4.4.1 Endorsement by top management

The top leadership in the Tanzanian government and organisations is considered to be rather conservative and bureaucratic as described in section 4.2. This attitude could have a negative impact on the successful introduction of new technologies and decision making processes. It could be possible that top management in Tanzania might not support the application of GSS to enhance meeting processes. During phase I of the study, we found that most top managers endorsed the use of GSS and were eager to continue using it in other sessions. To introduce GSS successfully it is necessary to get support from top management. You have to have their consent for anything that involves their group.

We had various observations and opinions from the field. We noted that the introduction of GSS may prove to be difficult, as a large part of the top management tends to depend on advise from subordinates, particularly the computer department personnel, to approve the demonstration and introduction of GSS to support meetings in their organisations and, in contrast to top managers, most of the computer personnel were reluctant to endorse and, very unsupportive regarding the introduction of GSS. This lack of willingness on behalf of IT personnel to promote and support GSS may frustrate the adoption process. This observation was also noted during Phase I of this study, to be among the reasons that may influence top management not to endorse the use of GSS.

Following bureaucratic delays in getting meetings organised, sometimes a meeting did not go ahead, someone wanted it, but managers stopped it. The management of many organisations where electronic meetings were ultimately organised and conducted did not seem to be threatened by or reluctant to introduce GSS. Many chief executives or senior officials (meeting owners) were quite enthusiastic about the use of innovative technology at their organisations. They sometimes helped to organise meetings and participated very seriously. They were very tolerant and ensured that meetings were successful even if there were some mishaps. For example, one meeting was re-scheduled to the next day at TBS because the researchers arrived late due to transport problems. Others even initiated the meetings, for example, the management of BP Tanzania Ltd and WAMATA. Almost all top management supported the meetings and the introduction of the technology in their organisations and extended invitations for more such meetings. Consequently, more meetings were conducted in their
institutions, for example, at BP Tanzania Ltd (2), IFM (3), WAMATA (5), TBS (2), TSJ (2), NSWTI (2), and CBE (4) [see Appendix 1].
The results from the questionnaire (Appendix 3) also show that people tend to think that management favour electronic meetings over traditional meetings, and they will endorse GSS in their organisations (table 4-2). The agreement that management will endorse the use of GSS is, however, much stronger compared to the preference for electronic over traditional meetings. The low standard deviations support this agreement. We note that there was low scores on management preference for electronic meetings over traditional in two sessions (27 & 29). This indicates people may feel that management would prefer traditional over electronic meetings. The following comment from one participant supports this observation: “Very good. There is democracy and the administration (especially dictators) can not take revenge.” Yet, in the same sessions, there was almost total agreement that management may endorse the use of GSS. For example, we note the following comment from one of the participants: “We (the organization/institute) may think of buying the equipment. The technology shown to us has drastically helped us be aware of the new/advanced tech; we may also remark on it in our teaching.” Participants in each of the sessions consisted of management and/or other staff members. It appears, therefore, that people feel that management in these organisations may endorse the use of GSS for other purposes than for meetings that the technology may undermine their managerial status or authority.

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Table 4-2 Endorsement by top management

Whereas, there was general support for the introduction of GSS in many organisations, some managers expected this new system to automatically bring solutions to their problems. This fact shows that they did not seem to really understand the limitations of the system. They expected the GSS to come up with solutions and that answers would show up on the screen as soon as they typed in their problem. For example, one manager said, “It was just another brainstorming session and nothing new came out”. This misunderstanding could be a reason for some managers not to endorse the technology.
In efforts to sensitise more people, particularly, top government officials, to the application of GSS, the University of Dar es Salaam management facilitated two major demonstrations using a mobile GDR. The first one was at the Dar es Salaam International Trade Fair 1998 (7 days) where the Vice President and some Ministers were introduced to the system. The second demonstration took place at the Parliament (3 days) where the Prime Minister, the Attorney General, some Ministers and members of Parliament were introduced to the system.

*Figure 4-1 The Vice President (Left) and Prime Minister (Right) being introduced to GSS*

The attributes of anonymity, parallel input and group memory seemed to generate more interest, satisfaction and sometimes surprises. For example, during the Parliament exhibition we noticed a look of surprise from the Prime Minister after he was told "The system is very fast in generating ideas, for instance, if you have 6 participants each with a workstation, within one minute you may have 6 ideas!...". At this point he extended his hand for a handshake and moved on to another exhibitor vividly satisfied.

Some Ministers and members of Parliament visited the site more than once and were very curious about the technology, its cost and how it was imported into the country. One Minister, for example, who was remarkably excited about the new technology said, "I will come for this later." Indeed after going through with other exhibitors, he came back for further briefing and on-hand practice. Following these demonstrations, the Commissioner of the Ministry of Education and Culture initiated some sessions in the ministry. Some demonstrations were conducted at the Ministry of Science, Technology and Higher Education, and invitations were extended for GSS meetings.

Some highly placed officials, however, had reservations about the anonymity attribute especially for real issues that are sensitive, arguing that it may encourage speculations or backbiting, which may be dangerous to the government. Another reservation was that government officials or chief
executives in some organisations were in favour of indigenous Tanzanians over foreigners in running the system and facilitating meetings. Two main reasons were given for this preference. First, it was argued that there are some sensitive meetings that foreigners may not be allowed to facilitate. Second, involvement of non-foreign experts would encourage local experts to be innovative in the project, which in essence forms part of capacity building [World Bank 1996]. In this regard, the involvement of foreign experts in the project may discourage more groups, particularly, the government from adopting the technology.

**Conclusions**

Despite a few reservations (pointed out above) made by some high placed officials, in general, directors and higher ranked managers did not seem to be scared of or intimidated by the introduction of the new system. Instead they were very enthusiastic and supportive. They were pleased with the attributes of anonymity, parallel input and group memory. Although most top management are very supportive of the introduction of GSS and would prefer and endorse the use of the technology in Tanzania, the conservatism and bureaucracy that prevail in many organisations is a hurdle to the adoption of GSS.

**4.4.2 Centralised decision making culture**

During Phase I of the study, the centralised decision making culture was highlighted under the endorsement by top management attribute. Centralised decision making is usually associated with tall hierarchies in organisations. There is no empowerment of decision making to lower levels of management. We feel that although top management may support the use of the technology, the usually long channels of communication delay the decision processes. During Phase II of this study we observed that this attribute appeared to have a significant influence the adoption process. We decided to pursue further study of it as an independent variable.

During our study we observed that there were very long channels of communication before a decision was made to allow GSS meetings to take place in many organisations. Different people had to be involved or consulted before top management made an ultimate decision. One prominent government institution dealing with environmental issues, for example, had to send a consultant to the University to enquire about the technology after receiving our formal request to conduct a GSS meeting. An intriguing case concerns another government law-making body whereby the letter addressed to it was found at the Ministry of Finance waiting for recommendation. It was not clear why this letter was re-directed to the ministry without the knowledge or consent of the CEO of the former institution. Unfortunately, both institutions never replied to our request. Some meetings failed to take place because some CEOs insisted that
they wanted to participate but could not be filled into the schedule. In some
cases there was a communication breakdown in the decision processes. Top
management failed to make decisions to endorse meetings because they did not
get prompt upward feedback from lower levels of management. These
observations, however, do not indicate that centralised decision making may
impact the adoption of GSS in a negative way, rather they show that centralised
decision making may slow the process.

In organisation where meetings were organised, equal participation seemed to
influence decision making. There were no indications of any influence of
centralised decision making. In many sessions there appeared to be no real
chairman or a higher ranked person who wanted to act as a chairman amongst
the participants. Participants seemed to be comfortable in meetings without a
chairman, especially during the merging exercises and oral discussions to
support their ideas. They were quite satisfied with the role of the facilitator as a
moderator of the meeting. This could be explained in the following ways:
Participants feel that they can express and give their opinion on sensitive issues
more freely without fear, also nobody wants to play a ‘leading’ role when it is
not determined by formal positions. Many sessions owners or chief executives
(if present) showed no intention to chair the meetings, they preferred to keep a
low profile sharing discussion with other participants, leaving the facilitator to
moderate the meeting. They did not seem to feel threatened by the contributions
from other participants whether they were anonymous or oral.

In sessions where there were rank differences, some lower ranked participants
did not really feel free to contribute or give their opinions about some issues
during non-electronic activities, for example, ideas that had to be merged in the
list. They just nodded or moaned if they agreed or disagreed on something.
Some higher ranked managers, however, would somehow avoid sensitive issues.
When it came to make a decision about these issues it seemed that they would
rather not consider opinions from other lower ranked people. We experienced
one case where the session owner tried to steer the process by expressing her
opinion every time during cleaning up the list of ideas generated so that the
group could not select sensitive issues such as the existence of an ethnic
(tribalism) problem in the organisation; however, she did not have much effect
because the group did not agree with her. Even the executive director of the
institution disagreed with her openly, and based on the reaction of the rest of the
group, it could be observed that the group agreed with the director and stood by
their choice.

In general, participants were also quite happy with the anonymity feature
because they could express themselves freely irrespective of their positions. The
results presented in table 4-3 support the contention that power is evenly

85
distributed during GSS meetings. The low standard deviations indicate that the variation of mean scores between groups is insignificant.

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**Table 4-3 Centralised decision making culture**

**Conclusions**

The observations and results show that ideas were freely entered even if there were rank differences in some sessions. People think that influence is equally distributed over participants in a GSS meeting. The use of GSS for decision making or meetings creates a more equal distribution of influence. People desire equality and not dominating individuals (e.g. chairmen) in meetings. There is no indication that location of decision power in Tanzania may influence the use of GSS negatively. Rather, an equal distribution of power during meetings could lead to the broad acceptance of GSS. This, however, depends on whether the centralised decision-makers endorse the technology or not.

**4.4.3 Computer literacy**

Generally, computer literacy in Tanzania is very low. Many people are not familiar with computer technology [see for example Baker 1993]. The World Bank Report also shows that access rate to personal computers in Tanzania is 1.6 (Pcs) per 1,000 people [Daily Mail May 03 1999]. During Phase I of our study it was expected that computer illiteracy might affect the successful application of GSS technology. The results show that computer illiteracy, in general, did not hinder the use of GSS in Tanzania. We further pursued our field study in different organisations. Many groups were quite diverse in computer literacy. We observed that, the experience regarding working with computers varied within and between groups. We may note, however, that there are two main separate issues on computer literacy that were the main concern to some participants as one participant noted, “Speed and knowledge of computer is important to enhance effective participation in a GSS meeting”. These distinct attributes of typing skills and computer operating skills are shown in figure 4-2. Our expectation in Phase II of our study was, therefore that, the more people were exposed to the use of GSS the more they would improve their computer operating and typing skills and hence this would stimulate further the acceptance and adoption of the technology.
**Computer operation skills**

Some groups were comprised of participants who had some computer experience and participants with no knowledge or almost no experience with computers, which is not uncommon particularly at higher levels of management in Tanzania. There were also groups comprised of participants who almost all had no prior practical experience of using computers, for example, the WAMATA Youths and WAMATA Housewives. These participants did not understand even the basic functions of a keyboard, of a mouse or of a touch pad.

It was expected, therefore, that this problem would be an obstacle for some people and prevent meaningful participation in meetings, as one participant commented, "I had many ideas and views about the issue but since I have no knowledge of computers I failed to analyse and present these views". This problem, however, did not seem to affect the meeting processes in general because in all cases an explanation concerning the use of the computer was given prior to the electronic meeting. It normally took some 15 to 20 minutes to introduce and teach all participants the basic skills required to execute the simple operations of GroupSystems and a computer in general. During the meeting, inexperienced participants were closely assisted or supported in using the system whenever they had problems. Sometimes experienced participants could assist the inexperienced whenever they needed assistance. The fact that some participants were less capable did not seem to affect their enthusiasm. It could be noticed that even most inexperienced participants managed to participate quite easily during the entire meetings. As meetings went on all the participants were able to pick up speed and enter more ideas and/or comments, which resulted in quite a high productivity at the end of many meetings.

![Diagram](image)

*Figure 4-2 Attributes that influence Computer Literacy*

There were a few groups, however, that comprised of participants who had all interacted with computers before. These mastered the keys very quickly and had no troubles/complaints at all during the process. They needed minimum or no supervision at all. They seemed very eager to learn how the technology worked.
ADAPTION AND DIFFUSION OF GROUP SUPPORT SYSTEMS IN TANZANIA

Many technical questions were asked before and during the meeting. Such groups included, for example, students majoring in computer science or information technology, some tutors/lecturers, specialists in information technology, and management personnel, such as those from BP Tanzania Ltd. Productivity in such groups was relatively high compared to the less experienced groups. Many ideas, which focused on the theme under discussion, were generated in a very short time. For example, in one of the BP Tanzania Ltd management sessions it was observed that within less than 10 minutes about 50 ideas had been generated. This was observed to be a very high rate compared to other sessions so far conducted. Even the meeting owner appreciated the rate at which participants were generating ideas and commended them.

Typing skills
The typing skills of most participants was very limited (even among the computer experienced participants). It was expected this would be a hurdle for many people to participate fully in meetings as one participant made the following remark, “Typing speed is an obstacle to the contribution of ideas.” This, however, did not seem to influence negatively participants’ enthusiasm. They stayed focused although they had to put in extra effort to enter their ideas. Many participants typed mainly with one finger. Generally, their ideas were short, very well formulated and very much to the point. We experienced only two groups of participants (journalists) who had good typing skills but less computer skills. They entered quite lengthy ideas and comments but their speed in generating more issues (at the beginning) was limited by their inexperience with using the computer.

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>To what extent was it difficult to use the technology (very difficult - very simple)?</td>
<td>4.2</td>
<td>0.37</td>
<td>285</td>
</tr>
<tr>
<td>Meeting</td>
<td>12 13 14 15 16 17 18 19 20 24 25 26 27 28 29 30 31 32 33 34 35 36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVG</td>
<td>4.1 4.1 3.2 4.2 4.1 4.5 4.4 4.1 4.4 4.1 4.0 4.8 4.2 3.5 4.2 3.8 4.1 4.3 4.7 4.3 3.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STD</td>
<td>0.8 1.0 1.0 0.7 1.1 0.8 0.8 1.0 0.5 0.5 0.8 1.3 0.4 0.7 1.0 0.9 1.0 0.7 0.4 0.4 0.8 0.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>To what extent did &quot;using a computer&quot; hinder you in participating in this meeting (very much - very little)?</td>
<td>4.2</td>
<td>0.30</td>
<td>283</td>
</tr>
<tr>
<td>Meeting</td>
<td>12 13 14 15 16 17 18 19 20 24 25 26 27 28 29 30 31 32 33 34 35 36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVG</td>
<td>4.6 3.8 3.9 4.1 4.6 4.3 4.3 3.9 4.7 4.3 4.3 3.8 4.5 4.3 3.6 4.6 4.0 4.4 4.5 4.1 4.0 4.2</td>
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<td>STD</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4-4 Computer literacy

In general, limited computer operation and typing skills affected the number of ideas generated at the beginning of the meeting. This, however, improved as the meeting went along. Participants became more enthusiastic and did not seem to find it difficult to operate the system. Ideas were generated faster when participants got used to operating the system, and productivity improved. These
observations are confirmed by the data from the related questions (see table 4-4), in which most participants stated that the technology was simple and they were not hindered by using it. The low standard deviations show that there is little variation between the groups’ average outcomes.

Following the introduction of GSS in various organisations, some subsequent sessions were organised which almost all comprised participants who had prior experience with the use of GroupSystems. For such sessions it was possible to give a short introduction and then start the meeting almost right away. It could be noted that productivity went up during the brainstorming and problem analysis stages. This is an indication that, as participants got used to the system, more productivity could be achieved. This is also reflected in participants’ comments that made clear that increased typing speed (skills) and computer operation experience are prerequisites for increased electronic meeting productivity.

Conclusions
We may note that there are two main separate issues on computer literacy. These include 1) how to operate the computer: it is possible to learn these skills during a first meeting in about 15 to 20 minutes 2) typing skills: this is much harder to learn within a limited time. Thus, it follows that a low level of computer literacy does not impair the enthusiasm of the participants. Participants were very positive and enthusiastic in general about GSS, and found using the technology quite simple. Some participants liked GSS mainly because it gave them an opportunity to get used to, and learn to use a computer. Sometimes, however, participants were restricted in generating ideas faster by their lack of computer experience or slow typing. Improvements in generating more ideas became apparent as participants got used to the system. This indicates that GSS meetings in Tanzania do not seem to be negatively affected by computer illiteracy.

4.4.4 Oral communication preference

The different nature and content of oral and computer interaction was discussed in Phase I of the research. Communication in Tanzania is considered to be strongly focused on oral interaction. As discussed earlier in Phase I (section 3.5) of this study, it was expected that the participation of people and hence their satisfaction in electronic meetings would be less because the preference for oral communication might discourage the adoption of GSS. It was found, however, that electronic communication was appreciated and accepted easily where a consensus was required on certain issues. Oral communication appeared to be important only for participants to feel comfortable with the meeting process and the technology. The key issue was to find the balance between the two.
There were a few groups where participants wanted to communicate orally whenever there were issues that needed clarification. For example, in one session, participants wanted to discuss ideas after the voting session and there was no noticeable reluctance or even fear towards communicating orally. At a certain stage the oral discussion became sharper than the electronic one. As such oral communication played a crucial role in this meeting. In another session we had to take quite some time to merge different ideas as the group came up with a lot of ideas. During the merging phase no participant felt reluctant to participate in the discussion.

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>I prefer oral communication over written communication with my colleagues (predominately oral - both equally - predominately written).</td>
<td>3.6</td>
<td>0.40</td>
<td>281</td>
</tr>
<tr>
<td>Meeting</td>
<td>12 13 14 15 16 17 18 19 20 24 25 26 27 28 29 30 31 32 33 34 35 36</td>
<td>3.6</td>
<td>3.5</td>
<td>3.1</td>
</tr>
<tr>
<td>AVG</td>
<td>0.8</td>
<td>0.9</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>STD</td>
<td>1.0</td>
<td>1.0</td>
<td>1.3</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Table 4-5 Oral communication preference

In many sessions, during the entire meeting, participants did not really want to communicate orally about the subject. The number of people discussing issues or asking questions was limited. Most participants seemed to be satisfied with just communicating by the computer anonymously. They appeared to be very passive with respect to oral discussion although in many cases facilitators tried to encourage it. This behaviour could be explained in various ways. One, it could be observed that quite a number of participants felt reluctant to participate in oral discussion because they could not express themselves well in English compared to Kiswahili. For example, it was noted in one session that participants switched over to the Kiswahili language during oral interaction on certain issues and participation in the discussion turned out to be quite high. So GSS could facilitate better communication as remarked by one participant, “This is the right technology for us who cannot express ourselves well during verbal communication.” Two, the composition of the group or objectives and set-up of the meeting also influenced oral communication. Sometimes, during the entire meeting most participants with lower ranks did not show any intention to communicate orally if there were some rank differences. Oral discussions were, in such cases, dominated by the superiors. The lower ranked participants would rather not discuss important issues with their superiors maybe for fear of being reprimanded or loosing their job. Generally, in Tanzanian communities people
tend to respect superiors and their opinions and/or ideas. It is thus unlikely that superiors will be questioned during an oral discussion.

Scores in table 4-5 (question 21) in which only two groups (29 & 34) slightly prefer oral communication with colleagues support these observations. Participants in these sessions were management teams. The scores (question 36) also show that people find it easier to write than to talk. There is little variation of the scores between groups and hence little disagreement about the outcomes.

Conclusions
Based on the observations and the results (see table 4-5), we conclude that to a certain extent, most people in Tanzania prefer written communication to oral communication, especially where they find it difficult to express themselves (orally) in English and where there are rank differences. This orientation may encourage more people to use GSS and hence influence positively the adoption of GSS.

4.4.5 Presence of referent power

During Phase I of this study it was revealed that referent power is rather common in African organisations [World Bank 1996]. We did not, however, observe any events that indicated referent power issues during GSS meetings. We only made a tentative conclusion that referent power may undermine the acceptance of GSS in Africa because decision making is positioned oriented. During Phase II, we pursue further research on this matter.

From our experience, decision making in Tanzania is based on personal relations or favouritism and strongly politically oriented. In a politically oriented decision making process, people want to know who said what unto whom in order to judge an idea or comment. This is important, especially when management wants to know, for example, who supports their opinions or ideas. It could also be used as a criterion to judge the competence of someone to represent management at a certain function or meeting. This means that some people, particularly management, may not welcome a system like GSS because it would undermine this kind of decision making and also decrease the influence of personalised power. This could, however, be exactly the same reason why people want to use GSS to support rational decision making.

During meetings, participants were quite happy with the anonymity feature because they could express themselves freely and in a more focused way without fear. Participants could also react to and question some ideas irrespective of the rank differences. Some participants, however, noted that the system is not entirely anonymous even if someone does not identify himself. It is
very possible in some cases to identify where the idea comes from, especially if
the group is small and participants know each other very well. This could mean
it does not matter who says what. People are after only rational decisions. This
observation is supported by the results in table 4-6, in which the scores suggest
that participants normally focus on more rational decision making during
meetings.

We observed only one case when the director asked people to give up their
anonymity to clarify some ideas. Our assumption was that the director had good
intentions regarding getting the issues more clear no matter who said what. The
participants, however, were very reluctant to give up their anonymity. The main
reason for the reluctance, to our opinion, was that the participants, in this
particular case, feared that the director wanted to find out where certain ideas
were coming from, not just to clarify the issues.

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>During meetings my colleagues focus mainly on providing (personally important arguments - rationally orientated arguments).</td>
<td>3.8</td>
<td>0.45</td>
<td>287</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meeting</th>
<th>AVG</th>
<th>STD</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 13 14 15 16 17 18 19 20 24 25 26 27 28 29 30 31 32 33 34 35 36</td>
<td>3.3 3.8 4.0 3.7 3.4 3.7 3.9 3.6 4.5 3.6 3.4 3.5 5.0 3.4 3.5 4.1 3.7 4.7 3.5 3.4 3.6 3.9</td>
<td></td>
</tr>
<tr>
<td>STD</td>
<td>1.5 1.2 1.1 1.4 1.2 0.7 1.0 1.5 0.8 1.1 0.5 1.8 0.0 1.4 1.3 1.0 1.0 0.7 1.3 0.8 1.6 1.2</td>
<td></td>
</tr>
</tbody>
</table>

Table 4-6 Presence of referent power

Conclusions

Based on experience and the political conflicts evident in Tanzania, Tanzania’s
decision making is considered to be a strongly politically orientated process. The
results, however, do not support this. In general, participants did not want to
know who said what unto whom, which may imply that, there was no
personalised power and sessions were not really politically oriented. Therefore,
there is no evidence that referent power could influence the application of GSS
negatively in Tanzania. This could mean that groups would welcome a system
like this to create a basis for more rationally oriented decision making.

4.4.6 Satisfaction with use

It will be recalled that a lot of issues and examples related to satisfaction were
discussed in some of the preceding four environmental factors. In this section
we focus on the satisfaction of the participants based on the distinction made by
Briggs and Vreede [1997] in the following different four aspects of meeting
satisfaction:

- Interest accommodation
- Product value
- Process satisfaction

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PHASE II: FOCUSED IN-DEPTH ANALYSIS OF ADOPTION OF GSS IN TANZANIA

- Product satisfaction
A summary of results from the questionnaire (Appendix 2) for each of the satisfaction attributes are presented in tables 4-7a through 4-7d. These results confirm the observations made on each of the attributes as discussed in the subsequent sections.

Interest accommodation
Based on answers and comments during interviews, we notice that there were quite some different opinions regarding interest accommodation among the participants. Although most meetings were focused on achieving their goals or objectives, some participants felt that their interests were accommodated and others felt differently. For example, one unsatisfied participant at a meeting commented "I am not entirely satisfied because of the fact that the generated ideas needed more elaboration than was possible in the limited amount of time". Looking at the data for interest accommodation (table 4-7a), however, we notice that the mean scores of all the questions can be characterised as quite high. This shows that participants felt their interests were accommodated, they got what they needed and gained, and the outcomes met their personal needs. There were very little variations in the scores between groups.

Product value
To analyse this specific aspect we have to look at the answers to the open questions of the questionnaire, the interviews and the scores of product value. The evaluation of this parameter, however, based on answers or comments given during the interview is somehow complicated by the fact that there was some diversity in answers concerning the value of the meeting results. Instead of evaluating the worthiness of the meeting results, some people were thinking of the cost of buying the system and paying for a facilitator and then comparing it to the value of the output of the meeting. Based on this notion it seems quite logical that people felt the technology is too expensive to support a meeting. Comments such as, "at this moment this way of conducting meetings is not yet possible in our country due to financial constraints", "the technology is costly but still people have to use it", and ".....it is my hope and wish that every one will want the system to be used again in our company if the cost is reasonable" demonstrate that participants were referring to the cost of the technology instead of the value of meeting results. This problem, however, is only found in the interviews. Questions 4 and 18 (see table 4-7b) are unlikely to be misunderstood.

When we look at the outcome of the product value (table 4-7b), the scores show that participants considered that the values of the meeting products were high. That is, participants felt that the work they accomplished during the session was worth the effort, the results were worth the cost of resources committed to
produce them, and that the results of the meetings justified their efforts. So based on the answers given during the interviews and the data from the related questions, we can conclude that the value of the meeting products was considered to be high. Looking at the low standard deviations, we see that there is general agreement on the results.
# Phase II: Focused in-depth analysis of adoption of GSS in Tanzania

<table>
<thead>
<tr>
<th>No</th>
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<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Today, my interest were (not accommodated – accommodated)</td>
<td>4.2</td>
<td>0.30</td>
<td>301</td>
</tr>
<tr>
<td>10</td>
<td>Thinking about what I needed from this meeting (I did not get it - I got it)</td>
<td>4.2</td>
<td>0.22</td>
<td>300</td>
</tr>
<tr>
<td>17</td>
<td>In this meeting I personally (lost - gained)</td>
<td>4.5</td>
<td>0.30</td>
<td>300</td>
</tr>
<tr>
<td>24</td>
<td>The outcome of today's activities (does not meet my personal needs - meets my personal needs)</td>
<td>4.1</td>
<td>0.30</td>
<td>295</td>
</tr>
</tbody>
</table>

### Meeting Results

<table>
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<th>STD</th>
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</tr>
</thead>
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<td></td>
</tr>
<tr>
<td>24</td>
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</tbody>
</table>

### Table 4-7a Interest accommodation

<table>
<thead>
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<th>No</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>The work we accomplished today was (not worth - worth) the effort.</td>
<td>4.3</td>
<td>0.38</td>
<td>299</td>
</tr>
<tr>
<td>11</td>
<td>The results of this meeting are worth the resources it cost to produce them (disagree - agree).</td>
<td>4.1</td>
<td>0.32</td>
<td>295</td>
</tr>
<tr>
<td>18</td>
<td>The value of the meeting's outcomes justifies our efforts (disagree - agree).</td>
<td>4.3</td>
<td>0.38</td>
<td>301</td>
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</tbody>
</table>

### Table 4-7b Product value

<table>
<thead>
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<th>No</th>
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<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
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<td></td>
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<td>11</td>
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<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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95
Product satisfaction

We noticed that participants and the session owners were quite satisfied with the products of the meetings. Most participants, particularly session owners, stated that the results of the meetings would be used. For example, one manager said, "the suggestions for improvements are really useful for me and I will definitely use them in my plans to improve the process. A lot of ideas which were generated would normally not have been expressed freely, so I consider the information to be very valuable". We had an experience with another organisation, which was supposed to retrench its workers but there was anxiety among the workers as a result of the exercise. So the organisation wanted to find a better strategy to implement it in order to minimise loss. The results of the meetings were used to make decision immediately after the session. This meeting comprised the whole management team except the Managing Director who was in his office waiting for the outcome of the meeting. While we were still busy packing our mobile system, we got the information that, after being briefed about the results of the meeting, the Managing Director immediately made a decision and that some of the implementation were to take effect the next day. His decisions were consistent with the outcomes of the meeting. The same organisation has continued to use the system for other sessions. Similarly while making a follow-up on the conducted sessions, we were informed that results of the meetings were implemented in several organisations.

There were very few participants who were not satisfied with the products of the meeting. One participant who was not satisfied with the outcome of the meeting noted, "the ideas and comments were too shallow and needed more work to become better." The high mean scores with very small variations for product satisfaction (table 4-7c), however, support our observations that, generally, participants were quite satisfied with the products of the meetings.

Process satisfaction

There are several issues that we observed in relation to process satisfaction. Based on the results of the questionnaire (table 4-7d) and interviews, participants were quite satisfied with the meeting process. The standard deviations in the table show that participants were almost in total agreement with each other. One participant, for example, noted "management techniques are rather old-fashioned and stubborn. GSS can give a new impulse to those techniques." This satisfaction was also expressed at the end of most meetings by the way we were thanked for having put on the session.

There were, however, some differences of opinion between participants concerning the process. The sentiments are reflected in the lower score for
question 19 (table 4-7d) compared with results on other attributes. The differences could be caused by several factors. One of the factors could be
Table 4-7c: Product satisfaction

<table>
<thead>
<tr>
<th>No</th>
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<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>The product of this meeting (did not meet - met) my expectations.</td>
<td>4.2</td>
<td>0.34</td>
<td>301</td>
</tr>
<tr>
<td>13</td>
<td>The outcome of today's activities (does not meet the meeting's objectives - meets the meeting's objectives)</td>
<td>4.2</td>
<td>0.28</td>
<td>299</td>
</tr>
<tr>
<td>20</td>
<td>With respect to the outcome of today's meeting, I have (many complaints - no complaints at all)</td>
<td>4.1</td>
<td>0.34</td>
<td>298</td>
</tr>
<tr>
<td>26</td>
<td>The outcome of today's meeting is (unsatisfactory - satisfactory)</td>
<td>4.3</td>
<td>0.32</td>
<td>297</td>
</tr>
<tr>
<td>29</td>
<td>The results of today's meeting are (inadequate - adequate)</td>
<td>4.1</td>
<td>0.37</td>
<td>297</td>
</tr>
</tbody>
</table>

Meeting: 9 10 11 12 13 14 15 16 17 18 19 20 24 25 26 27 28 29 30 31 32 33 34 35 36

<table>
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<td>STD</td>
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</tr>
<tr>
<td>13</td>
<td>AVG</td>
<td>STD</td>
<td>n</td>
</tr>
<tr>
<td>20</td>
<td>AVG</td>
<td>STD</td>
<td>n</td>
</tr>
<tr>
<td>26</td>
<td>AVG</td>
<td>STD</td>
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<tr>
<td>29</td>
<td>AVG</td>
<td>STD</td>
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</tr>
<tr>
<td>No</td>
<td>Question</td>
<td>AVG</td>
<td>STD</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------------------------------------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>5</td>
<td>I was satisfied with the way we did things today to achieve our goals. (disagree - agree)</td>
<td>4.5</td>
<td>0.32</td>
</tr>
<tr>
<td>12</td>
<td>The meeting methods we used today (did not meet - met) my expectations.</td>
<td>4.4</td>
<td>0.40</td>
</tr>
<tr>
<td>19</td>
<td>Today's meeting process was (inadequate - adequate) to meet our goals.</td>
<td>3.9</td>
<td>0.31</td>
</tr>
<tr>
<td>25</td>
<td>How satisfied were you with the work process we used today? (dissatisfied – satisfied)</td>
<td>4.4</td>
<td>0.31</td>
</tr>
<tr>
<td>28</td>
<td>The group used its time well, devoting enough attention to the important issues. (disagree - agree)</td>
<td>4.3</td>
<td>0.29</td>
</tr>
<tr>
<td>23</td>
<td>How satisfied are you with the design of the session in the sense that the agenda items followed one another logically? (dissatisfied - satisfied)</td>
<td>4.4</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>Meeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>AVG</td>
<td>3.9</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>STD</td>
<td>1.1</td>
<td>0.5</td>
</tr>
<tr>
<td>12</td>
<td>AVG</td>
<td>4.0</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>STD</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>19</td>
<td>AVG</td>
<td>3.4</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>STD</td>
<td>1.2</td>
<td>0.5</td>
</tr>
<tr>
<td>25</td>
<td>AVG</td>
<td>3.5</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>STD</td>
<td>0.9</td>
<td>0.5</td>
</tr>
<tr>
<td>28</td>
<td>AVG</td>
<td>4.2</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>STD</td>
<td>1.2</td>
<td>0.5</td>
</tr>
<tr>
<td>23</td>
<td>AVG</td>
<td>3.0</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>STD</td>
<td>1.0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 4-7d Process satisfaction
shortage of time. Sometimes it was not possible to elaborate more on certain ideas or comments because we had to maintain a tight time schedule. As a result, some participants felt that they did not have enough time to participate fully. Another factor could be that more outspoken participants could not steer the meeting process as perhaps they would normally do in traditional meetings because of the presence and influence of an impartial facilitator.

This could cause some dissatisfaction among some participants. The aspect of meeting preparation might also influence satisfaction with the process. Poor meeting preparation may lead to a poor meeting process that could cause reluctance to participate in the meeting and ultimately lead to poor satisfaction with the process. Participants may not be satisfied, for example, if the meeting is not well planned and the agenda of the meeting does not comply with the objectives of the meeting.

Conclusions
It is accepted among experienced GSS users that good planning is vital for the success of a GSS process. Many users create stories about processes gone quickly astray due to vague planning. A vaguely planned process leads to confusion and lost effort. Based on the results of the questionnaire and interviews we can conclude that most participants felt quite satisfied with the GSS meeting process. The objectives of the meetings were all more or less achieved and we expect that the results have been used to influence the decision making processes in some organisations.

4.5 Dimensions of the cultural aspect

When it comes to analysing the effects of cultural effects on the adoption of GSS, we cannot reduce it to a question of one culture, the Tanzanian culture. Several different cultures are involved. There are differences in culture between different countries; and between different parts of the same country; and between different organisations in the same country. It is sometimes easier to describe cultural variations than to explain them.

During data analysis, however, further insight was pursued by positioning our findings in the context of Hofstede’s [1980, 1991] cultural dimensions. Hofstede’s cultural dimensions appeared also to influence the adoption of GSS in Tanzania. According to Hofstede’s cultural dimensions, East Africa is different from the other cultures in which GSS have been studied so far [Hofstede 1991]:

- Compared to Mexico, East Africa scores lower in terms of uncertainty avoidance, masculinity, and power distance.
• Compared to Singapore, East Africa especially scores much higher in terms of uncertainty avoidance.
• Compared to the USA, East Africa scores higher in terms of power distance and short-term gain orientation, but lower in terms of individuality and masculinity.

The dimensions with regard to the adoption of GSS in Tanzania are discussed below.

4.5.1 Power distance (PDI)

The dimension of power distance deals with the amount of inequality of power, particularly, between managers and subordinates within organisations and institutions. Power distance is the "extent to which members of a society accept that the power in institutions and organisations is distributed unequally" [Hofstede 1991]. It is argued that a country which scores high on power distance is likely to have centralised authority, autocratic/dictatorship and paternalistic behaviour, and empowerment of subordinates is limited. In such countries anonymity, for example, may not be a desirable feature of communication [Ho et al. 1989]. Physical presence and verbal communication during meetings are more preferred. Examples of such countries are India and Singapore. Countries that score low on power distance tend to prefer issues like participatory decision making and dislike inequality in the workplace, for example, Denmark and Austria. In such countries, usually, there are consultations between managers and subordinates, and also decision making is delegated to subordinates [Slocum and Lei 1993].

Tanzania seems to fit more clearly with other high power distance countries. Hofstede's discussion of the origin of Power Distance norm supports this contention, given Tanzanian history and circumstances. This gives an impression that Tanzanian organisations are characterised by an unequal distribution of power, which means there is limited interdependence between bosses and subordinates. This unequal distribution of power could affect the use of GSS because GSS could undermine authority. Thus, we argue that the new technology will be less likely to be accepted by Tanzanian users. GSS could, however, be welcomed for the same authority-undermining capabilities in order to effect participatory decision making.

We observed that interaction during GSS meetings varied among groups in Tanzania. In a few groups where ranks appeared to be equally distributed among participants e.g. managers, lecturers, students, etc., interaction between participants was very open. Participants had a lot of conflicting critical comments and ideas. They questioned and opposed each other's ideas without
reluctance during electronic or oral discussion. There was, however, no significant domination and influence on the meeting processes, which of course indicates that participants played their roles equally. Sometimes they could converge to a consensus very easily when a discussion was more focused on the objective of the meeting. In most such sessions, as soon as a consensus was reached, all participants agreed the outcome, without reluctance, to be democratic.

In groups where there were rank differences, for example, groups comprised of teachers and students or directors and subordinate staff, interaction was to a large extent limited to electronic communication with little criticism. Participants were reluctant to give comments orally. In most cases they did not object to or oppose the remarks that were made from the authority figure, such as the director, session owner or even the facilitator. People sometimes took on a passive attitude and waited to see what the session owner would do. We noted some exceptions where, at certain times, some participants had first to discuss issues with the session owners or refer them to the facilitator who eventually made the comments public. Sometimes participants expected a facilitator to come up with answers to certain issues. In such instances participants were usually advised that the answers should come from themselves as group members of the organisation.

Based on our experiences, observations and results (see table 4-8), we argue that there is a fair involvement of many participants in traditional meeting processes. This could mean that in traditional meetings, there are hidden issues that are normally not being discussed. We note, however, that the high average scores and small standard deviations (table 4-8: question 31) suggest that there is almost total agreement that people participated more meaningfully in GSS facilitated meetings. GSS, therefore, enabled many people to participate more meaningfully. There is a wish for anonymity, freedom of expression so that many ‘hidden issues’ can be revealed.

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>To what extent are your colleagues meaningfully involved in normal meeting processes (very little - very much)</td>
<td>3.4</td>
<td>0.42</td>
<td>287</td>
</tr>
<tr>
<td></td>
<td>Meeting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>AVG</td>
<td>3.7</td>
<td>4.0</td>
<td>3.6</td>
<td>2.9</td>
</tr>
<tr>
<td>STD</td>
<td>1.0</td>
<td>1.1</td>
<td>1.5</td>
<td>1.3</td>
</tr>
<tr>
<td>31</td>
<td>In today's meeting the use of GSS enabled me to participate more meaningfully (disagree - agree).</td>
<td>4.5</td>
<td>0.26</td>
<td>283</td>
</tr>
<tr>
<td></td>
<td>Meeting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>AVG</td>
<td>4.6</td>
<td>4.4</td>
<td>4.4</td>
<td>4.6</td>
</tr>
<tr>
<td>STD</td>
<td>0.6</td>
<td>0.8</td>
<td>0.8</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Table 4-8 Power Distance
Commenting on anonymous communication, one participant had the following to say: "A real problem in organisations is that people will write anonymous letters to bring something to the attention of a director. A problem with this (approach) is that people may use information completely out of context. 'Will this system (GSS) have the same problem because of the anonymous input?" Then he went on "Answer in short: no, because misuse (of information) during the meeting can be noticed immediately. Misuse outside of the meeting environment is less likely because the anonymous information does not originate from one person, but from the whole group which is likely to take ownership. The 'misuser' may be scared off by this." Another participant commented "the use of GSS overcomes shyness and fear." These are, few indications that the problem of freedom of expression due to rank differences is deep rooted in Tanzanian work institutions. It is not uncommon to find letter-boxes in many work places where people are encouraged to bring to the attention of management any anomalies by posting anonymous letters.

Conclusions
Generally, power distance in Tanzania appears to be very high compared to countries such as Denmark or Austria. This could mean that normally people are not effectively involved in collaborative decision making processes and that GSS offers a better chance. The fact that power distance varies in different institutions could depend on a number of factors such as the type of organisation (culture), the issue being discussed, and group composition. It could also depend on the impact that disagreement with an authority might have: whether, for example, someone could loose a job or be reprimanded. Where there are significant rank differences, people may be moderately involved or less likely to participate meaningfully in meetings and decision making processes. This is primarily caused by the fact that only rarely people with lower ranks will object to anyone with higher rank or who is older. It is quite possible that the use of GSS in meeting processes could encourage people to participate more meaningfully because participants can enter ideas or comments anonymously without fear of repercussion.

4.5.2 Uncertainty avoidance (UAV)

Uncertainty avoidance is the "degree to which the members of a society feel uncomfortable with uncertainty or unknown situations" [Hofstede 1991], which leads people to be very formal and concerned with conformity to procedures, regulations or rules to avoid risks in decision making. Uncertainty avoidance could affect the way individuals choose a media for communication. According to Straub et al. [1989], information richness [Daft and Lengel 1984; Daft et al.
1987] and social presence [Short et al. 1976] would predict individuals choose communication media on the basis of how well those media reduce uncertainty.

In countries with a low uncertainty avoidance score, for example Jamaica and Singapore, people are more likely to take risks and are also tolerant of, and not threatened by, new ideas or innovations. Simple channels, for example, simple information exchange and memos, are used to facilitate communication for simple tasks where problems do not exist or are well defined, and that do not require someone to be (personally) present. Countries with high scores on uncertainty avoidance, like Germany and Japan, tend to be very strict to defend against risks or in following the rules and standards for predicting future possibilities to minimise risks. People will use very rich channels of communication for sensitive issues such as negotiation and conflict resolutions. In such issues, systems like GSS may not be preferred.

Tanzania is characterised by a low level of uncertainty avoidance [Hofstede 1991], which means that people probably do not feel threatened by new ideas or innovations. Use of simple channels like memos is common to facilitate communication even in some complex problem solving issues like urban planning (e.g. housing plot allocation). This attitude could mean that people may be interested in using new technologies like GSS.

Our experience from GSS meetings in Tanzania is that the participants were not very sceptical about using computers to support meetings and decision making. At the beginning of a meeting, sometimes, people held back. The hesitation was, as such, probably primarily focused on the fact that people did not want to make a fool of themselves, because they were inexperienced in operating a computer and uncertain about the outcomes of GSS. After some explanation, however, people were more informed and no longer felt that a meeting supported by computers was threatening. Thereafter, participants became more stimulated and challenged and, during the entire meeting, they were very enthusiastic. As one of the participants at TBS commented "it was not really difficult to find participants, because it was stated that it would be very easy to operate the system".

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Did the fact that that this meeting was going to be supported by GSS make you hesitate to participate (very much - very little)?</td>
<td>4.1</td>
<td>0.48</td>
<td>282</td>
</tr>
<tr>
<td>Meeting AVG</td>
<td>12 13 14 15 16 17 18 19 20 24 25 26 27 28 29 30 31 32 33 34 35 36</td>
<td>4.1</td>
<td>0.48</td>
<td>282</td>
</tr>
<tr>
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<td>1.2 1.4 1.1 1.3 0.9 0.7 1.0 1.7 0.9 1.0 1.2 1.3 0.4 1.6 0.6 0.7 1.3 1.0 0.9 0.8 0.4 1.6</td>
<td>1.2</td>
<td>1.4</td>
<td>1.1</td>
</tr>
<tr>
<td>34</td>
<td>I think that my colleagues would regard the introduction of GSS in their work situation as (threatening - stimulating).</td>
<td>4.6</td>
<td>0.31</td>
<td>285</td>
</tr>
</tbody>
</table>
PHASE II: FOCUSED IN-DEPTH ANALYSIS OF ADOPTION OF GSS IN TANZANIA

<table>
<thead>
<tr>
<th>Meeting</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>24</th>
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<th>33</th>
<th>34</th>
<th>35</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVG</td>
<td>4.9</td>
<td>4.6</td>
<td>4.7</td>
<td>4.9</td>
<td>4.7</td>
<td>4.5</td>
<td>4.0</td>
<td>4.6</td>
<td>4.9</td>
<td>4.1</td>
<td>4.3</td>
<td>4.5</td>
<td>4.8</td>
<td>4.9</td>
<td>4.0</td>
<td>4.5</td>
<td>4.5</td>
<td>5.0</td>
<td>4.4</td>
<td>4.2</td>
<td>4.9</td>
<td>4.8</td>
</tr>
<tr>
<td>STD</td>
<td>0.2</td>
<td>0.6</td>
<td>0.6</td>
<td>0.3</td>
<td>0.5</td>
<td>0.5</td>
<td>1.3</td>
<td>1.0</td>
<td>0.3</td>
<td>1.1</td>
<td>0.7</td>
<td>1.1</td>
<td>0.4</td>
<td>0.3</td>
<td>0.4</td>
<td>0.9</td>
<td>0.7</td>
<td>0.0</td>
<td>1.3</td>
<td>0.8</td>
<td>0.3</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Table 4-9 Uncertainty avoidance

People who had participated in more than one session were eager to learn more about how to operate the system. For those who were inexperienced they kept on going and really wanted to master the system. Many participants asked a lot of questions about the technology, our experiences and facilitation. The high mean score and low standard deviation for questions 14 and 34 (table 4-9) support the observations that people were not threatened but rather stimulated by using computers in a meeting. We also had other experiences such as described by the following comment of a participant at the second NSWTI meeting “it was rather difficult to find participants because of their busy schedules but they were also somewhat afraid as the meeting was going to be supported by computers”.

We assume that people became stimulated by GSS because they felt the new technology is important because it may create an image of status or innovation, which can help, for instance, to promote an individual or the business of an organisation. We would not expect, for example, a group of students whose studies are focused on computer technology to have a negative attitude towards new information technology. We also note that there may be other reasons for enthusiasm. For example, the WAMATA Youths were very enthusiastic about the system because they had never seen such a system before. In addition, they expected that this new system would be a means to generate new ideas to assist them to solve their problems. They wanted, for instance, to make clear that a change of management processes should be effected without annoying their superiors.

To have a successful meeting it is essential that all the participants are present. We experienced a few cases whereby a number of participants did not turn up for the meetings. This could be considered as uncertainty avoidance. In one instance, for example, some people who were invited to the meeting sent their representatives.

There were also other cases where uncertainty avoidance could be noted. We had an experience in one of the meetings where a group of computer programmers and systems analysts were misinformed by the group leader about the meeting objectives despite discussing the problem with him for two consecutive days. The group leader seemed not to know exactly the nature of the problem, the objective of the meeting and the anticipated outputs. A computer consultant in the company had instructed the group leader to organise a meeting and use GSS. The theme of the meeting was to deliberate strategies for dealing with the Year 2000 (Y2K) Millennium Bug problem in the organisation.
Instead, participants were told that the facilitator would give a presentation on the theme of discussion. This caused a lot of confusion. Participants became adamant to participate in a meeting according to the agenda. Most of them did not want to have a discussion because they did not even know what the Y2K Bug was. After some discussions and clarifications, eventually participants seemed to understand the cause of the confusion and what was at stake. They finally agreed reluctantly to participate. The outcome of the meeting was quite unsatisfactory. At the end of the session, however, they asked for another similar meeting, insisting that proper preparation and communication should be made prior to the session so that they could be more productive. This suggests that, poor preparation of, and communication about, a meeting may also influence uncertainty among participants about the outcome.

**Conclusions**

Despite some mishaps such as technical problems, delays in starting meetings and rescheduling of meetings, many participants did not indicate any negative attitude or feel reluctant towards the use of GSS irrespective of the uncertainty of the outcome of the meeting. May be this could be explained by the fact that people were curious and eager to know more about the new technology, and some expected GSS would assist them in solving their problems.

**4.5.3 Individualism versus collectivism (IDV)**

This dimension focuses on how the relative importance of individual goals is compared to group or collective goals. *Individualism* relates to the society where individuals are expected to take care of themselves and immediate family only. In countries where an individualism culture dominates, like the United States, people tend to look after themselves and relatives or close-friends. In contrast, *collectivism* concerns societies where responsibilities and loyalties are more integrated into strong and cohesive groups [Hofstede 1991]. Social relationships among groups are very strong. Societies or organisations are expected to be responsible for the welfare of their members. Members in turn are expected to be loyal to their groups. Usually, decision-making is collective and people prefer to avoid conflicts between group members. This type of culture is more common in socialist oriented countries, like China.

According to Hofstede [1991] and our own experience, Tanzanian culture is rather collectivistic. For nearly 40 years, since independence, Tanzania has been pursuing a socialist ideology. This type of political orientation has caused Tanzania’s culture to be even more collectivist. This could mean that participants in a face-to-face verbal meeting do not participate freely because they do not want to raise issues which could create conflict.
Based on observations, interviews and on the results of question 8 (table 4-10) participants in GSS meetings were quite pleased to express themselves freely.

In most of the GSS meetings, participants generated ideas that were all part of a couple of internally oriented issues. Groups focused on a limited number of issues. Even for groups that comprised students only, they were extremely focused on the goals of sessions. There were very few funny ideas or jokes generated. Most students did not come up with humorous or non-serious ideas. Participants agreed on most issues. Where there was a high degree of consensus, there was limited electronic or oral discussion among participants. Groups converged quite quickly to agreements. For example, we had two cases where the groups reached a 100% consensus on certain issues. Based on this it can be said that a strong collectivistic nature makes Tanzanian participants focus on issues that are accepted within a group. The results for question 32 (table 4-10) confirm this strong focus on the group as whole. Participants did not feel reluctant to express their opinions if they disagreed with each other on some issues. Participants did not have problems with disagreeing with each other. Sometimes, however, this caused the oral discussion to become quite lively.

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Using the technology do you feel comfortable offering new views on the issues of the meeting (very uncomfortable - very comfortable)?</td>
<td>4.6</td>
<td>0.27</td>
<td>286</td>
</tr>
<tr>
<td>Meeting</td>
<td>12 13 14 15 16 17 18 19 20 24 25 26 27 28 29 30 31 32 33 34 35 36</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
</tr>
<tr>
<td>AVG</td>
<td>0.6</td>
<td>0.7</td>
<td>0.7</td>
<td>0.3</td>
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</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>The meeting output can be characterised as primarily (loose individual results - integrated group results).</td>
<td>4.4</td>
<td>0.34</td>
<td>283</td>
</tr>
<tr>
<td>Meeting</td>
<td>12 13 14 15 16 17 18 19 20 24 25 26 27 28 29 30 31 32 33 34 35 36</td>
<td>4.5</td>
<td>4.4</td>
<td>4.6</td>
</tr>
<tr>
<td>AVG</td>
<td>0.7</td>
<td>0.7</td>
<td>0.6</td>
<td>0.6</td>
</tr>
</tbody>
</table>

**Table 4-10 Individualism-Collectivism**

**Conclusions**

In general, participants converged very quickly to a consensus focusing on a limited number of ideas. Apparently GSS allowed for this in combination with the oral part of the process. They did not seem to have any severe discussions or conflicts even if there was disagreement on certain issues. This could be explained in various ways. It could be that once different ideas come up, people tend to give in to avoid prolonged confrontations. That could mean they hold back once it is clear that a conflict might arise. Another possibility could be that people who have a great influence amongst the group do not want to offend each other. It might also be that participants feel that the topic being discussed is not worth having a ‘fight’ over. The fact that one of the participants noted that use
of GSS avoids conflict when at the same time being very positive about the results of a meeting indicates that avoiding a conflict is seen as a positive effect of GSS. It follows, therefore, that in a collectivistic culture like Tanzania, GSS may encourage freedom to contribute ideas comfortably and allow integrative decision making. The use of GSS may help participants to become an even closer group because it helps to focus on certain common issues.

4.5.4 Masculinity versus Femininity (MAS)

This dimension is related to the extent to which the goals of both sexes, men and women, are different. The distinction between men and women is common and different in every society. Masculinity refers to a clear distinction between both gender roles, while societies are called feminine when both social gender roles overlap [Hofstede 1991]. Masculinity stands for preference for achievement, assertiveness and material success. In countries with a high feminine score, for example, the Netherlands, both men and women are assumed to be tender, modest and co-operative. In masculine countries, however, like Japan and Switzerland, men are expected to be tough, assertive and focused on individual accomplishments. Here, social presence and verbal communication during meetings would be favoured because people would want to maintain their status quo.

According to our experience and Hofstede [1991], Tanzanian culture can be characterised as rather feminine, which means that there is a strong focus on issues like co-operation and modesty; because of this focus it is quite possible that participants would like to use GSS because it supports this co-operative orientation.

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>The use of GSS stimulates people to co-operate in a meeting instead of pursuing individual goals (disagree-agree).</td>
<td>4.5</td>
<td>0.32</td>
<td>285</td>
</tr>
<tr>
<td>33</td>
<td>The atmosphere in this group/organisation is primarily focused on (individual accomplishments - group accomplishments).</td>
<td>4.3</td>
<td>0.38</td>
<td>281</td>
</tr>
</tbody>
</table>

Table 4-11 Masculinity vs. Femininity

In many GSS sessions, there was a lot of co-operation among participants. There was no noticeable domination or hesitation to participate. People assisted each
other whenever there was a need. This situation was sometimes caused by practical circumstances, for instance, when participants needed to share a computer or neighbours needed some assistance. Little co-operation, however, was noted where they were, for example, large distances between neighbouring participants or when the group comprised a few experienced participants who could pick up everything rather quickly, and hence needed less assistance.

The atmosphere in meetings was friendly, relaxed and sometimes informal as a result of oral discussions between neighbouring participants. Although there was a lot of consensus and cohesion among participants on many important issues, sometimes groups agreed to disagree on certain issues. Despite some of the disagreements, people did not feel reluctant to co-operate and communicate whenever there was a need.

From our experience GSS stimulated co-operation among participants to focus on group achievements instead of pursuing individual goals. The high average scores of the questionnaire (table 4-11) support this focus. The low standard deviations indicate that there is agreement on this aspect. We assume that, by doing so participants expected to be more productive by using GSS.

Conclusions
Based on our observations and the results we conclude that Tanzanian culture has strong focus on co-operation and modesty. People find that participation, the opinions of others, consensus, equality and compromise on important matters in a meeting are the most valuable effects of using GSS. GSS may, therefore, stimulate further this co-operation to achieve group accomplishments.

4.5.5 Long-term orientation versus short-term orientation (LTO)

Some countries are characterised by a strong tendency for short-term gains without really focusing on the future. This is often accompanied with quid pro quo attitude, that is, the giving and receiving of gifts for personal steadiness and stability. Other countries, however, can be distinguished by a strong focus on long-term developments and gains. In countries focusing on short-term gains, personal steadiness and stability and protecting your “face” are also probably considered to be more important than gaining “face” [Davison 1996].

Tanzanian culture can be characterised by a strong short-term orientation [Hofstede, 1991]. On one hand, it was assumed that GSS might discourage participants because its anonymity characteristic does not make it possible to trace where the favours came from during the meeting, which means that it could undermine the preferred personal stability. On the other hand, it was anticipated that participants would support the use the technology because it
enables participants to express themselves freely while keeping “face”, which is more essential to them.

We noted in various GSS meetings that the nature of the ideas generated was influenced by the kind of participants, the issues discussed, the ‘sense of urgency’, etc. In some cases, ideas and comments, in general, could be characterised as rather focused on the long-term. The quality and number of ideas generated were rather high. The ideas were rational, not focusing on personally important issues but rather on the subject of the meeting, for example, to draw up a vision for an organisation, to identify ways and means on how employment procedure could be changed for ultimate benefit, etc.

Some groups came up with ideas that focused primarily on short-term goals or personal interests. This scenario could be experienced in meetings where the discussion was concerned with their own welfare or benefits, such as remuneration, and/or if the problem was not familiar or difficult for the participants. It was observed that the quality of ideas and comments that were generated related to such issues were not of the high quality associated with some irrelevant remarks or jokes.

We noted, however, that many participants misconceived short-term and long-term issues. There was a lot of misinterpretation or misuse of words, such as ‘a strategy’ or ‘a good plan’ during generating ideas. Some people, for example, thought that through the use of GSS they would achieve their goals in the long term.

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>AVG</th>
<th>STD</th>
<th>n</th>
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<td>15</td>
<td>Using a GSS makes it easier for you to maintain the image (i.e. keep &quot;face&quot;) (disagree - agree).</td>
<td>4.2</td>
<td>0.35</td>
<td>285</td>
</tr>
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<tr>
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<td>4.0</td>
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<td>0.9</td>
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<td>0.8</td>
<td>0.4</td>
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<tr>
<td>35</td>
<td>For my colleagues maintaining their image (i.e. keeping &quot;face&quot;) (very unimportant - very important).</td>
<td>4.1</td>
<td>0.33</td>
<td>284</td>
</tr>
<tr>
<td></td>
<td>Meeting</td>
<td>12</td>
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<td></td>
<td>0.7</td>
<td>0.7</td>
<td>1.1</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Table 4-12 Long-term vs. Short-term orientation

Based on our observations and interviews participants were satisfied using GSS to support meetings or decision making processes because of keeping “face”. For example, one of the participants commented that “concerning certain subjects (especially social and administrative issues) “keeping face” is very important. And especially in those cases the possibility to work anonymously is
very good, because it makes it possible to express your opinion freely”. The high average scores and low standard deviation in table 4-12 support these observations.

Conclusions
It is difficult to draw a clear conclusion on this dimension from the results. There was a lot of misinterpretation on issues related to short-term and long-term orientation. It seems GSS can, however, be used to support decision making in Tanzania because it is an ideal technology to help participants keep “face”.

4.6 General Conclusions

Using the data analysis a summary is given of the outcomes regarding the successful adoption of GSS for capacity building in Tanzania using different environmental factors and cultural dimensions.

4.6.1 Environmental Factors

During Phase I of this study we developed a framework (figure 3-1) that became the basis for further research on environmental factors. Using the data analysis and results obtained in Phase II of the study, we now present the resulting framework (figure 4-3) that includes new environmental categories: computer operation skills, typing skills and centralised decision making culture. As discussed earlier, it is anticipated that more computer operation and typing skills may stimulate computer literacy. Our expectation, therefore, is that a high level of computer literacy, endorsement by top management and user satisfaction may have a positive influence on the acceptance and hence adoption of GSS in Tanzania. Whereas, increased oral communication preference, presence of referent power and a centralised decision making culture may have a negative impact.
Figure 4-3 Factors influencing the adoption of GSS in Tanzania

The environmental factor's model originated from the grounded theory approach that was used to investigate and determine critical factors that might influence the adoption of GSS. The timeframe for the introduction of GSS was too short, so the adoption process was constrained only by the likelihood of acceptance. So the effect of only the contextual factors were considered on the adoption of GSS. The arrows in the model are used to indicate the likelihood of acceptance because the actual adoption level has not been determined (fig 4-3).

The resulting influences of each of the environmental factors regarding the adoption of GSS for capacity building in Tanzania are summarised below.

**Endorsement by top management**
Past research emphasises that the use and implementation of innovations are not driven by technical, economic, or rational consideration [Zmud 1984]. Field results showed that the environmental context can have a significant influence on the adoption process. Top management support was almost consistently recognised and well accepted as critical for the successful use and adoption of information technology such as GSS [see e.g. Zmud 1984; Orlikowski 1993]. Implementing GSS invariably requires resources that will be forthcoming only with the active support of top management. Strong and transparent leadership helps overcome the behavioural and technical problems that effect changes in everyday practices and job roles. Thus, top management support for use of GSS is likely to exert a positive influence on GSS adoption.
Tanzanian top management is typified as conservative and bureaucratic, and this has been shown to block the introduction of GSS on a large number of occasions. Computer personnel have also been influential in blocking the use of GSS. In either case, this could be explained in terms of uncertainty avoidance. Both parties seem to avoid taking risks to introduce a new, unknown, technology. The overall decision for endorsement of GSS, however, depends entirely on top management. The increased support and endorsement of GSS by top management will lead to a positive impact on the adoption of GSS in Tanzania. The absence of this support may frustrate the adoption process.

Centralised decision making culture
It is not astonishing that a great deal of organisational literature is concerned with the issue of centralisation and decentralisation. The issue becomes more complex in different countries because the boundaries of organisational tasks are not uniformly defined [Blankenburg 1996]. The degree of centralisation and decentralisation can be different with regard to different tasks. Confronted with the alternative of giving authority, the challenge for co-ordination of different tasks and decision making is too great for any organisation to master.

Tanzanian organisations are characterised by tall hierarchies with centralised decision making processes. Centralised decision making, however, is very much related to the attribute of endorsement by top management. Decision power in Tanzanian organisations is mostly located at the top management level. The use of GSS in meetings creates an equal distribution of power. This could mean that management would not like the use of GSS, because everyone is equally important in an electronic meeting. GSS could, therefore, undermine the power of management and hence not be accepted. Where decision making is decentralised, GSS may be accepted and adopted more easily.

There is no indication as yet that centralised decision making in Tanzania may influence the application of GSS negatively. Results from the study show that most people desire equality and not dominating individuals (e.g. chairmen) in meetings. This could have a more positive impact on the acceptance of GSS by subordinates rather than management. For the existing centralised decision making systems top management has to make the final decision to endorse GSS.

Computer literacy
Computer operating and typing skills has direct, positive influences on computer literacy, which in turn is assumed to positively influence the adoption of GSS. In meetings held in Tanzania we did not notice that people were held back from participating in the meetings because they had to use a computer. Giving a good introduction regarding how to operate a computer and GroupSystems mainly prevented the negative effects of computer illiteracy. In addition, it was essential
to assist participants during the course of the meeting. Participants who were more computer literate did not seem to enter more ideas or comments than others, but their ideas or comments were more elaborate. Participants considered the use of computers to be rather simple, stimulating and challenging. It was established that, although computer literacy is considered to be very low in Tanzania, this does not affect GSS meetings negatively.

Although some people have also raised concern that senior managers may be unwilling to type and that this may be a hurdle to GSS adoption, there were no suggestions that other features such as voice recognition or writing pads be added to the system immediately. So the keyboard still remains an ideal input tool. We may conclude, therefore, that the low level of computer literacy does not have a negative influence on the adoption of GSS in Tanzania.

**Oral communication preference**

In chapter 3 we described various forms of interaction that are inherent in oral and written communications. Like in any other African country, Tanzanian communication is known to be more focused on oral communication. During meetings, physical presence and the way people present/express themselves matters very much to influence decision making. Members use, for example, authority, status structure, and power to help express ideas. The anonymity feature in GSS limits these characteristics. In the field study, however, we found that many people, especially subordinates, prefer anonymous written communication to oral communication when there are rank differences. Moreover, participation in a meeting is considered to be easier using GSS, because many people find it difficult to express themselves (orally) in the English language. When using written communication they become more focused, because they do not have to confront others and can also take more time to think what to write. So GSS can facilitate communication in work groups in many ways.

GSS can help support communication between different levels in organisations particularly upward communication, for example, ‘the upward feedback evaluation’ exercise that was conducted by BP Tanzania Ltd. Top management may also find GSS useful for communicating their expectations downward to line managers. There are three major advantages that may accrue from this improved communication. First, through participatory processes, people tend to experience organisation learning. For example, people may come to a meeting with very narrow perceptions of the company and walk out with a CEO’s perceptions [Tyran et al. 1992]. Second, GSS may help to reduce semantic-information distance. That is, it may help to improve understanding between superiors and subordinates. Third, top management may be committed to the
outcomes of meetings. This commitment can be important for implementation of strategic plans.

We may conclude, therefore, that a preference for written interaction over oral communication may encourage people to be more satisfied with GSS and hence to adopt the technology.

**Presence of referent power**
In Tanzania decision making is considered to be a politically oriented process. From the results, we note that, there is a relationship between referent power and oral communication. In a politically oriented decision process, people want to know who said what unto whom.

During the study, we found that many people preferred anonymous communication because it could give them freedom of expression without being identified. Only two groups, which had almost all management participants, showed a slight preference for oral communication during meetings. This may be explained by the fact that some managers might be reluctant to use anonymous communication, leading to withholding some ideas because they feel that GSS may make it difficult for them to get credit for their contribution. This is a symptom of the presence of referent power although there was no clear evidence of its existence.

Results show that many organisations would welcome a system like this to create more rationally oriented decision making. The successful application of GSS in organisations, however, requires the support and endorsement of top management. The presence of political orientated decision making processes on the level of top management could frustrate the successful adoption of GSS in Tanzania.

**User Satisfaction**
Numerous studies [e.g. Dennis et al. 1990; DeSanctis and Gallepe 1987; Morales et al. 1995], have found that groups using GSS experience more process gains, e.g. satisfaction, synergy, more information, more learning, stimulation, and fewer process losses, e.g. production blocking, domination, apprehension, conformance pressure, co-ordination problems, than groups using manual technology.

The potential effectiveness of GSS is justified by the argument that electronically supported communication in group meetings promotes equal participation and influence among group members, since all members can type at the same time and thus participate simultaneously. Research, for example, has shown that in traditional meetings 20% of the people do 80% of the talking
because some group members are shy, of lesser status, intimidated, or too polite [Kirkpatrick 1992]. This lack of participation among group members may lead to lower overall productivity or less critical evaluation of ideas. GSS provides for equal participation and this has a potential to improve the quality of interaction and ultimately lead to better decision making. GSS technology is expected to contribute to the achievement of group and organisational goals by reducing communication barriers, e.g. process losses, associated with power distance and oral communication.

In Tanzania, groups expressed high levels of satisfaction with meeting processes, GSS technology and the outcomes. The objectives of the meetings were all more or less achieved. The results were used by some session owners or have influenced decision making process in some organisations.

4.6.2 Cultural Dimensions

Based on earlier studies [Hofstede 1980, 1991] and our experience, Tanzanian culture is considered to be collective and feminine, where there is a high power distance and low uncertainty avoidance. Generally, groups in Tanzania focus on short-term gains. Our expectation was that these cultural factors will have an important effect on the adoption of GSS in Tanzania. These five dimensions serve as a cultural framework by which we can define the Tanzanian culture as well as the possible implications for the adoption of GSS with relation to the environmental factors.

The Hofstede's model was adopted after it was further realised that the cultural factors have also some influence on the adoption process. It will be noted, however, that the relationships between the cultural dimensions and environmental factors were not explicitly shown in the resulting adoption framework (figure 4-3). We avoided it because data obtained by using the grounded theory analysis techniques did not indicate any relationships between these factors. We have, however, attempted to summarise this relationship in chapter 7 in the matrix form (tables 7-1a and 7-1b). In the following sections, we summarise the results of the influence of each cultural dimension.

Power Distance

In organisations, the level of power distance is related to the degree of centralisation of authority and degree of autocratic leadership [Hofstede 1981]. In high power distance countries like Tanzania, oral discussion traditionally inhibits frank discussion and causes inequalities with regard to member influence and participation. Results from our field study show that in Tanzania participants are moderately involved in decision making processes or meetings. People tend to hesitate to project their ideas orally in the presence of their
superiors. They are inclined not to oppose elders or superiors. These characteristics are deeply rooted in a system where decision making is centralised and politically oriented, and these are the symptoms of power distance.

Power distance provides a useful cultural variable for predicting the effectiveness of adopting a new technology such as GSS. GSS promotes the decentralisation of authority, democratic and consensual decision making [DeSanctis and Poole 1994; Davison and Jordan 1998]. GSS may, therefore, encourage people to become more involved and participate meaningfully. Decision making may become more rationally oriented. Although many people in Tanzania might like to use GSS for such reasons, top management has to approve it. If the boss is powerful and cannot be contradicted, then he or she may see GSS as unacceptable, ‘insubordinate’ and possibly threatening. It is unlikely that GSS will be approved easily where top management wants to maintain their status quo.

**Individualism vs. Collectivism**

In highly collectivistic countries such as Singapore, consensus is considered to be a high priority and essential for national goals [Watson et al. 1994]. Economically, Watson et al. [1994] state that highly collectivistic host countries may want to be seen as politically and socially stable and therefore attractive to foreign investment. Tanzanians characterised as rather collectivistic may wish to minimise dissent and nonconformity [Hofstede 1991]. People will tend to avoid conflicts or prolonged confrontation to reach higher levels of agreement. Oral communication in the process of finding group consensus may allow high power distance dynamics, dominance, conformance, and evaluation apprehension, to come into play and influence the results agreed upon.

Since GSS environments minimise the social and interactive cues often used in traditional meetings, we expected participants might converge quickly to a consensus. This might be so because, for example, dominant individuals within a GSS environment will have less influence to sway group members to reconsider their preferences. The field results clearly indicate that GSS initiates a push towards group based work. It encourages participants to behave more collectively, focusing and converging quite quickly on a limited number of issues. This collectivistic culture may have a positive influence on the adoption of GSS. Davison and Jordan [1998], however, argue that in a collective culture, where high power distance is the norm, group work is already institutionalised. It is likely that GSS may be rejected because it may disrupt existing work practices or individuals may adapt features of GSS for activities that are culturally unacceptable.
Masculinity vs. Femininity
Tanzania has a strong focus on co-operation and modesty. Results from the field suggest that normally participants have a strong group focus. There was a lot of co-operation among participants. It was assumed that people would expect to be more productive using GSS. GSS stimulated this co-operation between participants. It is quite possible, therefore, that participants will like to use GSS because it supports co-operation. This orientation may encourage people to accept and adopt GSS provided there is support from top management.

Uncertainty Avoidance
In countries with low uncertainty avoidance like Tanzania, there may be a feeling that if information is freely shared around and there exists a climate where uncertainty needs not to be guided then there is no need to implement a system that seeks to promote information sharing. Furthermore, some managers may be sceptical of the benefits accruing from GSS, thinking that the technology will not be able to change anything [Davison and Jordan1998]. We expected that this type of thinking might undermine the application of GSS.

On the contrary, our results showed that most participants were not sceptical about using GSS and did not hesitate to participate in a meeting supported by the technology. GSS stimulated participation and people did not feel threatened by the technology, which may have a positive impact on the acceptance. These results show that low level uncertainty avoidance may have a positive influence on the adoption of GSS.

We note, however, that there is a relationship between uncertainty avoidance and top management endorsement. On one hand, it is likely to be more difficult that GSS will be accepted where top management is oriented to high uncertainty avoidance for fear of criticism for their decisions or implementation failure. On the other hand, the top management that is focused on low uncertainty avoidance is likely easily to endorse the adoption of GSS. Such management might take risks, e.g. of failures, to endorse the new technology for the organisation, realising that even when technologies are designed and implemented in the same culture they may fail. Research suggests that over 40 percent of technology implementation, US technologies in US settings, attempts fail; and that implementation failures are largely the result of human and organisational, rather than technological, problems [Bikson and Gutek 1984].

Long-term vs. Short-term
From our experience, Tanzania is characterised by a quid pro quo attitude, that is, giving and receiving of gifts for personal steadiness and stability. This can be explained by the fact that people are not sure of the security of the positions they are holding based on personal contacts. Based on the observations it was not
possible to determine the influence of this factor on the adoption of GSS. Similarly it was not possible to clearly decide whether GSS had any influence of short-term or long-term orientation of ideas generated because of the nature of the group composition in meetings. Thus, there is no evidence to suggest that quid pro quo would influence the adoption of GSS. Maintaining face, however, has shown to be quite important for Tanzanians and the use of GSS supports this.

4.6.3 Conclusion

From the conclusions, therefore, we note that most of the environmental factors and cultural dimensions influence the adoption of GSS in Tanzania in a positive way. These results only partially support our findings with regard to Hofstede's [1991] cultural propositions that the egalitarian features of GSS may have generated greater relative effects on participants from collectivistic and high power distance cultures such as Tanzania, as these participants may not operate in equal and participative environment. GSS technology may have encouraged Tanzanian GSS participants to participate more fully and freely than previously possibly in non GSS meeting, potentially reducing the high power distance effects of evaluation apprehension, dominance, and superior-subordinate intimidation manifested in traditional meetings. These positive satisfaction results may encourage organisations to adopt GSS successfully.

We have, however, to put these positive results into a wider perspective, as there are also factors that can engender user resistance to the adoption of GSS. Resistance to change leading to GSS adoption failure includes (1) lack of management support and endorsement, (2) potential redistribution of power and resources, (3) presence of referent power, and (4) uncertainty due to fear of criticism or failure. In organisations, however, the decisive dimensions of culture are power distance and uncertainty. Organisations are devices to distribute power, and they also serve to avoid uncertainty, to make things predictable. The inherent structures and culture of organisations influence top management decision-making. These attributes may foster resistance from organisations to stimulate the adoption of GSS in Tanzania. It is these challenges that need to be attended and resolved using more rational approaches for successful adoption of GSS.

The discussion of the results of Phase II of our study was based on the observations and data collected during GSS meetings. Based on our conclusions regarding cultural and environmental factors, there are good indications that GSS will be adopted. They are not directly proven. We were also interested to get more information from participants after a lapse of time as this could help to
explain more of the issues raised. We, therefore, pursued a further ex-post survey during Phase III of study; this is presented in chapter 5.
5 Phase III: Ex-Post Survey

5.1 Introduction

The discussion and results presented in the previous phases of the study are based on observations made, and data collected, during GSS meetings. We further pursued the research by conducting a survey after the GSS meetings. In this chapter we present the data sources, analysis and the results and draw some conclusions.

5.2 Data sources

During the course of the study we constructed a survey for ex-post interviews [see appendix 3]. The survey instrument was adopted from the survey instrument on individual attitudes towards work environments and information technology [Ishman 1996]. The original instrument was modified to include questions on some issues that were investigated during Phases I & II of the study. The objective of the ex-post survey was to obtain details of the investigated organisations backgrounds, and get more insight into issues of environmental and cultural factors that may have a large influence on the adoption of GSS in the Tanzania context as discussed in section 4.4. This additional information was essential to give more insight into some of the issues outlined earlier in Phases I & II of the study.

The survey instrument we used for data collection consisted of questions about the environment and culture of the firm, its computer technology, key players, group processes, and employee work experience. Specifically, the information sought with regard to these attributes consisted of the type and size of the organisation, functions, roles and work experience of different employees, availability and use of computers in the organisations/departments. Individual and team participation and involvement in the GSS meeting process is considered to be important to meeting success as well as user acceptance of the GSS technology. In this regard, the survey instrument also was used to obtain information on, among other things: user involvement, participation as well as perceptions, and experiences in using GSS tools, user satisfaction, and information sharing. More information was sought on co-operation among employees to achieve group objectives. Furthermore, we investigated, managerial commitment towards the use of GSS, changes associated with the use of the GSS tools in such areas as work, performance, and interaction with peers, superiors, and users. Questions on Hofstede’s cultural dimensions were also included to further investigate their influence on the GSS adoption process.
in the Tanzania context. The questions in the instrument consisted of closed and open-ended questions and questions that were rated on a 5 point Likert scale (where 1 denoted strongly disagree or very low and 5 strongly agree or very high). A high score indicates that participants are positive about an attribute. The environmental and cultural context issues included in the questionnaire are described in the input-process-output model (figure 3-3).

The population sample consisted of individuals who either participated in real GSS sessions or participated in demonstrations [Appendix 1]. A total of 132 ex-post questionnaires [Appendix 3] were distributed. Of these, 74 questionnaires were returned at a return rate of 56%. Of those questionnaires returned, all of them were sufficiently completed to be included in the study. Experiences from some other studies show that it is sometimes difficult to achieve high return rate for various reasons. For example, Chung and Adams [1997] sent out 400 questionnaires and 44 had returned, a response rate of 11% for Korean business firms, 42 questionnaires out of 293 were returned for the US firms, a response rate of 14%. Compared to these results, and based on our experiences during the field study and the length of our questionnaire, the rate of return and completion for this study can be considered very good.

### 5.3 Data Analysis and Results

#### 5.3.1 Demographics of the survey

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<tbody>
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<td>3</td>
</tr>
<tr>
<td>Banking/Investment</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Chemical/Petrochemical</td>
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<td>13</td>
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<tr>
<td>Health/Medical</td>
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<td>4</td>
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<tr>
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<td>3</td>
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<tr>
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<tr>
<td>Social Security</td>
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<td>3</td>
</tr>
<tr>
<td>Other</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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</tr>
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</table>

*Table 5-1a Industries Represented in a sample*

The 74 respondents in the sample were Tanzanians (97%) and foreigners (3%) from English speaking countries. Of these, 26% were female and 74% male respondents. The primary languages spoken were Kiswahili (97%) and English (3%). The predominant language used in their work places was Kiswahili (43%), English (24%) or both (31%). The other 2% did not indicate the
language used at their work places. Tables 5-1a through 5-1e give a further breakdown of the demographics of the survey sample.

<table>
<thead>
<tr>
<th>Group work (function)</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>(Administration, Finance, Accounting)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counselling</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Engineering</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Marketing</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>(Sales, Marketing, Customer service)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Production</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Research and Development</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>Support services</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>(Library &amp; Computer Services)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching/Training</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>74</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

*Table 5-1b Group Functions Represented in a sample*

<table>
<thead>
<tr>
<th>Number of employees in</th>
<th>Freq.</th>
<th>%</th>
<th>Work</th>
<th>Freq.</th>
<th>%</th>
<th>Years</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution</td>
<td></td>
<td></td>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;300</td>
<td>41</td>
<td>55</td>
<td>&lt;10</td>
<td>25</td>
<td>34</td>
<td>&gt;10</td>
<td>38</td>
<td>51</td>
</tr>
<tr>
<td>300-700</td>
<td>7</td>
<td>9</td>
<td>10-25</td>
<td>17</td>
<td>23</td>
<td>5-10</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>700-1000</td>
<td>4</td>
<td>5</td>
<td>25-50</td>
<td>14</td>
<td>19</td>
<td>1-5</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>&gt;1000</td>
<td>5</td>
<td>7</td>
<td>&gt;50</td>
<td>3</td>
<td>4</td>
<td>1 Year</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>not indicated</td>
<td>17</td>
<td>23</td>
<td>not</td>
<td>15</td>
<td>20</td>
<td>not</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>total</td>
<td>74</td>
<td>100</td>
<td>total</td>
<td>74</td>
<td>100</td>
<td>total</td>
<td>74</td>
<td>100</td>
</tr>
</tbody>
</table>

*Table 5-1c Organisations’ employees and work experience*

<table>
<thead>
<tr>
<th>Management position</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Executive Officer</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Director/Manager</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Head of Department</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Lecturer/Tutor</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Supervisor/Head of section</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Accountant/Auditor</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>others</td>
<td>32</td>
<td>43</td>
</tr>
<tr>
<td>total</td>
<td>74</td>
<td>100</td>
</tr>
</tbody>
</table>

*Table 5-1d Respondents’ Titles Represented in a sample*

5.3.2 Organisation structure and work experience

The sample consisted of people from different sectors of the economy, performing a variety of functions [tables 5-1a & 5-1b]. Respondents with
diverse work experience were distributed among small, medium and large organisations [table 5-1c]; but most of them were from organisations that had an average number of less than 300 employees and small work groups of less than 25 people. Results in table 5-1c show that the majority of respondents, about 73%, had an average work experience of more than 5 years. Nearly 57% of them had some form of managerial, supervisory or professional role in their organisations [table 5-1d]. Out of these, about 38% were in a management position.

<table>
<thead>
<tr>
<th>PCs for work group</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>32</td>
<td>43</td>
</tr>
<tr>
<td>10-25</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>25-40</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>&gt;40</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Not indicated</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>74</td>
<td>100</td>
</tr>
</tbody>
</table>

*Table 5-1e Pcs available for work groups*

5.3.3 Computer Background

Respondents answered questions on the availability and use of computers in their respective organisations/departments. It was evident that there is an unequal distribution of PCs in organisations. Many groups (69%) indicated that they had at least one PC [table 5-1e]. A group’s access to computer application was in the frequency of affirmative (64%), and negative (26%). Whereas about 30% of respondents indicated that their work groups did not either posses or have access to a single computer. It was found that on the average, each employee, irrespective of the institution, was supposed to have access to 3 PCs. This means there were organisations, and in particular work groups, that appeared to have more PCs than the number of users. This distribution reflects that there is underutilisation of computer resources in many work groups. This scenario can be explained in various ways. Some of the major reasons are, for example, foreign donor community influence on the supply of computers to different projects in the government and various organisations, and centralised (uneven) and uncoordinated distribution of the resources. Another reason could be the inadequacies of trained personnel [Baker 1993; Odedra et al. 1993]. There is a low level of computer literacy in many organisations. As a result, very few people use computers and some tasks are performed manually even where PCs are available.

From our experience in organisations where computers are available access is limited to few individuals. More computers are allocated to middle management, computer personnel, accounts and finance personnel, and secretaries. It is not unusual in Tanzania to find some managers with at least 2 different types of PCs
on his or her table or a pool of secretaries sharing the same office and each having a PC while some work groups in the same organisation do not have even a single computer! These are the people who would use computers regularly at least for word processing. Many people, for example, administrators and other professionals are disadvantaged. When interviewed, however, nearly all agreed that computers were very helpful and essential. Some said they could no longer afford to work without computers. Working manually is slower and a more expensive way to get things done, so they would like to change their style of working. Thus, it may be concluded that even people who had never used a computer would be unlikely to resist using GSS on the basis of a dislike of computer technology in general.

5.3.4 Co-operation and Information sharing/access

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-operation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. A</td>
<td>One does better work alone than in a group</td>
<td>2.4</td>
<td>1.0</td>
</tr>
<tr>
<td>B</td>
<td>If a group is slowing me down, it is better to leave it and work alone</td>
<td>3.8</td>
<td>1.1</td>
</tr>
<tr>
<td>C</td>
<td>Only those who depend upon themselves get ahead in life</td>
<td>2.5</td>
<td>1.2</td>
</tr>
<tr>
<td>D</td>
<td>To be superior, a person must stand alone</td>
<td>2.4</td>
<td>1.1</td>
</tr>
<tr>
<td>E</td>
<td>I would rather struggle through a problem alone than discuss it with other employees</td>
<td>2.7</td>
<td>1.1</td>
</tr>
<tr>
<td>13. A</td>
<td>An employee should accept the group's decision even when personally he or she had a different opinion</td>
<td>3.4</td>
<td>1.3</td>
</tr>
<tr>
<td>B</td>
<td>Problem solving by groups gives better results than problem solving by individuals</td>
<td>4.2</td>
<td>1.0</td>
</tr>
<tr>
<td>C</td>
<td>Employees like to work in a group rather than by themselves</td>
<td>3.4</td>
<td>0.9</td>
</tr>
<tr>
<td>D</td>
<td>In society, people are born into extended families or clans who protect them in shared necessity for loyalty</td>
<td>3.4</td>
<td>0.9</td>
</tr>
<tr>
<td>E</td>
<td>The needs of people close to me should take priority over my personal needs</td>
<td>3.0</td>
<td>1.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information sharing/access</th>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. I am willing to share information that I control with other members of my work group</td>
<td>3.5</td>
<td>1.1</td>
</tr>
<tr>
<td>17. I am willing to share information that I control with members of other work groups within my organisation</td>
<td>3.6</td>
<td>1.2</td>
</tr>
<tr>
<td>18. My work group shares information that it controls with the other work groups within the organisation</td>
<td>4.0</td>
<td>0.7</td>
</tr>
<tr>
<td>19. The majority of work groups within my organisation share information with each other</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td>20. My organisation shares information with other competitive organisations (within the same industry)</td>
<td>3.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Table 5-2 Co-operation and Information sharing
The scores for co-operation [table 5-2] show, in general, that there is a feeling that people would like to work in a group and that personal or group achievements within an organisation are dependent on collaboration with other employees. People disagree that a person does better work alone and that in order to achieve more he must stand alone. These results show that Tanzania culture is more focused on co-operation and this may have a positive influence on the adoption of GSS. In contrast, there is a fair agreement that some people would prefer to work alone if the group is slow. In addition, it has been established that individuals who are protected by their families or clans in a shared necessity for loyalty, may be motivated for individual gains in an organisation while protecting personal needs. These are characteristics of individualism in work places, which are often considered undesirable as they may lead to nepotism and to a conflict of interest [Hofstede 1991]. It is not quite clear why these results contradict the earlier outcomes that shows that Tanzanians are more inclined on collectivism.

It has long been acknowledged that the range and depth of information that a given individual, and hence, a group, has access to influences group performance [McGrath and Hollingshead 1994]. Access to information is also a means of reducing uncertainty [Rogers 1995]. It reduces uncertainty about cause-effect relationships in problem solving. Uncertainty here refers to when a given group or person has only limited information available about a particular situation at a given time, but that missing information could, in principle, be obtained [McGrath and Hollingshead 1994]. When people work in a collaborative group, the extent to which group members fully share all information available to them, is a matter of considerable consequence for effective group performance.

During the survey, people were very concerned about sharing information and confidentiality of sensitive information. Whereas results in table 5-2 show that people are strongly willing to share information among work groups, it seems people are more hesitant to share information they personally control with other members within the work group or organisation. Similarly, organisations are fairly willing to share information with other competitive organisations within the same industry. This could mean they tend to hold back some information that they control. There, could be various reasons to explain this situation. It could be that, there is strong willingness to share information to achieve group accomplishments. In contrast, both the employees and organisations may be hesitant to share information they control with other group members or external organisations because they are uncertain about their work environment with respect to, for example, threats or competition and hence want to protect either their personal needs or organisations' interests. Participants may also be feeling that, by exposing information they personally control to others, for example, by
using it in a GSS, might dilute their personal control. This could mean, there is quite a bit of fear about inputting important information into the system or sharing information among group members. These results are consistent with results found during Phase II of study, where it was concluded that, Tanzanian culture has strong focus on co-operation and modesty to achieve group accomplishments and GSS may, therefore stimulate this co-operation; but that top management in the government and organisations were reserved about the involvement of foreign or external facilitators on some sensitive meetings. Although this could be a genuine concern, it is not clear how an internal facilitator would be effective where there is referent power. This could mean that where a foreigner or external facilitator is involved GSS could be accepted easily for issues that either require brainstorming or for those where the outcomes are for public consumption. GSS may not be welcome where sensitive issues are involved that do not require group information sharing.

5.3.5 User Participation, Involvement and Perceptions

User involvement is defined as a special case of participative decision making [Ishman 1996]. Barki and Hartwick [1989] and Kappelman and McLean [1994] have differentiated the perceptions associated with user satisfaction and user involvement. User satisfaction refers to the positive effective orientation that a person has toward an information system. User involvement is rather subjective in nature and reflects the degree to which the user perceives the system to be personally important to them. In participative decision making, various stakeholders of organisations are brought into the management decision making processes. It is anticipated that involving these individuals in the decision making processes will result in increased satisfaction and productivity. There is an expectation of higher levels of user satisfaction and acceptance given user participation in the application of information systems such as GSS.

In our study about 80% of all respondents participated in group discussion. About 30% of the respondents, in particular meeting owners or management, were involved in other activities such as planning, setting objectives, organising and justifying the use of electronic meetings [table 5-3]. The high average scores show that there is strong agreement that user involvement in decision making using GSS is important to individuals as well as for the success of the meeting. Individuals feel that GSS is interesting to users, important for accomplishing tasks, and valuable to organisations. Thus, user participation and involvement in the GSS meeting process is important for meeting success as well as for user acceptance of the technology. There is a fair agreement, however, among users that GSS may either be wanted by other individuals in work groups and/or endorsed by organisations for meetings. Intuitively, this shows that, even if individuals accept GSS, there is scepticism among people that work groups or
organisation will endorse the technology because decision making is in most cases carried out by top management. The relatively low scores reflect the doubts of respondents who did not indicate their positions. These findings confirm the earlier results in Phases I & II of study where it was found that even if individuals would like to use GSS, people were not sure if top management would endorse its assimilation and use.

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
<th>Freq.</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User Participation</strong></td>
<td>Regarding the GSS, I participated in.....</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>A Initiating the electronic meeting</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>B Justifying its use</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>C Setting the meeting objectives</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>D Planning the meeting</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>E Group Discussion</td>
<td>60</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>F Identifying potential problems</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>G Identifying information needs</td>
<td>14</td>
<td>19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User Involvement</strong></td>
<td>My participation in the GSS is or was..</td>
</tr>
<tr>
<td>22.</td>
<td>A Important to me</td>
</tr>
<tr>
<td></td>
<td>B Valuable to others</td>
</tr>
<tr>
<td></td>
<td>C Important to the meeting success</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User Perceptions</strong></td>
<td>I believe/perceive that the GSS is or will be...</td>
</tr>
<tr>
<td>23.</td>
<td>A Important to accomplishing tasks</td>
</tr>
<tr>
<td></td>
<td>B Interesting to me</td>
</tr>
<tr>
<td></td>
<td>C Good for all concerned</td>
</tr>
<tr>
<td></td>
<td>D Valuable to the organisation</td>
</tr>
<tr>
<td></td>
<td>E Wanted by other individuals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Staff (n=17)</th>
<th>Senior Staff (n=25)</th>
<th>Position not indicated (n=32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1  0.5</td>
<td>3.8  0.7</td>
<td>3.2  0.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td>F Endorsed by the organisation for meetings</td>
<td>3.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Staff (n=17)</th>
<th>Senior Staff (n=25)</th>
<th>Position not indicated (n=32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.8  0.9</td>
<td>3.6  0.6</td>
<td>3.5  1.0</td>
</tr>
</tbody>
</table>

*Table 5-3 User participation and perceptions*
5.3.6 Systems Quality and Meeting Processes

Several researchers have promoted information and system quality as an important dimension of user satisfaction and consequently, system success [Inshman 1996]. System quality in this case involved ratings on the ease-of-use of GSS, its availability whenever needed and the value of the information generated. The attribute of meeting processes is related to the process satisfaction in the satisfaction instrument [Briggs and Vreede 1997].

Results in table 5-4 show that, in general, participants were quite satisfied with the ease-of-use of GSS operating procedures and the quality of produced information, also, the meeting processes i.e. preparations, time allocation, facilitation, procedures for resolving conflicts, use of GSS tools, etc. were rated as quite fair. Participants scored low on the availability of GSS. There is, however, high variation in the score on the outcome. This shows there is significant disagreement among participants on this aspect. This means there are participants who believe GSS could be available whenever needed. There may be various reasons for the differences in opinions. As discussed earlier, one of them may be that some people feel management may not endorse the system whenever needed. People may also feel that many organisations cannot afford to use GSS because they cannot offset the costs. This again is reflected in the fair score [table 5-4: question 34] on whether higher levels of management have given adequate attention to the needs of GSS in their work groups.

<table>
<thead>
<tr>
<th>Systems Quality</th>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Is available whenever I need it</td>
<td>2.4</td>
<td>1.1</td>
</tr>
<tr>
<td>B Produced information in a useful form</td>
<td>4.0</td>
<td>0.7</td>
</tr>
<tr>
<td>C Operating procedures are easy to understand &amp; use</td>
<td>4.1</td>
<td>0.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meeting process</th>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td>27. The preparation for the meeting has been provided fairly to my work group</td>
<td>3.8</td>
<td>0.8</td>
</tr>
<tr>
<td>28. The time for the meeting has been allocated fairly to my work group</td>
<td>3.7</td>
<td>0.9</td>
</tr>
<tr>
<td>29. The facilitation of the meeting has been provided fairly to my work group</td>
<td>4.0</td>
<td>0.7</td>
</tr>
<tr>
<td>30. The procedures for resolving conflicting issues in a meeting have been handled fairly</td>
<td>4.0</td>
<td>0.8</td>
</tr>
<tr>
<td>31. Priorities for the use of different GSS tools for my work group have been assigned fairly</td>
<td>3.8</td>
<td>0.9</td>
</tr>
<tr>
<td>32. The benefits that my work group had received from the GSS meeting(s) are fair when compared to the time and effort we have spent in applying the system</td>
<td>3.9</td>
<td>0.7</td>
</tr>
</tbody>
</table>
Table 5-4 Systems quality and Meeting processes

While in general it is considered that GSS is very useful for participatory decision making processes, it is also possible that the technology may be unsuitable for various meetings. Participants were asked to give their opinions on this aspect. It was suggested that GSS may be unsuitable for the following meetings: religious congregations, political meetings, e.g. rallies, conflict solving meetings, clan meetings, parliament/general assembly, one-to-one counselling, presentations or lectures, mass mobilisation meetings, and confrontation, e.g. management/labour disputes, or intrigue, opposing affiliations meetings. Other meetings include: meetings with high time limitations in which participants do not need anonymity, for example, where participants use visual expressions to express their ideas; meetings not intended to have final discussions or consensus; and disciplinary meetings where expressions are important. It was further noted that, despite all the potential benefits, GSS application seems to be very minimal indeed in, for example, government routine activities. Its application appears to be suitable in workshops and seminars where group discussion and decision making take the upper hand, that is, where groups have to reach a consensus on certain issues.

5.3.7 User Satisfaction

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.</td>
<td>With regard to the GSS, I am very satisfied in/with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Accuracy/correctness of its information</td>
<td>4.0</td>
<td>0.7</td>
</tr>
<tr>
<td>B</td>
<td>Competitiveness/comprehensiveness of its information</td>
<td>4.0</td>
<td>0.5</td>
</tr>
<tr>
<td>C</td>
<td>Degree of understanding I have about it</td>
<td>3.6</td>
<td>0.8</td>
</tr>
<tr>
<td>D</td>
<td>Level of control I feel I have over it</td>
<td>3.4</td>
<td>0.8</td>
</tr>
<tr>
<td>E</td>
<td>Timeliness of its information</td>
<td>4.1</td>
<td>0.6</td>
</tr>
<tr>
<td>F</td>
<td>Level of maintaining participants image</td>
<td>4.0</td>
<td>0.7</td>
</tr>
<tr>
<td>G</td>
<td>Offering ideas anonymously</td>
<td>4.3</td>
<td>0.8</td>
</tr>
<tr>
<td>H</td>
<td>Offering ideas in parallel</td>
<td>4.2</td>
<td>0.8</td>
</tr>
<tr>
<td>I</td>
<td>Conduction and flow of GSS meeting</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td>J</td>
<td>In achieving the meeting goal</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td>K</td>
<td>Efficiency and effectiveness of GSS meeting</td>
<td>4.2</td>
<td>0.7</td>
</tr>
<tr>
<td>L</td>
<td>The outcome/results of the GSS meeting</td>
<td>4.1</td>
<td>0.7</td>
</tr>
<tr>
<td>M</td>
<td>Level of confidence I have in its information</td>
<td>4.0</td>
<td>0.8</td>
</tr>
</tbody>
</table>
Table 5-5 User satisfaction

User satisfaction refers to the positive effective orientation that an individual has toward GSS or how good they feel about it. The scores on user satisfaction [table 5-5] show that, most participants agree that they were very satisfied with some of the attributes of product value, process satisfaction, and product satisfaction from the satisfaction instrument [Briggs and Vreede 1997]. The average scores do not differ significantly with the results in tables 4-7a though 4-7d. In addition, respondents were very satisfied with the GSS features of anonymity and parallel communication, and the level of maintaining participants’ face during meetings. The only notable fairly agreement scores are on the confidence of understanding about and level of control over GSS [table 5-5: questions 25c & 25d]. This could be explained by the fact GSS was brought in from outside the organisation. Respondents were, therefore, sceptical over the control of the technology. Overall, there is strong agreement that participants are very satisfied with GSS.

5.3.8 Environmental Factors

Results in table 5-6 show that people are very much concerned with participatory decision making. There is almost total consensus that decision making should involve the broad needs of the group (or organisation) concerned. To achieve this goal, there should be a co-operative search for answers to common problems involving all employees. Decision making must involve all groups (workers) from the bottom to top executives. These results suggest that people would accept GSS to further this co-operation.

Although there is a fair agreement score for the existence of autocratic leadership in organisations, there are some varied opinions concerning decentralisation of decision making at departmental level and whether decision power should also be allocated to all workers rather than top management. On the average people seem to be impartial on these two issues. Looking at the scores in question 14 for different categories of staff, there seems to be some difference on opinions. There are people who feel that there is centralised and conservative decision making in organisations and hence a need for decentralisation and delegation of decision making. In contrast, others, especially those who are in management positions, feel that there is no need for a distribution of decision making power. These people are against change of the decision making processes. This shows, not surprisingly, that there are conflicting interest between juniors and superior staff in work groups. The number of respondents, junior and senior staff, was almost equally divided. The results in table 5-1d that show that nearly 57% of respondents had some
managerial, supervisory or professional role in their respective organisations support this. In these circumstances where endorsement depends on top management, GSS may not be accepted if management wants to maintain and protect their decision power and symbols of power.

Participants were also asked to rate environmental factors, identified during Phase II of this study [fig. 4-2], that might undermine the adoption of GSS in Tanzania. These include computer literacy, lack of top management support, presence of referent power, oral communication preference, lack of felt need or satisfaction of use, centralised decision making culture [table 5-6]. On the average there is fair agreement on most of the factors that they may undermine the adoption of GSS. Lack of top management support and presence of referent power, however, have the highest scores and hence are considered to be the most significant potential setbacks for use and adoption of GSS. These results are consistent with the outcomes discussed in the preceding paragraph. In addition, participants suggested that other factors, such as, uncertainty concerning jobs and skills, lack of organisational validity, financial and religious constraints may also undermine the adoption of GSS. No further investigation, however, was pursued on these attributes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. A</td>
<td>Decision making should involve consideration of at least the broad needs of the group (organisation) for whom policy is being made</td>
<td>4.6</td>
<td>0.05</td>
</tr>
<tr>
<td>B</td>
<td>Co-operative search for consensus answers to common problems involving all employees</td>
<td>4.0</td>
<td>0.8</td>
</tr>
<tr>
<td>C</td>
<td>Some members of the group (say bosses) impose their will on the other members of the group</td>
<td>3.2</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Junior Staff (n=17)</td>
<td>3.3</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Senior Staff (n=25)</td>
<td>3.3</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Position not indicated (n=32)</td>
<td>2.9</td>
<td>1.6</td>
</tr>
<tr>
<td>D</td>
<td>Decision making must involve all group (workers) from the bottom to the top executives</td>
<td>4.0</td>
<td>1.0</td>
</tr>
<tr>
<td>E</td>
<td>Each department must make decisions for themselves without the interference from either part or superiors</td>
<td>3.0</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Junior Staff (n=17)</td>
<td>3.0</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Senior Staff (n=25)</td>
<td>2.9</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Position not indicated (n=32)</td>
<td>2.7</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>The decision power should be located to all workers (group) rather than top management</td>
<td>3.0</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Junior Staff (n=17)</td>
<td>3.3</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Senior Staff (n=25)</td>
<td>2.8</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Position not indicated (n=32)</td>
<td>3.2</td>
<td>1.4</td>
</tr>
<tr>
<td>37.</td>
<td>Is the adoption and use of GSS undermined by the following factors?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Computer literacy</td>
<td>3.2</td>
<td>1.4</td>
</tr>
</tbody>
</table>
Table 5-6 Environmental factors

Concluding, the results show that people would accept GSS to further cooperation to achieve group objectives. Lack of top management support and presence of referent power especially, may frustrate the adoption process.

5.3.9 Cultural dimensions

Considering the results on personal interests against group gains [table 5-7: question 15], there are different opinions. Looking at the mean scores, people seem not to be very much concerned about what they receive/get from the organisation or what they contribute/give to the organisation. Instead, people are willing to help others and contribute more to the organisation for the benefit of the organisation. That is, people are not individualists, they say they would want to pursue collective goals; but the high scores on standard deviation show that there are significant variations in the agreement on all these issues. Going beneath the surface of data we observe that there are some different perceptions among superiors and junior staff in organisations. The ratings from people who are in either management or profession positions are very high (positively) on all issues that are in favour for the benefit of the organisation. In contrast, junior staff favour more issues that are for personal interests or gains.

Looking at the ratings of cultural attributes [table 5-7: question 35], the scores on the attributes of individualism and masculinity are low, indicating that people are more collectivistic and feminine. These results are consistent with the results for question 36, which show that people disagree that GSS might influence changes in organisation with regard to individualism and masculinity because people in Tanzania are more co-operative and modest. This is the culture they would want to maintain. Thus, it is expected that GSS may enhance these characteristics.

According to Hofstede's [1991] study and our experience, Tanzania is considered to have high power distance, low uncertainty avoidance and low long-term orientation. Results in table 5-7 reveal that people feel that there is some high power distance although junior staff seem to be impartial for unknown reasons. It is, therefore, expected that use of GSS may influence changes in the distribution of power in an organisation. The results of question 36 [table 5-7] support this. On the average people seem to be fairly impartial
regarding the uncertainty avoidance and the changes that use of GSS may influence. Quite contrary to our expectations, the scores for long-term orientation are fairly high. This is also reflected on the relatively high rating on the impact that use of GSS might have an influence in organisations [table 5-7: question 36]. People have fairly high feelings that GSS may enhance long-term orientation. From these results, our experience and other studies, we may infer that there is low long-term (i.e. short-term) orientation in Tanzania and it is expected that GSS may influence changes that may be focused more on long-term orientation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
<th>Mean</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Cultural dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. A</td>
<td>It would be important to me to GET/GIVE from the organisation (GET minus GIVE)</td>
<td>-0.2</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Junior Staff (n=17)</td>
<td>0.3</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Senior Staff (n=25)</td>
<td>-0.9</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Position not indicated (n=32)</td>
<td>0.5</td>
<td>2.3</td>
</tr>
<tr>
<td>B</td>
<td>It would be important to me to HELP others/watch out for my own INTERESTS (HELP minus INTEREST)</td>
<td>2.5</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>Junior Staff (n=17)</td>
<td>2.3</td>
<td>3.6</td>
</tr>
<tr>
<td></td>
<td>Senior Staff (n=25)</td>
<td>3.6</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Position not indicated (n=32)</td>
<td>1.4</td>
<td>3.7</td>
</tr>
<tr>
<td>C</td>
<td>I am more concerned about what I RECEIVE/CONTRIBUTE from/to the organisation (RECEIVE minus CONTRIBUTE)</td>
<td>-0.4</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>Junior Staff (n=17)</td>
<td>0.1</td>
<td>3.6</td>
</tr>
<tr>
<td></td>
<td>Senior Staff (n=25)</td>
<td>-1.5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Position not indicated (n=32)</td>
<td>0.7</td>
<td>3.0</td>
</tr>
<tr>
<td>D</td>
<td>The hard work I do should benefit the ORGANIZATION/ME (ORGANIZATION minus ME)</td>
<td>1.2</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Junior Staff (n=17)</td>
<td>1.3</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>Senior Staff (n=25)</td>
<td>1.7</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>Position not indicated (n=32)</td>
<td>0.7</td>
<td>3.1</td>
</tr>
<tr>
<td>35.</td>
<td>Rating of cultural attributes in the organisation (low vs. high)</td>
<td>3.2</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Power distance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Junior Staff (n=17)</td>
<td>3.0</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Senior Staff (n=25)</td>
<td>3.1</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Position not indicated (n=32)</td>
<td>3.4</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Individualism</td>
<td>2.8</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Masculinity</td>
<td>2.6</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Uncertainty Avoidance</td>
<td>3.1</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Long-term orientation</td>
<td>3.3</td>
<td>1.0</td>
</tr>
</tbody>
</table>

36. GSS may influence changes in organisational culture as regards to…
<table>
<thead>
<tr>
<th>Cultural Dimension</th>
<th>Power Distance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior Staff (n=17)</td>
<td>3.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Senior Staff (n=25)</td>
<td>2.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Position not indicated (n=32)</td>
<td>3.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Individualism</td>
<td>2.7</td>
<td>1.2</td>
</tr>
<tr>
<td>Masculinity</td>
<td>2.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td>3.0</td>
<td>1.1</td>
</tr>
<tr>
<td>Long-term orientation</td>
<td>3.6</td>
<td>1.1</td>
</tr>
</tbody>
</table>

*Table 5-7 Cultural dimensions*

5.3.10 Impact of GSS

People were asked to give opinions on the impact that the application of GSS may have in organisational culture. Opinions on these issues are diverse. Whereas there is a feeling that use of GSS may not make changes on the individualistic and masculinity attributes, there is agreement that the system may bring about changes in long-term orientation. That is, work groups might be focused more on long-term objectives or goals. This shows that work groups are believed to be somewhat short-term oriented. Yet, the average score of 3.0 points shows that respondents are undecided whether GSS might effect changes in the attribute of uncertainty avoidance. Considering various comments made by respondents regarding the impact that GSS may have in organisations in general, it is evident that there is some high power distance in organisations, and use of GSS may help to distribute power more evenly.

Looking at different opinions, we find that it is anticipated that the GSS might give more freedom of expression without fear of intimidation or victimisation, more involvement and equal participation, hence more rational contribution from different people. Use of GSS would apparently lead to better, non-egocentric decisions. Consensus on issues would be more objective. Several comments regarding this aspect were made. For example, one respondent had this to say, “*Personalities in my institution who feel proud of talking too much during meetings will be strongly affected by the introduction of GSS.........There are people who think they are more intelligent than others during meetings simply because they can easily express themselves.....GSS will prove to them that there are also more intelligent (shy) ones than they think.......*”. Another respondent remarked, “*After the GSS meeting, we managed to select and get new leadership, something we never expected since the institution started.*” In view of these comments the use of GSS may also change interpersonal relations within work groups. With regard to efficiency, there is a feeling that there might be time and financial resources savings because electronic meetings will take shorter times compared to traditional
meetings, and hence more resources may be used for statutory functions. In this regard, one executive secretary from one of the government ministries responded, "We shall conduct our (council's) meetings faster and before a decision is made every member will have to contribute his or her ideas."

In general, there was a feeling that GSS meetings, which promote participatory decision making, would be more productive and could increase development to the society. If well used, GSS might enhance democracy, transparency and efficiency in management and decision making.

5.4 Conclusions

The overall objective of this survey presented in this chapter was to add to the results already discussed in Phases I & II of the study. In particular, the ex-post survey has enriched the research with perceptions of the adoption of GSS from an individual point of view, in a cross-cultural environment.

The results presented above show that the stakeholders in the survey represented different work groups with diversified roles and work experiences. The outcomes have very little bias if any, towards the groups represented in the research. The results are, therefore, generalisations that might represent Tanzania culture and environment. The majority of respondents indicated that they had access to computers in their work places. This shows computer technology is not new to the majority of workers. The new technology to them was GSS. That is why using a computer during the meetings did not threaten participants, and hence computer literacy is not seen to be a stumbling block for the adoption process. It is also noted that people would like to work in a group, and decision making should involve the broad needs of the group or organisation concerned. From the results, we can infer that people like rational decisions and are more concerned with groups achievements compared to individual accomplishments. These outcomes are further reflected on the scores on user satisfaction, which show that, overall, participants were very satisfied with GSS, which enhance participatory processes.

Looking at factors that might undermine the adoption of GSS in Tanzania, lack of top management support and personalised power are considered to be the most significant setbacks because they scored higher compared to the other environmental factors. These results confirm earlier findings on environmental factors found in Phases I & II of the study. As expected, the positive score on the attribute of power distance also shows that there is some high power distance in organisations. Generally, there is a feeling that GSS would enhance democracy, transparency and decision making in work groups. For GSS to be
adopted, investment efforts in promotion and changing organisational culture are inevitable.
6. The practical experience with Group Support Systems

6.1 Introduction

For almost for forty years since independence, Tanzania pursed an Eastern block (socialist) oriented ideology. Hence, most organisations enjoyed the monopoly of doing their business or providing services under the then prevailing government’s protectionism policies. With the demise of the Eastern block influence and the emergence of open market economies worldwide, working groups in Tanzania must change their traditional way of working to continue to survive. They need to employ new collaborative or participatory approaches to enhance decision making processes in their organisations. In view of this, the study on this adoption of GSS is an attempt to stimulate and challenge work groups in Tanzania to apply such techniques to improve productivity.

In today’s world the performance of private and public organisations is very much influenced by the environments in which these institutions operate. To be successful, each organisation must ensure that its plans are aligned to the environment. The turbulent, uncertainty, complex and hostile characteristics of the environment, particularly external characteristics, subject organisations to unabated continuous competition [Huber 1984]. As a result, organisations must always strive to develop new strategies and change their work processes or activities to meet competition. The turbulence and increased complexity of the external environment affect decision making and control of external marketing forces. Internally, management and situational factors such as needs and demands, power location, organisational ideology and policies, and information processing [Applegate 1991; Nour and Yen 1992], have a great influence in maintaining the stability of an organisation. Organisations facing uncertainty in environments require, among other things, greater liaison roles, e.g. direct contact, teams, etc., between members of the organisation. These challenges require high quality decision making to be made within organisations while at the same time there is a need to exercise precise control protocols to achieve the prescribed goals.

Decision-makers also are faced with the dual problem of a lack of all information required to make good decisions, and at the same time, are unable to process all the available information to facilitate decision making. Decision making, in general, is difficult, it is compounded and constrained by many factors, such as limited knowledge, poor communication, information overload, information shortage, different perceptions, trust, and distrust etc. [Mumford
The practical experience with Group Support Systems

1991]. Some of these problems may be alleviated in organisations by the use of GSS.

Cultural attitudes towards technology and cultural dimensions in the implementation and use of technology are topics of increasing interest worldwide, perhaps as a result of increased globalisation and intercultural contact. As such, this research becomes more significant given increasing globalisation and the increasing impact of information technology in our lives.

Following the experiences that led to conclusions regarding culture and environment, there are other experiences to which we can relate issues and challenges that are of importance regarding the practical application of GSS. In the following sections we describe a number of practical issues and challenges with respect to running GSS meetings in Tanzania. This account is meant to sketch the context and nature of the situation in which the GSS technology was applied in Tanzania.

6.2 GSS Research Project Set-up

The GSS research project was started in May, 1997 at the University of Dar es Salaam (UDSM) and supported by the Delft University of Technology (DUT) [Guardian, May 30 1997]. Initially, the available computers at UDSM were used as back-up facilities during the research for electronic sessions at the University. During September 1997, a consignment of 15 laptops were shipped from the School of Technology, Policy and Management (TPM) in The Netherlands to be used for the electronic meetings that were conducted during Phase I of study. In due course, the efforts of TPM in collaboration with UDSM enabled the research project to secure 14 laptops to set-up a mobile GSS facility at UDSM. Currently, the project consists of both a mobile and fixed facility. The fixed facility, however, is not very reliable because it is not well organised and not dedicated for GSS. It is a multipurpose laboratory that is used also for other teaching and research activities.

When setting up the GSS research project in Tanzania, some major assumptions were made. First, it was assumed that Local Area Networks (LANs) protocols would be available to facilitate GSS. This is a pre-requisite for any organisation that want to acquire and customise GSS. The use of WAN to facilitate GSS was not considered due to the unreliable and limited bandwidth of the telecommunication infrastructure in Africa. Second, it was anticipated that GSS would be used to facilitate meetings in urban areas where there is an adequate and reliable electricity supply. Most of the rural areas do not have an electricity supply that can be used to support GSS meetings, and computers' charged batteries cannot be used to sustain long duration meetings. Last but not least, the
assumption was that the vision and direction of future such GSS projects must come from the Tanzanians. The local experts must have complete ownership of any initiatives for the project development, and other institutions such as Delft University of Technology, should support these initiatives to promote the concept of capacity building. This approach assumes that local experts know what is best for the assimilation of the new technology and the associated regulatory problems in the country.

6.3 Arrangement and facilitation of meetings

6.3.1 Arrangement of meetings

Organising an electronic meeting in Tanzania can be cumbersome. It was sometimes quite difficult to arrange meetings for the research. It is important to bear in mind that appointments, to a large extent, are “flexible”. Timings and dates can be changed at very short notice, or even without notice. This means that the preparation of GSS meetings can take a lot of time if several planning meetings are required with a problem owner. This situation is aggravated by the fact that phone communication can not be counted upon. The most reliable phone networks are for cellular phones, but due to the costs not everyone has access to these.

The more formal way of communicating with organisations, for example, by mail are highly ineffective due to long channels of communication and decision making. Informal networks seem to be the most important way of arranging meetings or even contacting organisations. Although aggressive interactive behaviour is abnormal in Tanzania, practically, sometimes one has to be unusually tenacious when arranging meetings. A large number of organisations, however, did not endorse GSS meetings to support this research. Several reasons have been discussed in previous chapters for the reluctance of organisations to approve GSS meetings.

6.3.2 Support for the meetings

In addition to the problem of arranging meetings, there are a number of other significant issues that should be considered to support successful GSS application. Some of these include:

- **Air-conditioning**: Heat and humidity are high in Tanzania. Computer equipment is not designed to operate and be stored in these conditions and may break down because of overheating. For example, a projector switched off automatically during a number of meetings because it has a safety switch against overheating. It is advisable to conduct GSS meetings and store
equipment in a room with air-conditioning or another type of climate-control.

- **Stable electrical power:** Electricity represents a very dynamic entity in Tanzania. First, there are significant periods in which there is no electricity available. If available, it is prone to large power fluctuations. This means that a number of precautions have to be taken when using the GSS equipment. It is advisable to use a power stabiliser if available, also, the batteries of all the laptops must be charged to survive relatively short electricity cuts. The availability of many extension cables is also recommended to get electricity from other rooms if necessary. Finally, laptops should not be connected directly to the mains electricity sockets. Rather they should be connected through fused and grounded strips that function as a safety valve.

- **Spare parts availability:** In general, essential equipment is not readily available in Tanzania for various types of computers. This is especially true for things like network-cards and specific kinds of cables. This means that in order to be able to conduct meetings it is necessary to have spare equipment and parts to hand.

### 6.3.3 Experience with facilitating meetings

In chapter 2, we outlined some of the facilitation issues and the key roles that a facilitator plays in a meeting. The main challenge for the facilitator is to be familiar with the technology and the issues involved from a content standpoint. In this section, we discuss further some of these issues and our experiences with respect to the Tanzanian context.

Facilitation can be viewed as a set of functions or behaviours carried out before, during, and after a meeting to help the group achieve its own outcomes [Bostrom et al. 1993]. Research and experience of group support sessions show that **facilitation** is one of the most important factors for a high quality meeting process, see e.g. [Bostrom et al. 1992]. The facilitator provides the following basic functions: planning and designing a meeting, developing and focussing on session targets, maintaining a good relationship between group members, promoting group responsibility, assisting participants to handle the technology during the session and controlling the technology and its potential [Clawson et al. 1993]. Facilitation functions may be carried out by group members or leaders, or by external facilitation specialists.

Based on the primary functions described above, two major types of facilitation can be distinguished: **chauffeur facilitation** and **interactive facilitation** [Dickson et al. 1993]. Chauffeur facilitation supports the group only in the selection and use of GSS tools. In some cases, technical support is provided by an additional
technical facilitator or technographer. The interactive facilitator helps to set up and maintains the agenda through the different activities in a meeting. Interactive facilitation is mostly restricted to process facilitation, which is assumed to be a primary facilitator's responsibility [Phillips and Phillips 1993].

From our experience, we noticed that the approach used to conduct meetings in Tanzania does not vary very much from the one used in western countries, for example, the Netherlands. There are aspects, for example, good planning and agenda of a meeting, having clear meeting purposes and objectives, and using appropriate GroupSystems tools, which are similar and important in both cultures. Such issues that are considered to be crucial for successful meetings are related to high quality of facilitation.

In this study, we found some facilitation aspects which appeared to be significantly relevant in Tanzania. First, during the facilitation process, the introduction approach used in Tanzania was different from the one used in Netherlands because of computer literacy differences. In Tanzania, it was essential to introduce aspects of how to operate a computer and how to use the software, GroupSystems. In addition, a facilitator might explain some added value of GSS, for example, using it in parallel with presentations. In most cases this approach stimulated and created some enthusiasm among the participants and may have had positive impact on the success of the meeting.

Second, there is almost no experience with new technologies like GSS in Tanzania. This meant that most people, particularly, session owners were not familiar with the meeting processes supported by GSS. So session owners needed more help during the preparation of meetings than would be required by more experienced counterparts. In most cases, session owners depended entirely on facilitators to plan and prepare the agenda, and facilitate meetings.

Third, English and Kiswahili are both official languages in Tanzania. The use of English, however, is often limited to written and official documentation. Oral communication often takes place in a local language, Kiswahili. This may also happen during GSS meetings. Sometimes participants felt more comfortable explaining or discussing an issue in Kiswahili. For this reason it is important that when an English speaking facilitator moderates the session, he or she teams up with a local Kiswahili speaking facilitator. A final issue concerns the fact that certain words are misused or considered inappropriate in Tanzania, for example "fresh" which is frequently considered to be a slang word and "competitive" which has strong negative connotations. The word "impact", in most cases, is interpreted to have negative consequences. This local drift in the use of English not only has to be taken into account when phrasing the questions
for the meeting agenda, but also e.g. when designing post-meeting questionnaires.

6.3.4 Conclusions

From our experience, therefore, we think that facilitators need to be very flexible and quick thinkers and be able to see broader issues that are needed to accomplish the objectives of a meeting. They also need to ensure that relevant people are included in a meeting, know how the different stakeholders interact and work together in a group or organisation and what their respective roles and issues are likely to be etc., and how their different activities may overlap or conflict. This implies basically a good knowledge of the organisation and how it works. Above all, facilitators need a good knowledge of the GSS technology and the different dynamics it can produce.

In summary, one has to be prepared to improvise during a GSS meeting in the Tanzanian environment. Apart from electricity and climate problems, participants may not turn up in time or not at all, or problem owners may decide on a different meeting agenda just before the start of the meeting. Clearly, some of the above issues are also relevant in Western GSS meetings.

6.4 Demand and Supply approaches to stimulate the adoption and use of GSS

Information Technologies have been among the fastest growing innovations both in production and use and the prospects for future growth appear equally bright [Freeman and Perez 1988; Willinger and Luscovitch 1988]. These technologies are being adopted now at a frantic pace in newly industrialising countries, like India and Singapore, and slowly in developing countries such as Tanzania. There is, however, a considerable controversy about how best to proceed with efforts to stimulate adoption and use of IT. Catching the wave will require visionary leadership in Tanzania and support from different institutions. Different institutions have different roles to play and obligations to stimulate the adoption of technologies. The major question, however, to be asked is: “What active roles might institutions, including governments, take to stimulate adoption of potentially useful technologies such as GSS?”

6.4.1 Institutional Roles

Many schools of thoughts in adoption and diffusion of technology agree that industrial innovations provide the main driving force for economic growth and that they contribute to the creation of competition among firms and countries
ADOPTION AND DIFFUSION OF GROUP SUPPORT SYSTEMS IN TANZANIA

[Mwamadzingo 1996]. There are, however, many theories to explain the adoption process and its effects on economic growth. The principle theory is the "demand-pull" and the "supply-push" theory. It is argued that both demand pull and supply push are required for the success of technology adoption. A successful adoption needs to take account of the interaction between market needs and the changing technology environment.

<table>
<thead>
<tr>
<th>Influence</th>
<th>Supply Push</th>
<th>Demand Pull</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge building</td>
<td>- Funding of Research projects</td>
<td>- Mobilisation</td>
</tr>
<tr>
<td>Knowledge deployment</td>
<td>- Provision of education services</td>
<td>Knowledge deployment</td>
</tr>
<tr>
<td>- Encouragement of in-migration of knowledgeable individuals and organisations</td>
<td>Provision of subsidy</td>
<td>- Provision of subsidy</td>
</tr>
<tr>
<td>Provision of subsidy</td>
<td>- Encouragement of capital markets to support R &amp; D</td>
<td>- Direct or indirect provision of complementary required for use</td>
</tr>
<tr>
<td>- Tax Relief for investments in R &amp; D</td>
<td>Adoption directive</td>
<td>Adoption directive</td>
</tr>
<tr>
<td>- Instruct institutions to adopt the system</td>
<td>Standards setting</td>
<td>Standards setting</td>
</tr>
<tr>
<td>- Establish standards under which adoption might be encouraged</td>
<td></td>
<td>- Require conformity with other standards that necessitate use of specific adopted products or processes</td>
</tr>
</tbody>
</table>

Table 6-1 Dimensions of Institutional Intervention [after Gurbaxani et al. 1991]

Researchers [e.g. Gurbaxani et al. 1991; Aiyepoku et al. 1994] argue that, from an economic perspective, the broad causal parameters of adoption that might be affected by institutional intervention are "supply-push" and "demand-pull" factors. "Supply-push" assumes that the major motivating force for adoption
comes from the production of the innovative product or process. The "demand-pull" is dictated by the needs of society, as articulated through the market mechanism. The importance of the demand-side factors emanates from the fact that unfavourable developments on the demand side are capable of weakening or even impeding the widespread adoption of new technologies such as GSS. The role of "supply-push" or "demand-pull" forces in the adoption process is important for the assessment of institutional options for affecting adoption and use of GSS. The demand and supply perspectives will enhance a better understanding of the adoption process in Tanzania.

Institutions are active players in the GSS adoption process and their role is prominent in several strategies. The different intervention strategies are classified into two dimensions of potential institutional action [see table 6-1]. On one dimension are the "supply-push" and "demand-pull" forces that institution might exert. On the other dimension are the two dominant roles of influence and regulation that institutions can play. In each case we identify strategies that might be employed as shown in each of the cells in the matrix. The six strategies include knowledge building, knowledge deployment, provision of subsidy, mobilisation, standard setting, and adoption directive.

Institutions can intervene in several ways according to policy contingencies. "Demand-pull" policies stimulate national use of GSS, including the application of GSS in the public and private sectors, and GSS education and awareness programmes. "Supply-push" policies stimulate national production of IT, including the growth of indigenous and joint-venture IT companies, research and development, and technology transfer. Within each of these two goal orientations, the government may adopt an influence or regulation role. In the influence role, government promotes technology through various forms of funding, incentives and subsidies, informational or consultation assistance, and partnership projects. In the regulation role, government exercises its legal or statutory powers to abet GSS adoption by issuing directives, setting technical standards, formalising common procedures, protecting copyright, and so on.

It is not our intention to go into the details of these actions. Different studies [see e.g. Gurbaxani et al. 1991; Aiyepoku et al. 1994] provide detailed reviews of diffusion of innovations. Summaries of the major relevant conclusions drawn from such research and that are related to the adoption of GSS are:

- Institutional intervention to promote knowledge building is essential to sustain development of GSS, but it is not absolutely required for successful adoption and use
- Serious and sustained institutional interventions for knowledge deployment is essential for significant GSS adoption, and the extent of adoption is likely to be correlated with the extent of knowledge deployment
ADOPTION AND DIFFUSION OF GROUP SUPPORT SYSTEMS IN TANZANIA

- Subsidies are crucial instruments of institutional intervention in adoption of GSS
- Standards can be an important tool of institutional intervention in the adoption of GSS, but standard setting is a risky instrument that must be used with great care to avoid counterproductive consequences
- Adoption directives have relatively little potential to support the adoption of GSS.

6.4.2 Specific institutional involvement in Tanzania

In most adoption processes institutional involvement is regarded as imperative. The institutional involvement in Tanzania covers a large variety of actors ranging from research institutions, governmental agencies, local government, national and global organisations, to non-profit private organisations like peer-groups, task forces, or industry associations. Unfortunately, very little if anything is known about how these organisations shape the GSS adoption trajectory in different nations. Based on our experiences and various studies [see e.g. Gurbaxani et al. 1991; Aiyepoku et al. 1994; Night et al. 1995] we define the role of each group in advancing the GSS adoption process. In particular, we examine how these organisations might influence the GSS adoption processes in capacity building in Tanzania. We identify specific institutional measures, which are needed to make GSS adoption a success by probing the demand pull and supply push forces mobilised by these actors.

The demand for use of GSS could be stimulated by various local institutions in Tanzania. Some of these include:

- **The Government, Central and local government authorities:** The Government entities, for example ministries, provinces, municipalities, etc., are the most powerful source of institutional influence and regulation of adoption [Nelson and Soete 1988]. The Tanzanian government could be stimulated to use GSS to support their decision making processes and meetings. In turn, the government must give a push for the use and adoption of GSS in the country as part of its obligation to enhance research and development in science and technology. It is likely that when the government uses this technology other organisations will be more likely to use it too. We believe, however, that this approach is likely to be difficult as the Tanzanian government is characterised as rather bureaucratic and centralised. This means that the government is unlikely to participate in stimulating the use of GSS because it is less likely to use the technology itself. The deliberate government decisions to refrain from intervening in adoption processes might undermine the widespread application of information technologies such as GSS.
• **Professional and trade and industry associations**: These are agencies that might have a national or international influence. They include scientific and technical, professional organisations such as labour unions, trade and industrial associations. Such groups enable members to focus their attention on improving technologies and procedures applied in work groups. This should, in turn, stimulate the exploration and adoption of technologies such as GSS. Furthermore, the very act of exploring new development technologies, which is the technical core of the work group, should suggest to top management that the department is committed to improving its development infrastructure. This should, in turn, positively influence top management support for the use of GSS.

• **Corporations within the country**: Within Tanzania, powerful companies performing important functions, for example, The Bank of Tanzania (BoT), The National Social Security Fund (NSSF), BP Tanzania Ltd and IPP Ltd can have dramatic influence on adoption of GSS in industry. Changes in the technological environment, unsatisfactory procedures, or increasing pressure from competitors may result in demand for new technologies such as GSS to meet these challenges. It could be possible to provide consulting services supported by GSS to these organisations. This option could be beneficial because it will stimulate the use of GSS in a sector, which is not yet really familiar with the technology. During this research we contacted a number of companies but most of them did not participate in a meeting. Where GSS was used it was well accepted and some companies such as BP Tanzania Ltd. have started to use the technology for the meeting processes. Others, for example, the BoT and NSSF have indicated interest in acquiring and customising a GSS.

• **Higher Education and Research institutions**: The role of higher learning and research institutions in the adoption process is natural because of their multidisciplinary nature, their competence in undertaking basic research, their reservoirs of knowledge and information, and their ability to recruit young talent. They could use GSS for teaching and research. The higher education institutions in Tanzania, for example, The University of Dar es Salaam, Institute of Finance Management (IFM) and College of Business Education (CBE) form a special class of such influential organisations. Other organisations such as COSTECH, TIRDO, ESRF, and TBS [see table 1-1] form another class of research institutions that could use GSS. For this approach to be effective in stimulating the adoption process, high education institutions must co-operate with the research institutions and the industry. Unfortunately, however, this is not always the case in Tanzania. Several of the research institutions and the industry are preoccupied with their own problems, such as institutional rigidities, inadequate funds and infrastructures. They are usually unaware that the state-of-the-art technology used within higher learning institutions might provide plausible solutions to
their problems. To bridge this gap in communication, effective linkage and co-operation between the research institutions, industry and the university should be established. Co-operation, however, can be sustained only when all parties benefit. Co-operation is necessary for all parties to achieve their respective objectives and sometimes to ensure their survival. Co-operation between the university, research institutions and industry also ensures the integrity of the adoption process. Such integrity is necessary if investments at various points of the adoption are to be fruitful. Co-operation between the university, other research institutions and industry provides a perfect environment for the adoption of GSS.

On the supply side, the key factors include the activities of international organisations, donor agencies, and multinational companies.

- **International agencies based in Tanzania**: A large number of foreign aid organisations e.g. World Bank, UNESCO, UNIDO, USAID are active in Tanzania. They are catalyst agents, co-ordinators of donor efforts, and stimulators and financiers of projects applying empowering technologies such as GSS. These organisations are all focused on the development of Tanzania for which capacity building is the main agenda. They are, therefore, very likely to support the use of GSS for capacity building. These organisations have a powerful influence and close relations with the Tanzanian government and local NGO’s. They have better access to funds that can be used to facilitate and solve some of the identified practical problems. A lot of Tanzanian organisations and governmental departments will come in contact with GSS being used to support the meetings of the foreign aid agencies. This could be a very successful way of stimulating the use of GSS in Tanzania. This option has been used in Tanzania in few organisations such as the World Bank.

- **Multinational corporations**: These organisations have an important influence in the transfer of technology throughout the world as they integrate their local, national, regional and global operations. As such they could constitute a primary institutional mechanism of adoption of information technology such as GSS. The supply and use of GSS at each of the nodes of their global operations could easily become part and parcel of such operations.

### 6.5 Vision of GSS use in Tanzania

Our study concerns the adoption of Group Support Systems (GSS) that are used to make group meetings and group decision making more productive. This study outlines the use and adoption of GSS in capacity building in Tanzania. The study further proposes an explanation grounded in a cultural frame for the observations. The explanation focuses on the interaction between the specific
situation in which the adoption is taking place, its larger social, cultural and institutional context, and the unique actions of researchers. Based on how we understand the world around us, we made assumptions that guided our adoption choice. As participants in our larger professional, organisational and national cultures, we link our creation with larger social and cultural values.

There are a number of practical and academic reasons why a decision was made to employ GSS for specific tasks in Tanzania. It is anticipated that the application of GSS may help to overcome some of the problems in different sectors of the economy, for example, in capacity building, governance, development of social and economic infrastructure, etc. in order to enhance sustainable development.

In summary, we propose that field experiences with GSS so far indicate sufficiently that employing the technology in Tanzania is beneficial. The way ahead to further prosperity depends on the ability of the people to learn new skills and master the new technology. The development arena that we introduced above involves people from various backgrounds, with various status levels, and often with conflicting goals. Yet, there is a motive or urge to collaborate. GSS may improve the effectiveness and efficiency of this collaboration.

The real vision of Africa must be the application of Science and Technology to the solution of local problems. In view of this goal, our specific vision is to build a GSS centre of excellence in the region that will bring social change with increased opportunities for group participatory processes, education, and sustainable economic development on the international level. This vision, however, needs strong support from various individuals, organisations and a push from the government, as outlined in the previous section.
7. Epilogue

7.1 Introduction

Historically, Tanzanian culture has been influenced by The Soviet Union and China since 1960s. In Tanzania, conformity to external policies and lack of national or individual initiatives have been a survival technique up to the most recent economic and political changes towards an open market, and more transparent and democratic processes. From our experience, individuals who tried to make changes in their respective work groups were both held back by their peers and knocked down by their superiors. Although recent reforms have changed some structures that made these behaviours the norm, the changes may take some time to take effect. The effects of the new democratic order may take time to come into play. The changes, however, are significant when considering the assimilation and use of new technology in Tanzania. We conducted our study during this transition period. The results and reflections of the research might be a mixture of issues that are inherent in both social systems, socialism and capitalism. It is important, therefore, to look beneath the surface to interpret the meaning of the results, hence the importance of positioning them in a larger context.

In this final chapter we reflect on our research from three perspectives: environmental and cultural factors, the research questions, and the research approach. Thereafter we discuss some limitations of the research and then present an agenda for further research. Finally we give our concluding remarks.

7.2 Implications of cultural attributes on environmental factors

With the insights we have gained into some of the external factors that appear to have an impact on the adoption of GSS, it is worthwhile to relate these findings to Hofstede's cultural background of the research setting. For example: What effect does the amount of power distance and uncertainty avoidance have on the endorsement of GSS by managers? To what extent do the various cultural dimensions explain why participants will be less or more satisfied with using the technology? Looking into these cultural aspects may help us better to understand the mechanisms behind GSS adoption and compare our findings with those in other cultures. In the end, this may lead to the development of theories to improve the application of GSS technology across various cultures.

We present our perceptions in summary, on the relationships between the environmental (external) factors and the cultural dimensions that were described
during Phases I, II and III of the study in tables 7-1a and 7-1b below. The hypothesised influences of the environmental and cultural factors are shown in table 7-1a. We show how a more pronounced cultural attribute might effect the environmental factors in an organisation. The resulting, actual, situation in Tanzania is presented in table 7-1b. The plus and minus signs indicate positive and negative impacts of cultural attributes on the environmental factors, respectively.

<table>
<thead>
<tr>
<th>Environmental Factors</th>
<th>Cultural Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endorsement by top management</td>
<td>PDI (+)</td>
</tr>
<tr>
<td>Centralised decision making culture</td>
<td>-</td>
</tr>
<tr>
<td>Computer literacy</td>
<td>-</td>
</tr>
<tr>
<td>Presence of referent power</td>
<td>+</td>
</tr>
<tr>
<td>Oral communication preference</td>
<td>-</td>
</tr>
<tr>
<td>Satisfaction with use</td>
<td>-</td>
</tr>
</tbody>
</table>

*Table 7-1a Hypothesised impact of cultural dimensions on environmental factors*

<table>
<thead>
<tr>
<th>Environmental Factors</th>
<th>Cultural Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endorsement by top management</td>
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</tr>
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</tr>
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</tr>
<tr>
<td>Presence of referent power</td>
<td>-</td>
</tr>
<tr>
<td>Oral communication preference</td>
<td>+</td>
</tr>
<tr>
<td>Satisfaction with use</td>
<td>-/+</td>
</tr>
</tbody>
</table>

*Table 7-1b Actual impact of cultural dimensions on environmental factors*

**Power distance (PDI):** It is argued that a country which scores high on power distance, like India, is likely to have centralised authority, autocratic/dictatorship and paternalistic behaviour, and empowerment of subordinates will be limited. Decisions in most cases are politically oriented. In such countries anonymity may not be a desirable feature of communication [Ho et al. 1989]. Verbal communication during meetings is more preferred. In addition, it is assumed that most top management likes oral communication because they have little experience of computer operation and typing skills. Management does not respond quickly to new changes. They want to maintain their status quo, and as such they challenge new technologies, such as GSS, and its implementation.

Our study results on this attribute suggest that there is high power distance in Tanzania. As a result, most top management uses traditional decision making
processes. Decisions are centralised at the apex and politically oriented. Oral communication is more preferred, particularly, by superior staff so that they can know who said what unto whom. In general, the scores on satisfaction with GSS are very high. Interviews, however, indicated some dissatisfaction from top management whereas other participants were satisfied because GSS enhances equal distribution of power, transparency and democratic decision making. There was no clear relationship between power distance and computer literacy. GSS may, therefore, be adopted if top management is satisfied with the technology and if it does not threaten their positions and interests.

Uncertainty avoidance (UAV): This dimension relates to the extent to which members of a particular culture feel uncomfortable or threatened by unknown outcomes or new technology. In countries with a high uncertainty avoidance score, a decision to adopt the technology may take some time. Users, particularly, management need to study the technology and its impact before they can adopt. They want to be aware of the technology, how it works, how to use it and the implementation potentials and consequences for the organisation [Rogers 1995]. They are risk averse. Users prefer rich channels of communication and would like to know who said what unto whom. In such circumstances, oral communication will be preferred to written. The adoption process will usually have to go through all the stages of knowledge, persuasion, and decision before the technology is implemented [see figure 1-3]. Top management may, therefore, decide either to adopt the system if they are satisfied or otherwise reject it. In high uncertainty avoidance situations, major decisions are taken centrally by top management after consultations with very close allies whom they trust.

Results show that because of the low uncertainty avoidance, people in Tanzania are not threatened by new innovative ideas. The level of computer literacy seems not to be a problem for the use of GSS. People with little or no computer operating or typing skills participated well in meetings. People were more stimulated and challenged to learn new skills. This may have a positive impact on computer literacy. In Tanzania, simple channels like memos are commonly used to facilitate communication even in some complex problem solving issues. From our experience, it is not uncommon for example, to find letter-boxes in many offices that people can use to post anonymous letters to bring to attention any issue to management. This could mean anonymous communication might be preferred to oral communication so that most hidden issues can come to the surface. In such an environment, it is likely that most management might be inclined to take more risks to quickly adopt a new technology such as GSS.

Individualism (INDV): In an individualist culture, people are more self-centred and they tend to associate with their immediate families; relationships with
outside individuals are usually weak. The effects of this attribute on environmental factors are similar to those discussed under power distance and uncertainty avoidance, except that it is not clear how it may influence computer literacy and preference for oral communication.

Tanzania is considered to be more collectivistic. People strive to maintain harmony and avoid confrontation or disagreement among group members [Hofstede 1991]. Many people are satisfied with GSS because it may encourage group integrative decision making. GSS is likely to be endorsed by top management if it supports activities that are culturally acceptable. The presence of power distance, however, overrides collectivistic decision making. It creates an environment where decision making is more centralised. In such circumstances, decisions are likely to be made by top management to protect management interests. It is more likely that the adoption of the technology will depend on the attitudes of top management towards GSS.

Masculinity (MAS): This dimension describes the assertive environment relative to supportive environment in a particular culture. High masculinity (low femininity) scores emphasise power, assertiveness and individual achievement. Low masculinity (high femininity) scores indicate a greater emphasis on group achievement and co-operation [Hofstede 1991]. This attribute seems to be highly correlated with the attributes of power distance and uncertainty avoidance [see table 7-1a]. Its effects on external factors are similar to those of the other two attributes, except that there is no clear indication that masculinity may have a direct influence on computer literacy.

Based on our findings, people in Tanzania are more feminine, and this is the culture they want to maintain. They find that participation, opinions of others, consensus, equality and compromise on important matters in a meeting are the most valuable effects of using GSS. GSS can help support communication between different levels in organisations particularly upward communication. Top management may also find GSS useful and endorse it for communicating their expectations downward to line managers. In this way, GSS may help to reduce semantic-information distance. That is, it may help to improve understanding between superiors and subordinates. Use of GSS may, therefore, stimulate further this co-operation to achieve group accomplishments. It is expected that GSS may be accepted and adopted to enhance modest co-operation, and this may have a negative impact on the centralised decision making culture.

Long-term orientation (LTO): User satisfaction is a proxy measure for the adoption success. Initial satisfaction is expected to result in long-term success, due to users being motivated to challenge the new technology. Long-term
technology investment success is also determined by, among other things, user knowledge of the technology, use of the technology, and attitude toward the technology, e.g. satisfaction. Long-term investment in technology may take place where people are long-term oriented and do not take short-term risks. Management may take some time to study the technology before they can adopt it.

From our study results and experience, Tanzania is considered to be short-term oriented. People are characterised by *quid pro quo*, that is, giving and receiving gifts for personal steadiness and stability. It was not, however, possible to determine clear influences of short-term or long-term orientation on the adoption of GSS. In this respect, people consider GSS is useful for maintaining face.

7.2.1 Summary

The results in table 7-1b present a summary of the actual scenario of the influence of cultural factors on the environmental factors in the adoption process in Tanzania. We note that low long-term (short-term) orientation presents the least, and an insignificant, influence on the adoption of GSS, that is, preference for GSS only to 'keep face'. Low masculinity (femininity) may impact positively satisfaction and management may endorse GSS because it enhances modest cooperation. The collectivistic feature may have a positive impact on satisfaction and on top management endorsing the use of GSS. People want to use GSS for collective and rational decision making. The presence of high power distance, however, is likely to override the group decision making orientation. This may have a negative influence on the endorsement by top management, however, we note that because of the low uncertainty avoidance orientation, people may be satisfied with GSS because people are not threatened by new technology. People may use computers to learn new skills. In addition, GSS provides an easy and simple written communication channel. It is likely that top management may take some risks to endorse the assimilation and use of GSS. The major decisive dimension of culture, however, for the GSS adoption process in Tanzania is power distance. Resistance to the adoption of GSS is inherent in other environmental factors influenced by the presence of high power distance. We note that the presence of high power distance will positively impact centralised decision making and oral communication preference. It is, therefore, likely that top management will not easily endorse the assimilation and use of GSS because they might not be satisfied with the use of GSS. Referent power is another attribute that is associated with power distance. During our study, we did not observe it and but its presence was pointed out during interviews. Hence, its effect could not yet be determined.
7.3 Answering the research questions

During Phases I through III of this study, we made some conclusions drawn from observation, interviews and results regarding the adoption of GSS in Tanzania. We found that there are environmental and cultural factors that influence the adoption process. The results, the major conclusions and our practical experiences are used to answer the research questions presented in chapter 1 of this thesis in the following sections. The conclusions drawn in some questions particularly questions 3 and 4, however, are not based on empirical research but are based on our opinions.

7.3.1 Research question 1

How do people in Tanzania perceive GSS?

In this study we investigated peoples' perception of the application of GSS in capacity building. In particular, we investigated individual attitudes towards GSS technology and the differences, if any, between electronic and 'traditional' meetings.

We were curious, in the first place, to find out if people would participate in GSS meetings and would not have much difficulty in using the system, and hence would be satisfied with the technology. Practically, user participation and ease-of-use the technology aids greatly in requirements' determination and heightens user satisfaction and 'ownership' of the resulting system. For example, disagreement and showing personal position in a traditional meeting may jeopardise an individual's job security; whereas the GSS anonymity feature protects the identity of an individual and hence one may participate in a meeting without fear, this in turn may stimulate individuals to be satisfied with the technology and accept it.

Apart from a few exceptions [Vreede and Muller 1997], most field studies report high levels of participant satisfaction with meeting process and outcomes, see e.g. [Alavi 1993; Nunamaker et al. 1989; Vreede 1997; Vreede and Wijk 1997; Vogel and Vreede 1999]. The levels of participant satisfaction that we observed in the Tanzanian meetings are consistent with these findings.

On the whole, people in Tanzania are concerned to know the usefulness of the application of the technology. They also want to know more about the use of a computer, in particular, how GSS works and its implications for society. The results of our study show, in fact, that users of GSS find the technology easy to use, stimulating and challenging, efficient, it supports keeping 'face', and enhances transparency and democratic decision making. They feel that although
the technology is costly, people have to use it, and the system should be introduced to more people.

The results indicate that people were very satisfied with GSS. They expressed high levels of satisfaction regarding using GSS. There are several checks that support this outcome of the research. First, immediately after a session or later, we conducted personal interviews with some participants and meeting owners to get their perceptions on satisfaction of GSS. Two, also some organisations asked for use of GSS in other activities. Three, we made a follow-up on a number of meetings. Several organisations implemented the decisions which were made during the meetings or used the outcomes of the meetings to facilitate other processes. Three, we conducted an ex-post survey. The results of the satisfaction attribute show that people were very satisfied with GSS. Consider the following examples in table 7-2, which shows a comparison between Tanzanian and other satisfaction scores:

<table>
<thead>
<tr>
<th>Question</th>
<th>TZ(1)</th>
<th>TZ(2)</th>
<th>USA</th>
<th>NL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avg</td>
<td>Std</td>
<td>Avg</td>
<td>Std</td>
</tr>
<tr>
<td>Today, my interests were accommodated</td>
<td>4.2</td>
<td>0.7</td>
<td>4.2</td>
<td>0.3</td>
</tr>
<tr>
<td>The work we accomplished today was worth the effort</td>
<td>4.5</td>
<td>0.6</td>
<td>4.3</td>
<td>0.4</td>
</tr>
<tr>
<td>I was satisfied with the way we did things today to achieve our goals</td>
<td>4.4</td>
<td>0.8</td>
<td>4.5</td>
<td>0.3</td>
</tr>
<tr>
<td>The outcome of today's meeting is satisfactory</td>
<td>4.3</td>
<td>0.7</td>
<td>4.3</td>
<td>0.3</td>
</tr>
</tbody>
</table>

N=67, 300, 173, 1001 respectively. All values on a scale of 1 to 5, 5 being most positive.

Table 7-2 Comparative questionnaire results.

Looking at the data that was obtained after the Tanzanian (TZ) GSS meetings, TZ(1) and TZ(2), during Phases I & II of study respectively, the satisfaction levels in the Tanzanian meetings were even higher than in a number of meetings held in the USA (US) and the Netherlands (NL), see table 7-2. Included in table 7-2 are the results from the same questionnaire that was handed out to GSS meeting participants in the USA and the Netherlands. The questionnaires in the USA covered 8 meetings, the questionnaires in the Netherlands a 100 meetings.

Despite the large sample sizes of the meetings in all countries, we avoided detailed comparison analysis using advanced statistical tests such as using a t-test or ANOVA techniques because the meetings in Tanzania were not subjected to any experimental design; the study was purely exploratory. In addition, the targeted groups or issues discussed in GSS meetings in Tanzania were heterogeneous and different from those in the USA and the Netherlands.
The findings in our study also show that Tanzanian user perceptions of GSS are more or less the same as other users in other cultures. We found, for example, that Tanzanian users find GSS to be efficient because of quality of output and time saving. They expect GSS to enhance problem solving in various disciplines for improving organisations, for example, improving leadership, counselling, improving services, drawing up corporate visions, management upward feedback evaluation, job profiling, reviewing employees retrenchment, etc. GSS also allows full, transparent and democratic participation. GSS are easy to use after getting used to it and promote the development of closer relationships. Only few of users revealed some difficulties, and some of them expected GSS would work on their ideas and propose possible approaches to the problem; but on the whole there were no greater difficulties reported. Hence, participants felt that the use of GSS will open up new possibilities for greater participatory processes and influence Tanzanian culture.

Conclusions
This question is about the perceptions that people have about the use of GSS. Results indicate that people are more positive about GSS, particularly on satisfaction, in Tanzania compared to Western cultures. People are satisfied with GSS and find it useful. Individual attitudes, values and practices have a major influence on how a person approaches the world. In evaluating the use of GSS, for example, systems engineers may be operating from one set of assumptions, while administrative personnel may have a fundamentally different perception of the technology, and management yet other perceptions. In view of this, the results presented in this study are an amalgamation of the perceptions of different individuals.

Peoples’ perceptions are considered to be an important determinant in predicting the successful use of GSS. When the perception of a product’s usefulness vary significantly among different groups of people, such as managers, users, and technologists, then it is likely organisations will not accept and implement the system. These considerations lead to the second question.

7.3.2 Research question 2

Will GSS be accepted and adopted in Tanzania?

This question focuses on user acceptance and ultimately the adoption of GSS in Tanzania. More often people do not perceive the benefits of technology until they have used it to solve real problems. With the productivity gains that have been demonstrated for GSS meetings, will this technology spread and be
implemented throughout all organisations? Various studies [see e.g. Orlikowski 1993] have found that the largest obstacle to implementing groupware products successfully is (organisational) culture. Groupware products, such as GSS is limited in use in organisations, because of conflicting cultural attributes inherent in various firms in different nations; because GSS is a new technology designed to suit a "Western" culture, it might not be accepted and adopted in Tanzania due to various cross-cultural and environmental factors.

A study by Rudy [1996] identifies two main gaps in the existing research on computer-mediated communication such as GSS. First, most of the work fails to consider the context in which GSS is introduced. This criticism comes from contextualism, which insists that the context affects its use and effects. Second, particularly for media effects research, little has been done on the effects at an organisational level; most of the work deals with individuals and groups. From the viewpoint of Rudy's contextualist criticism, the theme of the meeting is quite relevant: "How do diverse cultural attitudes shape the implementation and use of GSS? Why GSS might be preferred in some cultures while it is avoided in other cultures?" [Rudy 1996].

We propose that it should be recognised that, if use is a consideration, adopting GSS cannot be approached in the same way as adopting, for example, a television because the technologies serve different purposes. Cultural effects, such as degree of context, the importance of human relations, and the relationship of the individual to the group, on the implementation and use of GSS should be acknowledged. The biggest challenge in the adoption process is "attaining widespread use".

**Influence of environmental factors**
Results from the field show that endorsement by top management and user satisfaction may have a positive influence on the acceptance and hence adoption of GSS in Tanzania. Whereas, increased oral communication preference, presence of referent power and centralised decision making culture may have a negative impact. A high level of computer literacy, however, is considered to have an insignificant influence on the adoption process. Detailed discussion of the influence of each of these attributes has been presented in chapters 3 through 5. In conclusion, it was observed that endorsement by top management was the most influential factor for the successful adoption process.

Managers may have many excuses for not endorsing the use of GSS [see e.g. Nunamaker et al. 1995]. In Tanzania, for example, rewards are more often based on successful execution of ideas once they have been evaluated and adopted. So managers would like to know who said what for review and evaluation purposes. In this respect, one manager was quoted from the field saying: "I need
to know who said what so that I can do annual reviews. How can I evaluate my people if their ideas are anonymous?” In this case, GSS is not likely to be accepted by management.

In addition, users have their own capabilities to execute tasks and to estimate the risks and cost of mistakes, which in turn affects their self-esteem and confidence [Stander 1998]. Managers, who fear criticism for their decisions, might have difficulties in endorsing the use and adoption of new technology, such as GSS, because of fear of failure or rejection by other workers. They want to be able to consult with other people as they usually do before they can make any decision. It is difficult to predict the effects of different kinds of technology beyond the apparent effects on efficiency and cost that are often decisive when it comes to the initial decision whether to invest in the technology or not [Sproull and Kiesler 1991]. Predictions of initial efficiency and cost effects do not have much predictive value about further effects once the technology has been deployed, or about social and societal effects in a longer perspective. Managers, however, who feel personally responsible for things that happen to them and have more control over the situation, are more willing to use and accept the GSS. A more comprehensive sensitisation and promotional scheme is needed for top management to endorse the use of GSS in Tanzania.

Influence of Cultural factors
Hofstede’s [1991] cultural dimensions on the implications for adoption of interactive technologies such GSS are relevant. They highlight the need for a theoretical structure to predict accurately the direct relationships. The discussion of Hofstede’s descriptions in chapters 4 suggests that, on one hand, there is a positive correlation between collectivistic and feminine culture, and GSS adoption. On the other hand, there is a negative relationship between adoption, and individualism and masculinity. Results of the study show that Tanzanians are known to be more focused on co-operation and group work, and converge very quickly to a consensus. People tend to avoid prolonged confrontations when using GSS. It was concluded, therefore, that using GSS might encourage this type of orientation. It is, therefore, possible that GSS will be adopted because it supports co-operation and group focus.

The long and short-term orientation in life dimension is based on Confucian ideas. The high serving rates of long-term oriented countries would allow for greater investment in GSS technology; however, the pressure to ‘keep up’ in short term focus, countries might provide an impetus for adoption of GSS. The influence of this attribute in a Tanzanian context could not be clearly identified. It was found that GSS might be used in Tanzania to keep “face”. We may argue, therefore, that it is too early to tell if this factor will have any significant impact on the adoption process in Tanzania.
In low uncertainty avoidance environments, e.g. Jamaica and Denmark, it is common that motivation comes from achievement, esteem or belongingness; there is high tolerance for deviant or innovative ideas and behaviour. In strong uncertainty avoidance countries (e.g. Greece and Portugal) there is resistance to innovation and motivation for work comes from security as well as belongingness. In low uncertainty avoidance cultures, new ideas will be more readily accepted than in high uncertainty avoidance cultures. Thus, low uncertainty avoidance cultures should experience faster rates of adoption of new technologies. Tanzania is considered to be have a low level of uncertainty avoidance. This was more evident in the findings that people were not threatened by the new technology. They were rather stimulated and challenged by GSS. Generally, people wanted to know about the technology and its applications in assisting to solve real world problems. These results suggest that GSS might be well accepted and adopted in Tanzania.

Power distance is probably one of the most serious factors in influencing the adoption of GSS. In low power distance countries subordinates expect to be consulted and the ideal boss is a resourceful democrat. Status symbols are frowned upon. Consequently, in low power distance countries the more equal status of subordinates may provide a grass roots path for adoption of GSS. In contrast, in high power distance countries, like Tanzania, subordinates expect to be told what to do and the ideal boss is a benevolent autocrat. Privileges and status symbols for managers are popular and expected. Adoption of GSS might be seen as a power status, especially if compared with other organisations. In these situations, the autocracy may facilitate quick adoption of GSS once the decision to adopt is made; but sometimes GSS might be seen as an instrument to erode the existing power. Normally powerful people tend to resist anything that threatens their power and they often have power to make their resistance effective. In this case, GSS might be rejected in Tanzanian organisations where there is high power distance.

Conclusions
Tanzanian culture is considered to be collective, feminine, where there is high power distance and low level of uncertainty avoidance. Other interesting findings are that people find GSS useful for keeping ‘face’, and that Tanzanians consider GSS to be a polite form of conducting meetings compared to a traditional orientation.

The results of our study show that in fact the Tanzanian users of GSS were, on the whole, very satisfied with the collaborative decision making process; because of the collectivistic and femininity orientation, it is likely that GSS may be adopted in Tanzania. Due to the presence of high power distance and referent
power, the adoption process may be slow during the initial phases but may be accelerated if top management starts supporting and endorsing GSS. Since people’s meeting and communication patterns have a great influence on individuals’ and organisations’ development interests, systems that radically change these patterns have been accepted only slowly. This gradual growth may however be disrupted, resulting in an increase demand for GSS if there are changes in power structures and top management attitudes towards endorsing new technology.

The utilisation and impact of GSS, however, may vary depending on the context of application. If participants can accept GSS, it is important to assess how participants perceive the impact of GSS process in capacity building. These considerations lead to the third research question.

7.3.3 Research question 3

What are the perceived impacts of the application of GSS in capacity building in Tanzania?

Capacity building principles and participative problem solving have quite a number of similarities [see e.g. World Bank 1995]. These similarities form the foundations for the link between the new capacity building strategies and the use of GSS, which has shown to be very helpful for participative problem solving. The use of GSS can, of course, also be focused on capacity building itself meaning that the use of GSS is seen as an investment in human capital, institutions and practices.

Based on the above links and our experiences, the possibilities for GSS to support capacity building are threefold:

1. The objectives of the meeting itself: In this case, GSS is used to support meetings and decision making in the field of capacity building [see section 1.6].

2. The provision of decision making methods and techniques: GSS is a tool that enhances accomplishing the necessary improvement in a decision-making environment, which is also an investment in practice.

3. The teaching of how to operate a computer: Using GSS to support a meeting where people are not familiar with computer technology encourages participants to learn the basics of how to operate a computer.

Based on the meetings described in this study, we noticed that GSS accomplished all the three possibilities described. The findings suggest that the meetings were a success and their objectives were more or less all achieved. There was a high level of participant acceptance with respect to the use of the
GSS technology. This phenomenon is reflected in, for example, the demand for more future meetings using GSS and the desire to acquire and implement the technology mentioned by a number of groups. The positive indications, however, with respect to the acceptance of the GSS technology for the observed meetings do not automatically imply that capacity building was achieved.

The various GSS meetings that were included in the study illustrated the way in which capacity building and mobilisation can be supported. It is difficult to determine exactly what the effect of these meetings was on capacity building because the impact of GSS on capacity building should be visible in the effect of capacity building itself, i.e. better educated people, more prominent roles for institutions in development activities, and effective development methods and tools. The effects, however, of capacity building efforts can only be seen in the long run since (1) it is a slow, continuous process, and (2) the effects have to be measured nationwide [World Bank 1996].

Nevertheless, several participants expressed the view that the GSS meetings were capacity building in themselves, because of the process of the empowering meeting design. Having gone through this type of exercise, they felt empowered to take more responsibility for their own organisation’s development, rather than relying on external parties to do so. Taking a closer look at the meetings from the perspective of each capacity building aspect separately, we first see that the meetings did train people in a number of necessary skills. New techniques and methods were provided for the application of GSS to create a more open and rationally orientated decision making process. Most participants in meetings in Tanzania were not familiar with computer technology, which made it necessary to teach them the basic skills for them to participate more effectively. The GSS meetings were used to train Tanzanians to operate the GSS both as a technographer and as a facilitator. Basic group facilitation skills were also taught, which can be considered a necessary skill due to the need to address development problems participatively. Moreover, some participants also considered the fact that they learned how to operate a computer as an important improvement in their skills. Computer training is considered a key capacity to promote development, see e.g. [Marshall and Ruohon 1998]. Second, participants from different institutions especially were enabled to be meaningfully involved in participative development activities. The results of these meetings consisted of strategy formulations and action plans to which all the participants had contributed actively. Third, we argue that the GSS meetings themselves were “proof by demonstration” that participative methods and tools can help to address development issues in Tanzania. Through the GSS meetings, a variety of participative methods, such as brainstorming and focus groups, were introduced and successfully applied.
A recent World Bank report on capacity building in Africa calls for attention to be paid to two key areas: Participation by the people themselves and improving the decision making environment of leaders and managers in key public sectors and civic sector institutions [World Bank 1996]. These two areas present a paradox. One cannot automatically assume that leaders and managers will happily embrace participative approaches. Strong hierarchical relationships (power distance) and referent power issues in Tanzanian culture stand in the way of participation. Participation may be perceived as threatening, either as a result of the colonial legacy or of traditional values. The employment of GSS as presented in this thesis may provide a way to overcome this paradox. Therefore, in summary, we argue that the added value of applying GSS in the areas that we visited extend along two timelines:

- **Immediate benefits.** From a short term perspective, a number of current problem areas and issues were addressed during the meetings that we studied.
- **Embedded benefits.** From a long-term perspective, a number of example approaches to address the issues in key problem areas may be institutionalized and may serve as examples, i.e. process blue prints, for other areas.

Generally, Tanzania with a less developed economy, needs to adopt GSS to suit not merely the social-economic priorities, but should also continually monitor and analyse the opportunities and constraints poised by globalisation. Properly managed with a view to equity, the technology could enhance Tanzania’s population access to information and to teaching aids and opportunities. In the education sector, for example, for many years the basic technology has remained unchanged. Whereas in Western cultures, the use of computers in education has extended to a primary school level, in Tanzania sadly very few University or College students have access to technology and some of them cannot even afford to use, for example, a simple mathematical calculator. The introduction of new interactive tools such as GSS, however, may bring a sharp increase in education productivity. In other sectors such as public administration, more decentralised and collaborative decision making is needed to enhance productivity. Technologies such as GSS can be used to provide the enabling infrastructure needed for organisations to get timely and pertinent information for decisions that must be made.

Unfortunately, as with the spread of other technologies the spread of GSS has followed a common pattern, wealthy nations have been quick to utilise it and reap its benefits, while poor countries like Tanzania must wait. In a global system, Tanzania cannot afford to remain technologically isolated, as economic well being has come to depend on technology and its application for development. The information revolution offers Tanzania a dramatic
opportunity to leapfrog into the future. Using GSS in decision making processes, may enhance the chance for the country’s economy to break out of decades of stagnation and decline. If GSS is excluded as a tool for capacity building, Tanzania is likely to be even more marginalised and economically stagnant in the future than it is today. This may spell doom for the country.

In conclusion, we have analysed the adoption of GSS for capacity building in Tanzania. The implementation and use of GSS has enormous benefits as a means to support capacity building efforts. When applying GSS in Tanzania, however, one has to consider the potential pitfalls and problems, which have been described. We believe that the adoption of GSS could be successful, but considerable effort and support are necessary to ensure its success.

It is important to assess how the GSS process may enhance the perceived impacts in capacity building. The way in which the GSS process can be used to improve the effectiveness and efficiency of participatory processes are particularly relevant. These considerations lead to a fourth research question. If GSS is perceived to have an impact on capacity building processes, then it is of interest to explore specific ways in which GSS may provide, or fail to provide, support in capacity building.

7.3.4 Research question 4

*How can GSS be used to improve participatory processes in capacity building?*

Considerations of building a Tanzanian capacity for the effective use of GSS in decision making are presented in the context of the challenges of sustainable development. Tanzania has a difficult task ahead and faces many problems that require special understanding and assistance from the international development community. The Government and other institutions can be assisted to make effective use of GSS for decision making to enhance productivity and the qualitative development of the country. There are various ways and means in which GSS may provide support in capacity building. At the core of these, are the replacement of more traditional meetings with contemporary, simple electronically supported meetings, and the availability of capacity to support the new technology and process.

The possibilities of sharing information and getting assistance to deal with problems across various stakeholders in GSS meetings help to build up the much-needed participatory approach in a developing culture. Usually, a key challenge to organisations in Tanzania is to replace the more centralised boardroom projects with dynamic visions of projects in process, which are adapted to the contemporary decision making participatory approaches. It is anticipated that
frequent use of GSS may reinforce capacity building by encouraging participation, transparency, and democratic decision making in organisations.

The multicultural nature of participants in meeting processes, however, poses a quite unique challenge to the application of GSS in capacity building. One of the issues that gives shape to a good background of a meeting is a simple communication process. Communication is an important determining factor of the effectiveness of user interaction and studies have shown that easy communication processes will increase productivity of users of collaborative systems [Bodley 1993]. Non-oral communication forms are very important part of interactive communication [Baruth and Manning 1991], a key factor of GSS. It is expected that, through GSS simple and easy communications may facilitate participatory processes and increase productivity in various sectors of the economy in Tanzania.

The linkage between GSS technology and capacity building is an important issue in the adoption process. It is widely recognised that a central factor in the acceptance of any technology in any culture is the availability of the capacity to put the technology to use in the recipient country. For example, the human resource capacity to adapt and put into use the new technology is crucial to the successful assimilation of the technology. The adoption of GSS, however, would be hampered if the capacity to stimulate use of the technology were inadequate or lacking. This problem may be compounded by the gross unavailability and insufficiently quality of contemporary IT tools like GSS, technically competent staff and professional services to enhance decision-making. GSS can be a veritable tool for partially overcoming this major constraint by providing training capability and professional services to cover a variety of capacity-building issues of concern to Tanzania.

The potential availability of continual and relatively cheap advice and support through GSS by use of local expertise and experience would enhance capacity building. The frequent use of GSS in many organisations, the forming of professional partnerships with international groups of colleagues with shared interests in development and research, and executing national sound development practices would ensure the maintenance of the integrity of GSS. This would, certainly, be an excellent vehicle for strengthening Tanzania’s GSS research and decision making capacity at the project through macro levels, and also help to achieve the goal of sustainable development.

Certainly, promoting GSS in Tanzania through various approaches would enhance the sustainability of domestic institutional capabilities efficiently to handle various severe development problems of the country. Significant resource savings would emerge as the current large meeting costs are replaced
by the significantly cheaper alternative of using the computer-mediated technology to communicate and share information. These challenges, however, suggest the need for urgent local and international involvement.

7.4 Research approach

In this section, we reflect on the research approach used in this study. We do this by addressing the main aspects of this approach, comprising of the research strategy and the action research instruments.

7.4.1 Research strategy

Studying the adoption of GSS in Tanzania, a context different from Western culture represented a new and complex problem. Limited knowledge existed regarding the culture and environment that were instrumental for this study. Hence, the research approach needed to be exploratory, focusing on building a new body of knowledge regarding the adoption of GSS in Tanzania. An inductive-hypothetical research approach was, therefore, used to conduct the research. The study was conducted in three inductive phases: an exploration of the application of GSS in Tanzania, an in-depth study, and an ex-post survey. For Phases I & II of our study, which covered the descriptive research initiation and abstraction activities, i.e. activities 1 and 2 in figure 1-4, we used a grounded theory approach. This approach aims to develop inductively derived grounded theories about a phenomenon.

Chapters 2 and 3 contain a number of reasons to explain why an inductive-hypothetical research strategy and grounded theory approach were applicable to our research domain. The inductive-hypothetical approach, for example, permits feedback and learning in one research in one research cycle, enabling the evaluation of ideas regarding the working mechanism in the problem area. This is implemented in the research approach by conducting a number of inductive cases prior to developing a new theory. This approach showed to be of great value in this research.

We were, however, 'theoretically sensitive'. In the context of grounded theory research, theoretical sensitivity is considered to be an important factor in formulating a theory that is faithful to the reality of the phenomenon under study [Glaser 1978]. It deals with the researchers' ability, insight, and experience with the phenomenon studied to give meaning to the data and separate what is permanent and what is not. Using this approach, factors or categories of data are identified which are used to develop a new theory. Theoretical sensitivity comes from reading the literature, professional experience, and personal experience [Strauss and Corbin 1990]. In the context of our study, theoretical sensitivity
consisted of extensive experience in facilitating GSS meetings, a significant background in GSS research, many years of development experience in Africa, and being native of the cultural context studied.

7.4.2 Action research instruments

The role of the researcher in this study was an active one, bearing similarities to the action researcher [Checkland 1991; Zuber-Skerritt 1991; Dick 1993]. The action approach in general proved to be useful for this study. The approach supported us in gaining an in-depth understanding of the practical potentials of the adoption and use of GSS in Tanzania. We consider action research to correspond well with the learning strategy included in the inductive-hypothetical model cycle. We realise, however, that action research is often criticised for its reliance on subjective interpretations. To deal with this problem, the following measures were pursued [see Yin, 1989]:

Frameworks
Various studies contend that at the core of the theoretical research approach, frameworks are instrumental for studying a certain problem. Frameworks may be described as expressions of all or part of a system represented by a set of abstract classes and the way instances of those classes collaborate. Frameworks play an important role in the development of a body of coherent research. The role of frameworks is to facilitate, and perhaps ratify, the development of consensus among researchers in the field concerning the body of phenomena constituting the subject matter of research [Pervan 1994].

Clearly, frameworks have far reaching implications for the problems to be investigated for the adoption of a new technology. The choices made for a framework in turn guide the implementation and eventual use of a technology. A good framework can reduce the efforts required to study and cost of studying, certain phenomena. Unfortunately, developing a good framework may take some time and is expensive. A framework must be simple enough to be learned, yet must provide enough features that it can be used quickly and provide hooks for the features that are likely to change. A framework must embody a theory of the problem domain, and is always the result of a domain analysis, whether explicit and formal, or hidden and informal. Therefore, frameworks should be developed only when many issues are going to be investigated within a specific problem domain.

Motivated by the promising new technology of GSS, we adapted and developed some frameworks for the study of adoption of GSS in Tanzania. The adapted models include: IT diffusion translations [Gillespie et al. 1995]; stages in the innovation–decision process [Rogers 1995]; the technology acceptance model
[Davis et al. 1989]; input-process-output model [Nunamaker et al. 1991]; and cross-cultural dimensions [Hofstede 1980, 1991]. These frameworks provided the foundation for our theory of descriptive inductive research.

Positioning our findings of the five environmental factors on TAM (figure 3-2), there were good indicators that GSS may be accepted, after knowing how people perceived the usefulness and ease-of-use of the technology, and hence satisfaction of GSS. The input-process-output model (figure 3-3) guided us in identifying the context variables that were assumed to influence the output, satisfaction level of participants, on the use of GSS.

We developed a new framework for the adoption process in Tanzania [see fig. 4-1]. We avoided using the existing theories such as the technical acceptance model of Davis et al. [1989] so that we could not be blindfolded and not see what was and was not really significant [Strauss and Cobin 1990]. We wanted to experience the unique reality of applying GSS in Tanzania and make sense of our observations without being constrained by boundaries of a certain theory. A number of categories were defined in the model to realise our objective. Each factor in a framework assumed the role of either a motivator or hindrance to the adoption process.

Sources and analysis of data
Multiple qualitative and quantitative techniques were used to collect data: questionnaires, open and structured interviews, participant observation, and system logs. The combine use of techniques can support the creation of a rich representation of the phenomena under investigation, and permit comparison and contrast of the collected data. We used research teams (facilitators, chauffeurs, and observers) to collect and analyse the data. A number of other researchers were involved in our research during the various phases of the study and reviewing the draft study reports. This was an attempt to reduce a researcher’s bias and obtain a more objective view by combining the subjective interpretations of different observers [Churchman 1971].

Given the nature of the research issues and the sources of data, a predominantly qualitative analysis was used to examine the data and identify common themes across the groups. While this type of analytic approach does not embody the precision and economy of presentation associated with more quantitative laboratory studies, it attempts to offer an added measure of richness consistent with our research objectives [Tyran et al. 1992].
7.5 Limitations of the research

The works of Hofstede demonstrate that the construct of culture is very broad. The five dimensions described offer a framework by which the culture of a country can be defined to a certain extent. Each of the dimensions has far reaching implications on the adoption and use of GSS in different countries. When using this construct it is necessary to place boundaries on its meaning. It may be argued that the limited use of data based on this framework for Tanzania is that it is pooled for four Eastern African countries (Ethiopia, Kenya, Tanzania and Zambia). It is quite true that these countries have many uncommon issues. There exist some differences in cultural and technological levels of development characterised by large ethnic groups, different religious groups, different literacy levels, and different national languages and political orientation [Odedra and Madon 1993; World Factbook 1998; US-Africa 1998]. For example, whereas in Tanzania there is a strong social integration, in Kenya there exists regionalism based on ethnic groups. Ethiopia is more oriented to Jewish culture compared to the British colonies of Tanzania, Kenya and Zambia. In addition, Kiswahili and English are both national (official) languages in Kenya and Tanzania, whereas in Zambia and Ethiopia the national languages are English and Amharic, respectively.

Although the analysis of the data collected seem to support the framework and its concept, applying Hofstede’s results in a Tanzanian context, however, is too general and limited to give the real cultural representation. It is difficult to observe and explain whether some of the cultural dimensions fit the Tanzanian context in a manner in which they have been presented. For example, it is difficult to rate whether Tanzanians are short-term oriented or long-term oriented. The ratings of the attributes in our survey provide a clue to this contention [see tables 4-12 & 5-7]. We, therefore, admit that the potential barriers and benefits arising from the use of GSS in Tanzania on assimilation and use of GSS cannot be conclusively based on Hofstede’s dimensions alone.

Clearly, the summary of results of this study may raise as many questions as it answers. Some of these may be addressed by more thorough and detailed analysis of the existing data, while others may provide rich fodder for future research. A rather detailed survey instrument must be used to address adequately all of the issues. There are opinions, however, that such lengthy and complex instruments as presented in this study could be counter productive. It was suggested, for example, that research questions should concentrate on positive indicators for all issues that respondents could indicate whether they agree or disagree. Lengthy surveys complicate both the administration of data collection and analysis of the data [Gutek 1991] and discourage participants from producing meaningful information.
7.6 Future Research

The report in this dissertation provides an improved understanding of assimilation and use of GSS in Tanzania, at the same time it opens up new areas of research. Within the context of this research project we have been able inductively to use the adoption of GSS (fig. 4-3) and Hofstede's cultural frameworks to analyse the potential of GSS in the field of capacity building in Tanzania. Based on the problems and limitations described in the previous sections as well as other experiences during the course of the research we can distinguish a number of areas that has opened up for further research.

In our study we identified the barriers to GSS adoption in Tanzania that fall into two broad categories: (i) environmental, local, factors, and (ii) cross-cultural factors. There have been, few rigorous analysis of the relationship between GSS adoption and culture. This is because, first, culture is perceived to be an unquantifiable construct. As a result, cultural variables are seen by some researchers to be constrained to the context in which they are observed so that generalisations across cultures and nations are not possible. The second reason is that the existing adoption theories do not explicitly state the relationships between cultural variables and adoption choices. It is anticipated, therefore, that further research may be pursued, specifically, on the development of theoretically derived hypotheses based on established, empirically tested cultural variables for the purpose of easing the integration of cultural variables into GSS adoption studies. Once relationships are established between culture and other aspects of GSS, such as use and their effect on society, can also be investigated.

It has been acknowledged that, there have been limitations in generalising and adapting study results from one culture without testing the developed research instruments in different cultures [see e.g. Davison and Jordan 1998]. Testing the instruments and comparing results with different countries would give more insight into the influence of culture and environment on the application of GSS. It could be well possible that the new information might lead to a new framework or alterations in the framework already developed that suits a particular culture. A good example of this is the addition of some questions on environmental and cultural factors, in Tanzania, on the questionnaire used in GSS meetings in The Netherlands and US [Briggs and Vreede 1997]. With time, there are some frames that might prove to be more stable and robust. Further research is, therefore, needed in this aspect.

The existing working environment in most developing countries is too turbulent and unpredictable to guarantee successful research. One of the major factors that compound this problem, particularly in Tanzania, was the bureaucratic delay in
endorsing GSS meetings in many organisations. Thus, the selection of specific
meetings of interest is difficult and may take quite a long time. For this reason,
in our study, we remained open to the selecting of meetings covering a wide
spectrum of issues in order to ensure that the objective of the research was
fulfilled. We, however, feel that future research should be more focused on
specific areas as illustrated in some of the following issues:

**Conduct meetings in the private sector:** All the GSS-meetings in Tanzania were
held in the public or semi-public sector. It is quite clear that there are large
differences between the public and the private sectors. Compared with the
public sector, the private sector has a stronger international focus because of
doing business with foreign companies. The institutions are also more likely to
be familiar with new management techniques and new technology. This could
mean that they might react differently, compared with the public organisations,
to the use of GSS for their meetings or decision making processes.

**Longitudinal measurements:** In this research we seldom had more than one
meeting with the same group of participants. We had more meetings with the
same organisations, but usually with different participants. It would be
interesting to see how participants behave when they become more familiar with
using a computer to support their meetings. This could give more insights into
how, for example, a dimension like uncertainty avoidance, factors like computer
literacy and political orientation are likely to influence the decision making
process when participants become more experienced with GSS. We could also
use GSS to study the other issues in organisations, such as examining business
reengineering or business processes’ efficiency and effectiveness and then
making a cross-comparison.

**Viability of GSS in Tanzania:** In this research we mentioned some of the
problems which beset the application of GSS in Tanzania. In view of this, it is
useful to analyse the commercial potential that GSS has in Tanzania and how to
exploit it. This is closely linked to the viability of the research project at the
University of Dar es Salaam. Basically if the research project cannot arrange
sufficient meetings, it is unlikely that GSS can be exploited commercially in
Tanzania. This research has been the first step towards this goal, but several
other aspects also have to be researched. These aspects are, for example, the best
infrastructure for the Group Support Facility (GSF) in Tanzania; customising
GSS into Kiswahili for potential markets in the East and Central African region;
use of GSS in commercial services, e.g. electronic commerce; and resource, e.g.
human skills and financial, arrangements necessary to sustain the use of GSS in
Tanzania.
ADOPTION AND DIFFUSION OF GROUP SUPPORT SYSTEMS IN TANZANIA

GSS for learning: Technology alone cannot support electronic meetings; it must also be accompanied by active support for learning how to use the technology, the work process, and social process. Support for electronic group processes must address the type of adaptation and endeavour to facilitate it suitably. Qureshi [1996] proposes that future research into different groups may be of value in determining the extent to which learning processes may be facilitated through a combination of technological, work and social adaptation. In view of this, we propose that further research could be pursued into how GSS can enhance learning, for example distance learning, in Tanzania.

Facilitation of GSS meetings in Tanzania: During the course of the research in Tanzania we used several facilitators and technical assistants. Based on our experiences, we noticed some variations in the meeting effectiveness and participant satisfaction between some meetings. These differences could be influenced by the roles of facilitators and technical assistants. More specifically, for example, the preparation of the meeting and the assistance of participants during the meeting could cause the variations. It is, therefore, necessary to identify the roles that a facilitator and technical assistant could play to ensure better meeting effectiveness as well as participant satisfaction.

In conclusion, the execution of some of the above issues would form a foundation for building a GSS centre of excellence in the Sub-Saharan Africa, which is our vision.

7.7 Concluding comments

The study described in this dissertation represents, as far as we know, the first in-depth analysis of the use of GSS in the Sub-Saharan Africa and one of the few non Euro-American field studies. This study is instrumental in reshaping the thinking about adoption of GSS in African context. Its aim was to give a detailed account of the application of GSS in a number of real Tanzanian groups and to shed light on some factors that appear to have an impact on the assimilation and use of a GSS technology that was developed based on a different set of cultural assumptions than those of the participants. The specific objective of the study was to explore the use and adoption of GSS in Tanzania in order to facilitate effective and efficient participative decision making in capacity building. As a result, we developed an adoption model, grounded on the data, in terms of a specification of a number of environmental factors that are believed to influence the accepted and eventual adoption of a technology [see fig. 4-1].

One of the biggest advantages of our suggested framework is its simplicity and capability to be adaptable to other African countries. The framework that
emerged from this study may also be useful for adoption of technologies other than GSS. It is important to put the deliberations in the simplest form so that many people can understand the messages we are sending to them. Complexity models will not always work in Africa. To achieve this, our proposed framework may be modified to suit a particular environment. The environmental factors in this study, however, are closely interrelated to the cultural factors that are described in the framework of Hofstede’s [1980, 1991] cultural dimensions. Both frameworks provide an excellent point of departure for further studies on the assimilation and use of GSS in African context, specifically in Tanzania.

Based on earlier studies [Hofstede 1980, 1991] and our results, Tanzania can be characterised as a group-oriented society with short-term orientation, low uncertainty avoidance, low differentiated gender roles, and which accepts the unequal distribution of power. The results, however, show that there is some overlap between the different cultural dimensions and the environmental factors on the influence of adoption of GSS. More specifically, there are some cultural factors that influence the environmental factors in the adoption process. Culture, for the purpose of this research, is considered to be a dynamic mix of group of people’s variables in constant interaction with each other. Culture changes according to context over time, and should be understood not in terms of pre-existing, fixed categories, but as resources, accumulations of actions, patterns that constitute, reinforce and transform social life. In short, culture is continually constructed and reconstructed. The overlap, therefore, is caused by the fact that culture interacts with and is integrated in all the other influences such as economic, political, social and institutional dimensions that are also called environment [see also e.g. Alvin NG and Ramiller 1997].

GSS is a very new technology in Tanzania. Much time is needed to make it known. There are many views given in relation to the adoption of GSS. Many respondents support the idea that GSS adoption should be enhanced. It is pointed out that the implementation of GSS in the Tanzania context have to be given a high priority since it may help to improve the working environment and culture in organisations; but this requires investment in issues such as revamping the existing organisational culture, promotional efforts, computerisation and computer training, etc.

We argue that Tanzanian cultural attitudes might affect the use of information technology, like GSS, in a meaningful way. Change in most organisational culture is inevitable to enable Tanzanians to move away from the more traditionally oriented meetings to more structured meetings by use of modern tools such as GSS. The use of new information technologies might provide a competitive advantage for many globally competitive firms, and become a distinctive competence force for these organisations. Until recently, for example,
most managers treated information technology as a support service and delegated it to Electronic Data Processing (EDP) departments. Now, however, companies must understand the broad effects and implications of the new technology and how it can be used to create substantial and sustainable competitive advantage. Information technology is changing the way companies operate.

The idea, however, that GSS will automatically bring about socio-economic change in line with developments in the West needs to be examined critically. When GSS is introduced into an organisation, it may be difficult to analyse its impacts, these are not limited to technical and economic aspects but also reach out to social and cultural aspects. The technology does not exist in isolation from other elements of an organisation. Once introduced, it interacts with the rest of organisational components. GSS provides a possibility of a new pattern of interaction e.g. less dependent on oral communication for certain tasks. GSS can also affect interpersonal relations. Within the organisation, the use of the new system may help, for example, to distribute power that is rare among the members of the organisation. Consequently, a new hierarchy may develop based on a new communication media, conflicting with the existing one. The system can also extend the organisation’s capacity for exploitation of resources.

Following Clapper and Massey [1995] it is suggested that how individuals frame problems-based on their initial knowledge and understanding of the problem-strongly influences their subsequent interaction with the group. It is possible that using a GSS will significantly impact how groups use their resources, such as information and knowledge, to generate output. It is also possible that these initial resources are such a significant factor in predicting the group output that any effect due to using a GSS is overwhelmed by the effect of these resources.

Regarding the values embedded in GSS, importing the technology by default means importing also the values of the West, for example, Western notions of freedom and democracy. Furthermore, if the technology is to be integrated into a culture rather than the culture into the technology, it would require conscious effort, say, to customise the system into a local language, like Kiswahili, so that it could be widely adopted.

Obviously, any change cannot arise from a vacuum. People do not quickly become responsive to changes. They want to maintain their status quo unless they are triggered or stimulated by certain events. To effect changes, strategic planning and overall sensitisation in IT is vital. Awareness and acceptance at all levels of management i.e. top management, tactical and operational levels are necessary. The same orientation should be exercised at the national level.
Sometimes, in other institutions re-engineering of the work processes must be achieved before GSS is adopted.

To achieve such changes and subsequently make GSS a popular means of conducting meetings, change agents must realise that, there is need to intensify a campaign to sensitise and educate many work groups in different organisations through various promotional channels such as news media, training, demonstrations, workshops/seminars, etc. Organised workshops/seminars to impart skills and techniques will greatly increase efficiency and effectiveness in the usage of GSS. Groups should be encouraged to use GSS frequently to increase productivity during meeting processes.

High computer illiteracy for the general public and few fully computerised organisations, may be a hurdle for the adoption of GSS in Tanzania. Access to computers by many workers, including some top management, is limited even in organisations where there are excessive numbers of computers. It is anticipated that promotional efforts for computerisation/computer use will aid faster the adoption of GSS. Institutions need modern communication equipment, easy and affordable access to networks and the Internet in order for them to participate in various electronic meetings, such as those facilitated by GSS.

Furthermore, whereas many people appreciate the usefulness of GSS, the technology is considered to be expensive for small organisations to acquire and maintain or hire it. The system is suitable for big companies or organisations. There is a feeling that reduced costs will encourage GSS to be accepted by many institutions. This could be achieved through, for example, the removal of all import taxes on IT facilities by the government, also, academic or research institutions such as the University should consider making more trial sessions available to organisations before they become fully acquainted with it.

In summary, results presented in this study suggest that there is a supportive environment for the adoption of GSS in Tanzania. The satisfaction with GSS is very positive. People expect that the technology may help to enhance participatory decision making processes. There is, however, scepticism about leaders and managers being willing to embrace participative decision making and hence endorse GSS in their institutions. This could be a major hurdle for the successful adoption of GSS. It is suggested that combined "demand-pull" and "supply-push" approaches should be used to stimulate the adoption of GSS in Tanzania.
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Appendix 1: GSS Meetings in Tanzania

<table>
<thead>
<tr>
<th>No</th>
<th>Date</th>
<th>Organisation</th>
<th>Topic</th>
<th>Sources of Data</th>
<th>Participants</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15-05-97</td>
<td>Maths. Dept. (UDSM)</td>
<td>Identification of departmental income generation opportunities</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2</td>
<td>19-05-97</td>
<td>BOT</td>
<td>Decision making on migration path for large computer systems</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>21-05-97</td>
<td>NSSF</td>
<td>Identification of strategies to increase investment income</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>22-05-97</td>
<td>BOT</td>
<td>Evaluation of training project portfolio</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5</td>
<td>23-05-97</td>
<td>NCR</td>
<td>Progress Development of Information Systems for CRDB (1996) Ltd.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
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<td>6</td>
<td>23-05-97</td>
<td>TDL</td>
<td>Decision on the adoption of a Costing method</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>7</td>
<td>27-05-97</td>
<td>Maths. Dept. (UDSM)</td>
<td>Identification of organisational (faculty) income generation opportunities</td>
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<td>✓</td>
<td>✓</td>
</tr>
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<td>8</td>
<td>22-07-97</td>
<td>World Bank (Tanzania)</td>
<td>Evaluation of a capacity building portfolio</td>
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<td>✓</td>
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<tr>
<td>9</td>
<td>08-09-97</td>
<td>NSSF</td>
<td>Year 2000 Challenges of Computers</td>
<td>✓</td>
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<td>10</td>
<td>12-12-97</td>
<td>TBS</td>
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<td>18-03-98</td>
<td>NSWTI</td>
<td>Integration of computers in the training courses</td>
<td>✓</td>
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<td>✓</td>
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<td>12</td>
<td>23-03-98</td>
<td>TBS</td>
<td>Improvement of Standards Preparation and Standards Quality</td>
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<td>✓</td>
<td>✓</td>
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<td>13</td>
<td>24-03-98</td>
<td>WAMATA</td>
<td>Creating a good Counselling Environment</td>
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<td>✓</td>
<td>✓</td>
</tr>
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<td>14</td>
<td>21-04-98</td>
<td>UDSM</td>
<td>Problems and solutions regarding Employment Procedures to Graduating Students in Tanzania</td>
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<td>✓</td>
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<td>15</td>
<td>24-04-98</td>
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<td>Sexual Offences in Tanzania: A Search for a permanent solution</td>
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<td>✓</td>
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<td>CBE 21st Century Vision</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>18</td>
<td>26-05-98</td>
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<td>CBE 21st Century Vision</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>19</td>
<td>04-06-98</td>
<td>WAMATA</td>
<td>Improvement of WAMATA Youths Wing Services (Kiswahili Session)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>20</td>
<td>10-06-98</td>
<td>BP Tanzania</td>
<td>Anticipation Anxiety on Retrenchment Exercise</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>No.</td>
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<td>Source</td>
<td>Topic</td>
<td>Qtn1</td>
<td>Qtn2</td>
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<td>------------</td>
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<td>----------------------------------------------------------------------</td>
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<td>21.</td>
<td>02-07-98</td>
<td>DITF</td>
<td>DEMO (1): Increase of Accidents in the Country</td>
<td>✓</td>
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<tr>
<td></td>
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<td>DEMO (2): Falling Education Standards in Tanzania</td>
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<td>22.</td>
<td>13-07-98</td>
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<td>Nile Basin Vision for 10 member countries</td>
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<td></td>
<td></td>
<td>(Washington)</td>
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<td></td>
<td></td>
<td>-</td>
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<td>23.</td>
<td>16-07-98</td>
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<td>DEMO (1): Courts' Interference in the management of</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td></td>
<td></td>
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<td>Education Institutions</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>DEMO (2): Increase of Court Appeals against Parliamentary Elections</td>
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<td>24.</td>
<td>02-09-98</td>
<td>TSJ</td>
<td>Improvement of TSJ Management/Leadership</td>
<td>✓</td>
<td>✓</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>25.</td>
<td>20-10-98</td>
<td>WAMATA</td>
<td>Causes for Counsellors to suffer from burnout</td>
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<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>26.</td>
<td>21-10-98</td>
<td>WAMATA</td>
<td>Causes for 'poor' communication or relationship between youth and</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>parents/guardians</td>
<td></td>
<td></td>
<td>-</td>
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<td>22-10-98</td>
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<td>Problems Facing Journalism in Tanzania</td>
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<td>Ministry of</td>
<td>Causes for Shortage of Teachers in Tanzania</td>
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<td>✓</td>
<td>✓</td>
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<td></td>
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<td>31.</td>
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<td>Government decision to License Private firms to sell firearms</td>
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<td>✓</td>
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<td>32.</td>
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<td>✓</td>
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<td></td>
<td></td>
<td>parents/guardians</td>
<td></td>
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<td>-</td>
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<td>34.</td>
<td>11-11-98</td>
<td>BP Tanzania</td>
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<td>21st Century CBE Vision and Corporate Planning</td>
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<td>36.</td>
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</table>

Qtn1 = Electronic Meeting feedback questionnaire (Appendix 2), Observ = Meeting observations (Appendix 3), Interview = Interviews before and after sessions, Qtn2= Ex-post questionnaire (Appendix 4)
Appendix 2: The Electronic Meeting Feedback Questionnaire

A.2.1 The different aspects measured by the questionnaire

In table A.2 the different aspects and the related questions are given.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Related questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant background</td>
<td>1 and 2</td>
</tr>
<tr>
<td>Interest accommodation</td>
<td>3, 10, 17 and 24</td>
</tr>
<tr>
<td>Product value</td>
<td>4, 11 and 18</td>
</tr>
<tr>
<td>Process satisfaction</td>
<td>5, 12, 19, 25, 28 and 23</td>
</tr>
<tr>
<td>Product satisfaction</td>
<td>6, 13, 20, 26 and 29</td>
</tr>
<tr>
<td>Culture - power distance</td>
<td>7 and 31</td>
</tr>
<tr>
<td>Culture - individualism/collectivism</td>
<td>8 and 32</td>
</tr>
<tr>
<td>Culture - masculinity/femininity</td>
<td>9 and 33</td>
</tr>
<tr>
<td>Culture - uncertainty avoidance</td>
<td>14 and 34</td>
</tr>
<tr>
<td>Culture - long-term/short-term orientation</td>
<td>15 and 35</td>
</tr>
<tr>
<td>Environment – presence of referent power</td>
<td>16</td>
</tr>
<tr>
<td>Environment - computer literacy</td>
<td>27 and 38</td>
</tr>
<tr>
<td>Environment – endorsement by top management</td>
<td>22 and 37</td>
</tr>
<tr>
<td>Environment – centralised decision making culture</td>
<td>30</td>
</tr>
<tr>
<td>Environment - oral communication preference</td>
<td>21 and 36</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>39 and 40</td>
</tr>
</tbody>
</table>

Table A.2 The aspects and their related questions

A.2.2 The questionnaire

Electronic Meeting Feedback Questionnaire
Meeting name: [Redacted]
Meeting date: [Redacted]
Meeting country: Tanzania

1. Not including this meeting, how many electronic meetings have you participated in?

2. What did you hope to produce in today's meeting?

3. Today, my interests were

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>not accommodated</td>
<td>accommodated</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. The work we accomplished today was

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>the effort.</td>
<td>not worth</td>
<td>worth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. I was satisfied with the way we did things today to achieve our goals.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>disagree</td>
<td>agree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. The product of this meeting

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
my expectations. \hspace{1cm} & did not meet \hspace{1cm} & met
\end{array} \]

7. To what extent are your colleagues meaningfully involved in normal meeting processes?

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
very little \hspace{1cm} & very much
\end{array} \]

8. Using the technology do you feel comfortable offering new views on the issues of the meeting?

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
very uncomfortable \hspace{1cm} & very comfortable
\end{array} \]

9. The use of GSS stimulates people to co-operate in a meeting instead of pursuing individual goals.

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
disagree \hspace{1cm} & agree
\end{array} \]

10. Thinking about what I needed from this meeting,

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
I did not get it \hspace{1cm} & I got it
\end{array} \]

11. The results of this meeting are worth the resources it cost to produce them.

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
disagree \hspace{1cm} & agree
\end{array} \]

12. The meeting methods we used today did not meet my expectations.

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
did not meet \hspace{1cm} & met
\end{array} \]

13. The outcome of today’s activities meets the meeting’s objectives.

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
does not meet \hspace{1cm} & meets
\end{array} \]

14. Did the fact that this meeting was going to be supported by GSS make you hesitate to participate?

\[ \begin{array}{ccccc}
1 & 2 & 3 & 4 & 5 \\
very much \hspace{1cm} & very little
\end{array} \]
15. Using a GSS makes it easier for you to maintain the image your colleagues have of you (i.e. keep "face").

    1  2  3  4  5
    disagree  agree

16. During meetings my colleagues focus mainly on providing:

    1  2  3  4  5
    personally important arguments  rationally orientated arguments

17. In this meeting I personally

    1  2  3  4  5
    lost  gained

18. The value of the meeting’s outcomes justifies our efforts.

    1  2  3  4  5
    disagree  agree

19. Today’s meeting process was to meet our goals.

    1  2  3  4  5
    inadequate  adequate

20. With respect to the outcome of today’s meeting, I have

    1  2  3  4  5
    many complaints  no complaints at all

21. I prefer oral communication over written communication with my colleagues (predominately oral - both equally - predominately written).

    1  2  3  4  5
    prefer oral  both equally  prefer written

22. The management itself of this organization will prefer electronic meetings over traditional meetings.

    1  2  3  4  5
    disagree  agree

23. How satisfied are you with the design of the session in the sense that the agenda items followed one another logically?

    1  2  3  4  5
    dissatisfied  satisfied
24. The outcome of today’s activities personal needs. does not meet meets

25. How satisfied were you with the work process we used today?

1 2 3 4 5
satisfied
dissatisfied

26. The outcome of today’s meeting is unsatisfactory satisfactory

27. To what extent was it difficult to use the technology (very difficult - very simple)?

1 2 3 4 5
very difficult simple

28. The group used its time well, devoting enough attention to the important issues.

1 2 3 4 5
disagree agree

29. The results of today’s meeting are inadequate adequate

30. I think that in meetings supported by GSS, influence in the meeting process is more equally distributed over the participants than in a normal meeting.

1 2 3 4 5
disagree agree

31. In today’s meeting, the use of GSS enabled me to participate more meaningfully.

1 2 3 4 5
disagree agree

32. The meeting output can be characterized as primarily:

1 2 3 4 5
loose individual results integrated group results

33. The atmosphere in this group/organization is primarily focused on:

1 2 3 4 5
APPENDIX 2: THE ELECTRONIC MEETING FEEDBACK QUESTIONNAIRE

*individual* accomplishments  *group* accomplishments

34. I think that my colleagues would regard the *introduction of GSS in their work situation* as:

1 2 3 4 5
threatening stimulating

35. For my colleagues *maintaining their image* (i.e. keeping "face") is:

1 2 3 4 5
very unimportant very important

36. I find it easier to *write* than to talk:

1 2 3 4 5
disagree agree

37. The *management* of this organization will *endorse* this type of electronic support for meetings.

1 2 3 4 5
disagree agree

38. To what extent did "using a computer" hinder you in participating in this meeting?

1 2 3 4 5
very much very little

39. Do you have any other remarks?

40. Please describe what you think will be the *impact* of this meeting?
Appendix 3: The observations instrument

During the meetings we observed the process and the interaction between the participants. To do so we used an aid to structure and focus the observations. This aid is given in table A.3.

<table>
<thead>
<tr>
<th>Cultural dimensions</th>
<th>Observation element</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Power-distance</td>
<td>Interaction between the participants (electronically as well as orally) and especially which participants interact with each other.</td>
</tr>
<tr>
<td>2. Individualism-collectivism</td>
<td>The focus on group loyalty (for example the way in which people interact when generated ideas are merged to come up with a more focused list).</td>
</tr>
<tr>
<td>3. Masculinity-femininity</td>
<td>The co-operation between the participants during the mee-ting.</td>
</tr>
<tr>
<td>4. Uncertainty avoidance</td>
<td>The attitude towards the introduction of GSS (for example are the participants beforehand more focused on the disadvantages instead of the advantages of the system).</td>
</tr>
<tr>
<td>5. Long-term vs. short-term orientation</td>
<td>The contents of the ideas and comments that are submitted (electronically as well as orally) and which kind of ideas are prominent in a voting section of the meeting.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Presence of referent power</td>
<td>The way in which the participants (and especially the chairman of the meeting) deal with participating anonymous-ly.</td>
</tr>
<tr>
<td>2. Computer literacy among participants</td>
<td>The extent to which participants need training to use the computer and the system (before as well as during the actual meeting) and the speed in which they enter ideas.</td>
</tr>
<tr>
<td>3. Endorsement by top management</td>
<td>The way in which the management of the organisation deals with the introduction of GSS (this will be observed primarily in the encounters before the GSS-meeting).</td>
</tr>
<tr>
<td>4. Centralised decision making culture</td>
<td>The role of the chairman during the meeting and to what extent the other participants expect the chairman to make decisions during the meeting.</td>
</tr>
<tr>
<td>5. Oral communication preference</td>
<td>The extent to which people are willing to interact orally and which role this oral communication plays in the meeting.</td>
</tr>
</tbody>
</table>

*Table A.3 Observation elements*
Appendix 4: Ex-post Questionnaire

UNIVERSITY OF DAR ES SALAAM
MATHEMATICS DEPARTMENT
P.O. BOX 35062 . DAR ES SALAAM . TANZANIA

Ref: GSS/Tz/Qn1.98
Ext.2046

Tel: 410500-8

24th August 1998

INDIVIDUAL ATTITUDES TOWARDS GROUP SUPPORT SYSTEMS (GSS)
AND WORK ENVIRONMENTS IN TANZANIA

(QUESTIONNAIRE)

Dear Participant:

The attached survey instrument has been developed to ascertain your attitudes toward
an information technology and work environment. Specifically, the questionnaire is
developed by GSS researchers to get exhaustive feedback from all entrepreneurs
sensitised to GSS meetings. The feedback includes positive or/and negative views,
impacts, challenges, advises and future visions of implementing the system if it was to
meet (or met) your requirements.

The purpose of the survey is to avail information on cross-cultural and environmental
factors that may have greater influence on the innovation, adoption and diffusion of
GSS in Tanzania context.

We call for your HONESTY response to all questions. “The great vantage in life is for
one to say what he/she think.” So, if you have a very negative opinion on a certain
issue, please do not hesitate to respond in that spirit. The same goes, of course, for
when you have a very positive opinion.

If you would be willing to participate in a follow-up study please print clearly your
name and address in the space provided. This portion of the survey will be separated
from your responses so that confidentiality will be maintained.

Name:

Address:
The terminology list on the reverse of this form is provided to assist you in the completion of the survey. Thank you very much for your help.

Sincerely,

R.J. Mgaya
Lecturer & GSS Project Research Coordinator
E-mail: rmgaya@cs.udsm.ac.tz
TERMINOLOGY:

The following explanations of terms used in the survey are meant to ensure all respondents are using the same frame of reference.

A. **Power Distance (PDI)** - the degree of interaction (inequality of power) between a person at a higher level and a person at a lower level.

B. **Uncertainty Avoidance (UAV)** - the extent to which future risks are avoided.

C. **Individualism (IDV)** - the relative importance of individual goals compared with group or collective goals (looking after oneself).

D. **Masculinity (MAS)** - the extent to which the goals of men dominate those of women (assertion-nurturance).

E. **Long-term orientation** - the extent to which individuals in organisation prefer long term objectives/goals versus short-term objectives/goals.

F. **Computer Literacy** - the degree to which individuals are familiar with using the computer.

G. **Personalised Power** - the extent to which people do not hold a position in an organisation based on their merits or skills, but on their contacts.

H. **Organisational validity** - the extent to which the organisation have been structured and how this may impact information flow in decision making.

I. **Political orientation** - the way in which top management deal with individuals in an organisation in decision making processes.

J. **Location of decision Power** - the extent to which decision making processes have been decentralised in an organisation.

K. **Verbal Communication Culture** - the extent to which people prefer to interact orally (instead of written) and the role it plays in the meeting.

L. **Work Group** - refers to those workers, associates, or colleagues you interact with each work day in an organisation. Another word for work group might be department.
ALL OF YOUR RESPONSES WILL REMAIN STRICTLY CONFIDENTIAL.

SECTION ONE

The following questions relate to your background as an individual.

1. What is your gender? [ ] FEMALE [ ] MALE

2. What is your Nationality? __________________________

3. What is primary language spoken in your home country? __________

4. What is the primary language spoken in your work environment? ______________

SECTION TWO

The following questions are related to your work experience and the structure of your work environment / organisation. If you are currently NOT working, BASE YOUR RESPONSES ON YOUR MOST RECENT JOB. Please provide an answer rather than leave the question unanswered.

5. Please tick (√) in front of the area that best describes your company's PRIMARY activity (please check only one activity):

<table>
<thead>
<tr>
<th>Company's primary activity</th>
<th>Tick (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td>Retailing</td>
<td></td>
</tr>
<tr>
<td>Health – Medical</td>
<td></td>
</tr>
<tr>
<td>International Trade</td>
<td></td>
</tr>
<tr>
<td>Investment/ Finance</td>
<td></td>
</tr>
<tr>
<td>Wholesaling</td>
<td></td>
</tr>
<tr>
<td>Education - Research</td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td></td>
</tr>
<tr>
<td>Banking</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td></td>
</tr>
<tr>
<td>Chemical - Biochemical Petrochemical</td>
<td></td>
</tr>
</tbody>
</table>

Other Describe) _____________________________________________ (Please

6. What is the total number of years of your work experience? ______
   If work experience is less than a year please check this box [ ].

7. Please tick (√) in front of the area that best describes your work group's (or department's) PRIMARY function within the organisation (Please check only one function):
Department
Production
Administration
Engineering
Research & Development
Sales/Marketing
Customer Service
Accounting

Other Describe)

(Please

8. Approximately how many workers are there in your work group? _____ How many workers in your organisation? _____

9. Approximately how many personal computers or microcomputers are available for your work group to use? _____ (Number Available)

10. Does your work group have access to the computer? [ ] NO [ ] YES

11. Are you in a management position? [ ] NO [ ] YES Please give the title of your position (e.g., supervisor, accountant, engineer, etc.).

SECTION THREE

This portion of the survey asks your opinions on work issues and information sharing in ANY organisation for which might work. There are no right or wrong answers. Please tick (✓) only ONE number for the answer that best express your opinion. The coding is as follows:

1. ----- Strongly disagree.
2. ----- Disagree.
3. ----- Undecided / Neutral.
4. ----- Agree.
5. ----- Strongly agree.

<table>
<thead>
<tr>
<th>Work issues and information</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.A One does better work working alone than in a group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.B If a group is slowing me down, it is better to leave it and work alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.C Only those who depend upon themselves get ahead in life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.D To be superior, a person must stand alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.E I would rather struggle through a problem alone than discuss it with other employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.A An employee should accept the group's decision even when personally he or she has a different opinion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.B Problem solving by groups gives better results than problem solving by individuals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.C Employees like to work in a group rather by themselves</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.D In society, people are born into extended families or clans who protect them in shared necessity for loyalty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION FOUR

Any group of people must often make decisions that will apply to all of them in common as a group (organisation). How would you like to make decisions for your organisation? Please tick (√) only ONE number for the answer that best express your opinion. The coding is as follows:

1.  ⬜️  Strongly disagree.
2.  ⬜️  Disagree.
3.  ⬜️  Undecided / Neutral.
4.  ⬜️  Agree.
5.  ⬜️  Strongly agree.

14. In ANY organisation

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Decision making should involve consideration of at least the broad needs of the group (organisation) for whom policy is being made.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Co-operative search for consensus answers to common problems involving all employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Some members of the group (say bosses) impose their will on the other members of the group.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Decision making must involve all groups (workers) from the bottom to the top executives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>Each department must make decision for themselves without interference from either part or superiors.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>The decision power should be located to all workers (group) rather than top management (a manager or a boss).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION FIVE

The following questions ask what you like for your relationship to be with ANY organisation for which you might work. For each question please DIVIDE 10 points between the two choices (choice A & B) by giving the MOST points to the choice that is MOST like you and the FEWEST points to the choice LEAST like you. You may, if you like, give the same number of points to both choices. You may also use zeros.

15. In ANY organisation I might work for:

a.  It would be more important for me to......
    A. GET from the organisation ___________
    B. GIVE to the organisation + _______
        Total number of points = 10

b.  It would be more important for me to......
    A. help others. ___________
    B. watch out for my own interests. + _______
        Total number of points = 10
APPENDIX 4: EX-POST QUESTIONNAIRE

c. I would be more concerned about ......
   A. what I RECEIVE from the organisation. _____
   B. what CONTRIBUTE to the organisation. +____
   Total number of points = 10

d. the hard work I would do should ........
   A. benefit the organisation. _____
   B. benefit me. +____
   Total number of points = 10

SECTION SIX

The following statements relate to information sharing and information access in your current work environment. If you are NOT currently working, BASE YOUR RESPONSES ON YOUR MOST RECENT JOB. Please tick (✓) the only ONE number for the answer that best express your opinion. The coding is as follows:

1. ----- Strongly disagree.
2. ----- Disagree.
3. ----- Undecided / Neutral.
4. ----- Agree.
5. ----- Strongly agree.

<table>
<thead>
<tr>
<th>Information sharing and access in work environment</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. I am willing to share information that I control with other members of my work group.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I am willing to share information that I control with members of other work groups within my organisation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. My work group shares information that it controls with other work groups within the organisation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. The majority of work groups within my organisation share information with each other.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. My organisation shares information with other competitive organisations (Within the same industry).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION SEVEN

The following statements relate to an electronic meeting system (GSS) that you have had some involvement/input in its use. Please tick (✓) the appropriate number to indicate your agreement or disagreement. The coding is as follows:

1. ----- Strongly disagree.
2. ----- Disagree.
3. ----- Undecided / Neutral.
4. ----- Agree.
5. ----- Strongly agree.

21. Regarding the Group Support (electronic meeting) Systems (GSS), I participated in ..
**Adoption and Diffusion of Group Support Systems in Tanzania**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Initiating the electronic meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Justifying its use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Setting the meeting objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Planning the meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>Group Discussion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>Identifying potential problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>Identifying information needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. My **participation in** the Group Support Systems (GSS) **use** is or was:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Important to me</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Valuable to others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Important to the meeting success</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23. I believe/perceive that the Group Support Systems (GSS) is or will be . . . . .

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Important in accomplishing tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Interesting to me</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Good for all concerned</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Valuable to the organisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>Wanted by other individuals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>Endorsed by the organisation for meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Is available whenever I need it</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Outputs information in a useful form</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Operating procedures are easy to understand &amp; use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25. In regards to the Group Support Systems (GSS), I am very satisfied in / with . . . . .

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Accuracy/correctness of its information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Completeness/comprehensiveness of its information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Degree of understanding I have about it</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>d.</td>
<td>Level of control I feel I have over it</td>
<td></td>
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<td></td>
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<tr>
<td>e.</td>
<td>Timeliness of its information</td>
<td></td>
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<tr>
<td>f.</td>
<td>Level of maintaining participant's image</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>Offering ideas anonymously</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>Offering ideas in parallel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>Conduction and flow of GSS meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>j.</td>
<td>In achieving the meeting goal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>k.</td>
<td>Efficiency and effective of GSS meeting</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>l.</td>
<td>The outcome/results of the GSS meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>m.</td>
<td>Level of confidence I have in its information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

26. Overall,

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SECTION EIGHT

The following items refer to your opinion as to how fair you and your work group have been treated in the use of GSS you referred to in section six. Be as honest as you can in your responses. Remember, these responses are confidential and can not be traced back to you. Please tick (✓) only ONE number for answer that best express your opinion. The coding scale for these questions is the same as in the previous section. Coding is as previously explained:

1. ----- Strongly disagree.
2. ----- Disagree.
3. ----- Undecided / Neutral.
4. ----- Agree.
5. ----- Strongly agree.

---

27. The preparation for the meeting have been provided fairly to my work group.
28. The time for the meeting has been allocated fairly to my work group.
29. The facilitation of the meeting have been provided fairly to my work group.
30. The procedures for resolving conflicting issues in a meeting have been handled fairly.
31. Priorities for the use of different GSS tools for my work group have been assigned fairly.
32. The benefits that my work group has received from the GSS meeting (s) are fair when compared to the time and effort we have spent in applying the system.
33. My work group’s ease of use of GSS was fairly good.
34. The GSS needs of my work group have been given adequate attention by higher levels of management.

SECTION NINE

This section deals with the organisational culture (both the cultures of the organisation as well a whole and of subcultures within the organisation). In your opinion

35. How do you rate the following cultural attributes in your organisation? Tick (✓)
**ADAPTATION AND DIFFUSION OF GROUP SUPPORT SYSTEMS IN TANZANIA**

<table>
<thead>
<tr>
<th>Attribute/Rating</th>
<th>Very Low</th>
<th>Low</th>
<th>Neutral</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power distance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Individualism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domination of men over women</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(masculinity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncertainty avoidance</td>
<td></td>
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<tr>
<td>Long-term orientation</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

36. Do you think (by using) GSS may influence changes in the organisational culture in the following attributes? Tick (✓)

<table>
<thead>
<tr>
<th>Attribute/Rating</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power distance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Individualism</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Masculinity</td>
<td></td>
<td></td>
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<tr>
<td>Uncertainty avoidance</td>
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<tr>
<td>Long-term orientation</td>
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</tbody>
</table>

**SECTION TEN**

This section deals with the environmental factors that may impact/influence the adoption of GSS in your organisation. In your opinion

37. Do you think the adoption and use of GSS in your organisation or other institutions may be undermined by the following factors? Tick (✓)

<table>
<thead>
<tr>
<th>Attribute/Rating</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer literacy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lack of top management support</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of referent power</td>
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<tr>
<td>Oral communication preference</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lack of felt need or satisfaction of use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Centralised decision making culture</td>
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</tbody>
</table>

**Other** (Please Describe)

38. Considering the "traditional meetings", which meetings do you think are unsuitable for the application of GSS?

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39. In your opinion, what do you think have been/will be the impact of the application of GSS in your institution or other organisations?

SECTION ELEVEN

Use the following space to make any additional comments you believe are important regarding, culture, work environments, meetings, etc. in relation to the adoption and diffusion of GSS in Tanzania context. Researchers need your advice for future re-innovation of the system to meet our working environment.

THANK YOU FOR COMPLETING THIS SURVEY.

PLEASE BE SURE YOU HAVE COMPLETED BOTH THE FRONT AND BACK

OF EACH PAGE OF THE SURVEY.
Summary

Research Scope and Objective

In recent years organisations have found themselves in more challenging and dynamic environments than ever before. Technology and practice have changed very rapidly. One of today's most important issues in developing countries is how to make use of technology to create opportunities that add to community development. There are indications that considerable differences exist in the way in which technologies are used and assimilated across cultures. The cultural values of a country have significant influences on organisational designs and practices. Understanding technology use in other cultural environments is becoming highly relevant, especially considering the increasing global nature of organisational work and mobility of organisational working.

Trends of Information Technology (IT) development in Tanzania show that despite a significantly increasing use of IT in Tanzania, the IT infrastructure is still in its formative stage. There is every indication of 'traditional' work processes in many sectors of the economy in the country that may have a negative impact on productivity at all levels. While the government and various organisations are aware of the necessity of fostering development in IT, it seems they do not yet appreciate the dangers and risks associated with generalised or simplistic approaches towards use and adoption of IT. It is, therefore, important that for successful projects in Tanzania, a clear relationship between the context and process of IT activity must be studied and understood for effective management of technological change, implementation and its subsequent use.

This dissertation contains a report of an exploratory study that links Tanzania's cultural-environment to the adoption of Group Support Systems (GSS), which is relatively a new type of Information Technology (IT) that is used to improve meeting productivity and participant satisfaction of meeting processes. GSS are typically based on a network of personal computers and software designed to coordinate group work.

Cultural and environmental factors seem to affect the satisfaction and participation equity of groups from different cultures, primarily because they affect the perceptions of the participants. The main purpose of investigating the environmental factors is to give more insights on factors that could influence the adoption of GSS besides the cultural dimensions. The environment and culture in Tanzania are quite different from other areas where GSS have been used. Thus, both the environmental and cultural factors represent a unique setting in
which to investigate the application of GSS in Tanzania. Although the adoption process is considered to be directly influenced by the culture and environmental factor of the situation, our study only looks at the likelihood of organisational GSS adoption. The study is not concerned with the speed (timeframe) of innovation adoption, because for this the timeframe of the application of the technology in Tanzania has been relatively short.

GSS has been introduced and is employed for specific tasks in Tanzania. Organisational studies and experiences from the field show that there are some benefits of using participatory approaches to development issues. The use of GSS may promote sustainable development by helping to inform decision making on priority issues. GSS may also enhance the capacity of members of the public to participate in the development of these plans and their implementation. This empowerment of the actors or stakeholders for sustainable development, is key to the study.

Little is known about the application of GSS in developing countries apart from a few exceptions in the Asia-Pacific region. The first reported studies on the practical application of GSS in Africa involved three countries, Tanzania, Malawi and Zimbabwe. Studies in Malawi and Zimbabwe report high satisfaction of participants with GSS. In Tanzania, studies illustrate the usefulness of the technology and how it can potentially enhance productivity in organisations. None of the studies, however, provides a theory or framework to guide the analysis and hence explain the adoption of GSS in Africa. The study findings are mainly based on the perceptions of the authors. There has been little structured data collection and analysis. The studies are worthwhile, however, in that they describe real experiences and indicate that GSS application has potential. We, therefore, pursued a more detailed and structured investigation of the application of GSS in Tanzania.

Our research capitalises on the potential benefits of the technology, and the need to design better ways of employing it in the public and private sector across national and cultural boundaries of Tanzania. Because GSS technology has a direct impact on the behaviour patterns and communication processes of people working in groups, very little is known about the applicability and impact of GSS in Tanzania. There is still much to be learnt about how best to apply and adopt it to enhance development activities, particularly in capacity building. More specifically, it remains unclear how people perceive GSS and whether they accept the technology, the impact of GSS and how it can be used to improved decision making in capacity building. This presents a unique and challenging environment for doing research into the adoption of GSS in Tanzania.
The objective of this study, therefore, is to explore the use and adoption of GSS in work groups in Tanzania in order to facilitate effective and efficient participative decision making in capacity building. Specifically, the study is aimed to further the knowledge about the perceived value of GSS by organisations and give practical considerations for the application and adoption of GSS in capacity building in Tanzania, and thus further the knowledge about IT adoption in developing countries. Furthermore, the study explores the potential of electronic meeting technologies in non-western cultures and environments, and provides examples for other developing countries with similar circumstances. Finally, it identifies a number of issues that are in need for further research on GSS in Tanzania.

Research Approach

Studies conducted on work groups take various perspectives and follow various research approaches. Studies of GSS in non-Euro-American cultures concern cross-cultural issues that are difficult to address in a purely deductive way. Studying the adoption of GSS in Tanzania, a context very different from a "Western" culture represented a new and complex problem. Very little research has been done regarding the culture and environment that were relevant for this study. This is why our research in the Tanzanian context is an exploratory, focusing on building a new body of knowledge regarding the adoption of GSS in Tanzania. We used grounded theory techniques to guide the data collection and analysis during the main part of the study. These techniques aim to develop inductively derived grounded theories about a phenomenon.

A number of GSS sessions were pre-planned, conducted and evaluated. We investigated the perceptions of individual participants to these sessions. Taking the role of action researchers, we actively participated to facilitate the GSS meetings studied.

During the study, both quantitative and qualitative data was collected from various sources to enable a rich representation of the phenomena under investigation. We applied multiple instruments (pluralism) to collect data in the area of GSS application in Tanzania. These included the electronic meeting feedback questionnaire, the observations instrument and the ex-post questionnaire. These instruments enabled us to compare and contrast the different sets of data and create a great exposure of the phenomenon being studied. It was anticipated that the combination of these instruments might counterbalance their respective weaknesses and strengths.
Findings

The study was conducted in three inductive phases: the exploration of the application of GSS in Tanzania (Phase I), the in-depth study (Phase II), and the ex-post survey (Phase III).

Phase I: Exploration

The aim of the exploratory (Phase I) study was to give a detailed account of the application of GSS in a number of real Tanzanian groups, and to shed light on some factors that appear to have an impact on the acceptance of a GSS technology. The resulting theory suggests that GSS may be stimulated by computer literacy, endorsement by top management and satisfaction with use. The presence of referent power and preference for oral communication, however, may have a negative impact on the acceptance of the technology.

Various levels of computer literacy were encountered during the study. Generally, participants were not very proficient using a computer due to limited computer operating and typing skills. This, however, did not seem to hinder the acceptance of GSS. The facilitator’s roles to strike the balance between groups with different keyboard skills and the ability of participants to communicate in parallel appeared to counterbalance computer literacy effects.

Bureaucratic delays in getting meetings organised in many organisations could be considered as reluctance for the acceptance of GSS, particularly by top management. Most top managers, however, endorsed the use of GSS technology without hesitation. The presence of top managers in most sessions also encouraged other participants to attend and participate in GSS meetings. Our data also suggests that participants were very satisfied with the meeting process, the outcomes, and the efficiency of using a GSS. A number of stakeholders expressed their satisfaction and were eager to have more electronic meetings for other issues.

Although there are indications that there is referent power in Tanzania, we did not observe this phenomenon during the GSS meetings. Even in meetings where organisations’ CEO’s or high government bureaucrats were present we did not observe any overt expressions of concern regarding to protect their power. Still we believe GSS may not easily be accepted where there is referent power. People may be unwilling to share information in GSS meetings for fear of upsetting relations that have to be nurtured.
The amount of oral communication varied in the meetings. Participants had a strong desire to discuss issues orally, especially after identifying the issues electronically. We, however, observed that the electronic communication was especially appreciated in meetings where there was disagreement on issues. Oral communication appeared to be an important aspect for the participants to feel comfortable with the meeting setting and the technology. At the same time, electronic communication was accepted easily, especially on issues where there was disagreement among the participants prior to the meeting. So it was important to find the appropriate balance between oral and electronic communication.

**Phase II: In-depth**

Having gained insight into some of the external factors that appear to have an impact on the acceptance of GSS, we pursued a further study (Phase II) of these factors in relation to the cultural background of the research setting. The cultural factors also appeared to influence the other factors mentioned above, hence the adoption of GSS in Tanzania. We anticipated that looking into these cultural aspects might help us better to understand the mechanisms behind GSS acceptance and compare our findings with those in other cultures. In the end, this might lead to the development of theories to improve the application of GSS technology across various cultures. During this phase of study, we positioned our findings in the context of the five Hofstede's cultural dimensions of *power distance, uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity, and long-term vs. short-term orientation.*

Power distance provides a useful cultural variable for predicting the effectiveness of adopting a new technology such as GSS. Results from our field study show that in Tanzania participants are moderately involved in decision making processes or meetings due the presence of power distance. Use of GSS, however, promotes the decentralisation of authority, democratic and consensual decision making. Use of GSS may, therefore, encourage people to become more involved and participate meaningfully. Although many people in Tanzania might like to use GSS for such reasons, it was found that top management has to approve it, otherwise, it is unlikely that GSS will be approved easily where top management wants to maintain their status quo.

We expected that in countries with low uncertainty avoidance like Tanzania, some people, particularly, managers might be sceptical of the benefits accruing from using GSS, thinking that the technology will not be able to change anything and thus undermine the application of GSS. On the contrary, our results showed that most participants were not sceptical about using GSS and did not hesitate to participate in a meeting supported by the technology. GSS
stimulated participation and people did not feel threatened by the technology, which may have a positive impact on the acceptance. These results show that low level uncertainty avoidance may have a positive influence on the adoption of GSS.

Tanzanians can be characterised as rather collectivistic and have a strong focus on co-operation and modesty. People tend to avoid conflicts or prolonged confrontation to reach higher levels of agreement because oral communication in the process of finding group consensus may allow high power distance dynamics, dominance, conformance, and evaluation apprehension, to come into play and influence the results agreed upon. Since GSS environments minimise the social and interactive cues often used in traditional meetings, we expected participants might converge more quickly to a consensus. The field results clearly indicate that GSS initiated a push towards group based work. There was a lot of co-operation among participants. Using GSS stimulated and encouraged participants to co-operate and behave more collectively, focusing and converging quite quickly on a limited number of issues. This orientation may encourage people to accept and adopt GSS provided there is support from top management.

From our experience, Tanzania is characterised by a quid pro quo attitude, that is, giving and receiving of gifts for personal steadiness and stability. Based on the observations it was not possible to determine the influence of this factor on the adoption of GSS. Similarly it was not possible to clearly decide whether GSS had any influence of short-term or long-term orientation of ideas generated because of the nature of the group composition in meetings. Maintaining face, however, has shown to be quite important for Tanzanians and the use of GSS supports this.

Also from the data analysis and results in Phase II of the study, the resulting theoretical framework included three new environmental categories: computer operation skills, typing skills and centralised decision making culture. It was anticipated that more computer operation and typing skills might stimulate computer literacy. Our expectation, therefore, was that a high level of computer literacy, endorsement by top management and user satisfaction might have a positive influence on the acceptance and hence adoption of GSS in Tanzania. Whereas, increased oral communication preference, presence of referent power and centralised decision making culture might have a negative impact.

Computer operating and typing skills have direct, positive influences on computer literacy, which in turn is assumed to positively influence the adoption of GSS. In meetings held in Tanzania we did not notice that people were held back from participating in the meetings because they had to use a computer.
Giving a good introduction regarding how to operate a computer and GroupSystems mainly prevented the negative effects of computer illiteracy. It was established that, although computer literacy is considered to be very low in Tanzania, this does not affect GSS meetings negatively.

Results during Phase I of this study indicated that Tanzanian top management is typified as conservative and bureaucratic, and this has been shown to block the introduction of GSS on a large number of occasions. These results are further confirmed during Phase II of this study. The overall decision for endorsement of GSS, however, depends entirely on top management. Where top management supported the use of GSS, the satisfaction and acceptance level was very positive. The increased support and endorsement of GSS by top management, therefore, is expected to lead to a positive impact on the adoption of GSS in Tanzania. The absence of this support may frustrate the adoption process.

Tanzanian communication is known to be more focused on oral communication. During meetings, the physical presence and the way people present and express themselves matters very much to influence decision making. Members use, for example, authority, status structure, and power to help express ideas. The anonymity feature in GSS limits these characteristics. In the field study, we found that many people, especially subordinates, prefer anonymous written communication to oral communication when there are rank differences. Moreover, participation in a meeting is considered to be easier using GSS, because many people find it difficult to express themselves (orally) in the English language, the official language in most Tanzanian organisations. When using written communication they become more focused, because they do not have to confront others and can also take more time to think what to write. So GSS can facilitate communication in work groups in many ways. We may conclude, therefore, that a preference for written interaction over oral communication may encourage people to be more satisfied with GSS and hence to adopt the technology.

Presence of referent power was another attribute that was observed and analysed during Phase II of this study. Although there was no clear evidence of the existence of referent power, it was pointed out consistently during interviews. In Tanzania, decision making is considered to be a politically oriented process. Results, however, show that many organisations would welcome a system like this to create more rationally oriented decision making. The successful application of GSS in organisations requires the support and endorsement of top management. The presence of political orientated decision making processes in the level of top management could frustrate the successful adoption of GSS in Tanzania.
Phase III: Ex-post

The results in Phase II of our study are based on the observations and data collected during GSS meetings. We were also interested to get more information from participants after a lapse of time that could help to explain more some of the issues raised. Therefore, we organised an ex-post survey during Phase III of study. This part helped to enrich the research with lasting perceptions of the application of GSS at an individual level.

The data during Phase III of study indicate that most workers had access to computers in their work places. This shows that computer technology is not new to the majority of workers in Tanzania. The new technology to them was GSS. That is why using a computer during the meetings did not threaten participants, and hence computer literacy is not seen to be a stumbling block for the adoption process. It was also noted that people would like to work in a group, they like rational decisions and are concerned with groups’ achievements more than individual accomplishments. Overall, participants were very satisfied with GSS, which enhance participatory processes. Considering factors that might undermine the adoption of GSS in Tanzania, lack of top management support, referent power and power distance were found to be the most significant setbacks.

These results confirm earlier findings found in Phases I & II of the study. Generally, there was a feeling that GSS would enhance democracy, transparency and decision making in work groups. For GSS to be adopted, investment efforts in promotion and changing organisational culture are considered inevitable.

Finally, we also looked into the relationships between the environmental (external) factors and the cultural dimensions that were described during Phases I, II and III of the study. We noted, for example, that low masculinity (femininity) and collectivistic features may increase satisfaction and also stimulate management to endorse the use of GSS because it enhances modest co-operation and rational decision making. The major decisive cultural dimension, however, for the adoption of GSS in Tanzania is power distance. Resistance to the adoption of GSS is inherent in other environmental factors, such as centralised decision making and referent power, which are influenced by the presence of high power distance.

Following the experiences that led to conclusions regarding culture and environment, there are a number of practical issues and challenges with respect to running GSS meetings in Tanzania that should be taken into consideration. These issues include, for example, arrangement of meetings in Tanzania is cumbersome, facilities to support meetings, e.g. air conditioning, power supply
and spare parts are problematic. So one has to be prepared to improvise during meetings in Tanzanian environment.

Conclusions

From practical perspective, experiences with GSS in Tanzania were rather positive. GSS sessions were capacity building in themselves. For example, many people were trained to how operate a computer. Others were trained to facilitate electronic meetings as chauffeurs. Most importantly, a number of example participative decision making process were developed and tested in reality.

There are indications that GSS will be adopted, but it is too early to tell to what extent. We noted, however, that the major decisive dimension of culture for the GSS adoption process in Tanzania is power distance. Resistance to the adoption of GSS due to other environmental factors is to a large extent influenced by the presence of high power distance. The influence of top management appeared to be the key factor for successful endorsement of the assimilation and use of GSS.

Considerations of building Tanzanian capacity for the effective use of GSS in decision making are presented in the context of challenges of sustainable development. GSS has increasingly become a vital resource input in the sustainable development equation. Therefore, Tanzania must appreciate the inevitability of using GSS to enhance decision making, facilitate research, policy formulation, and management to increase productivity in various sectors of the economy. While some drawbacks in the application of GSS have also been reported, the general consensus is that the advantages of using GSS far outweigh the disadvantages, and that its adoption should be actively encouraged in Tanzania for addressing capacity building development issues.
Samenvatting

Onderzoeksgebied en Doelstelling

De afgelopen jaren waren voor organisaties uitdagender en dynamischer dan ooit. Technologie en praktijk zijn zeer snel veranderd. Eén van belangrijkste zaken die vandaag spelen in ontwikkelingslanden is de vraag hoe het beste gebruik gemaakt kan worden van technologie om mogelijkheden te creëren die kunnen bijdragen aan de ontwikkeling van de maatschappij. Er zijn aanwijzingen dat verschillende culturen heel anders omgaan met de toepassing en het gebruik van technologie. De culturele waarden van een land kijken van grote invloed te zijn. Het is van groot belang te begrijpen hoe technologie wordt gebruikt binnen verschillende culturen omdat er in toenemende mate sprake is van wereldwijd opererende organisaties.

Trends in de ontwikkeling van Informatie Technologie (IT) in Tanzania tonen aan dat ondanks het toenemend gebruik van IT in Tanzania, de IT infrastructuur nog in een heel pril stadium is. Er is alle reden om aan te nemen dat traditionele arbeidsprocessen in verschillende onderdelen van de economie remmend werken op de productiviteit. Hoewel de regering en diverse andere organisaties zich bewust zijn van de noodzaak om de ontwikkeling van de IT te stimuleren, lijkt het erop alsof zij de gevaren en risico's die een te algemene of simpele benadering met betrekking tot het gebruik van IT met zich meebrengen, niet onderkennen. Voor succesvolle projecten in Tanzania is het daarom van belang dat onderzoek wordt gedaan naar de context en ontwikkeling van IT activiteiten om te komen tot een effectief management van technologische veranderingen, toepassingen en doelmatig gebruik.

Dit proefschrift bevat een verslag van een exploratief onderzoek dat Tanzania's cultuur verbindt met het toepassen van Group Support Systems (GSS), een redelijk nieuw type IT dat wordt gebruikt om de productiviteit van vergaderingen te verbhogen en zo ook de tevredenheid van de deelnemers te vergroten. GSS zijn doorgaans geïmplementeerd op een netwerk van Personal Computers en software die is ontworpen om groepswerk te ondersteunen.

Culturele en contextuele factoren lijken van invloed te zijn op de gelijkwaardige deelname en tevredenheid van groepen vanuit verschillende culturen, met name omdat deze factoren de visies van de deelnemers beïnvloeden. Het hoofddoel van het onderzoeken van contextuele factoren is het verkrijgen van inzicht in factoren die van invloed kunnen zijn bij het gebruiken van de GSS, naast culturele factoren. De maatschappij en de cultuur van Tanzania verschillen.
nogal van die van andere gebieden waar GSS is gebruikt. Zo vormen zowel contextuele als culturele factoren een uniek kader waarbinnen de adoptie van GSS in Tanzania kan worden bestudeerd. Hoewel het adoptieproces direct beïnvloed wordt door contextuele en culturele factoren, blijft het adoptieproces in ons onderzoek beperkt tot de mogelijkheid dat een organisatie GSS zal adopteren. Het onderzoek richt zich niet op de snelheid van deze adoptie. De belangrijkste reden hiervoor, is dat de beschikbare tijd in Tanzania voor het toepassen van de technologie relatief kort is.

In Tanzania is GSS geïntroduceerd en gebruikt voor specifieke doelen. Organisatorische studies en praktijkervaringen tonen aan dat er zekere voordelen zijn bij een gezamenlijke aanpak van ontwikkelingsvraagstukken. Het gebruik van GSS kan een duurzame ontwikkeling bevorderen door bij te dragen in de informatie die van belang is voor het nemen van beslissingen met betrekking tot gewichtige vraagstukken. GSS zou er ook toe kunnen bijdragen dat meer leden vanuit de bevolking worden betrokken bij de ontwikkeling van deze plannen en hun toepassing. Deze betrokkenheid van actoren of belanghebbenden bij een duurzame ontwikkeling, is de kern van deze studie.

Er is weinig bekend over de toepassing van GSS in ontwikkelinglanden, behoudens een paar uitzonderingen in Zuid-Oost Azië. De eerste gerapporteerde studies over de praktische toepassing van GSS in Afrika hebben betrekking op 3 landen: Tanzania, Malawi en Zimbabwe. Studies in Malawi en Zimbabwe maken melding van een grote tevredenheid bij deelnemers. In Tanzania tonen de studies de bruikbaarheid van de technologie aan en hoe zij de productiviteit in organisaties kan verhogen. Geen van de studies echter geeft een theorie of analytisch raamwerk dat kan dienen als leidraad voor het verklaren van de adoptie van GSS in Afrika. De uitkomsten van de genoemde studies zijn voornamelijk gebaseerd op de waarnemingen van de auteurs. Gegevensverzameling en -analyse zijn weinig gestructureerd. Toch zijn de studies waardevol omdat zij reële ervaringen beschrijven en omdat ze aantonen dat toepassing van GSS zeker potentieel heeft. Daarom hebben wij een meer gedetailleerd en gestructureerd onderzoek gedaan naar de toepassing van GSS in Tanzania.

Ons onderzoek profiteert van de potentiële voordelen van de technologie en de noodzaak om betere manieren te ontwerpen om het bruikbaar te maken in de publieke en de private sector, zelfs over de nationale en culturele grenzen van Tanzania heen. Omdat GSS-technologie directe invloed heeft op de gedragspatronen en communicatieprocessen van mensen die werken in een groep, is er weinig bekend over de toepassing en de invloed van GSS in Tanzania. Er moet nog veel geleerd worden over de beste manier van toepassing om ontwikkelingsactiviteiten te bevorderen met name waar het "capacity
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building” betreft. Met andere woorden, het blijft nog onduidelijk hoe mensen tegen GSS aankijken, of ze de technologie en haar invloed zullen accepteren en hoe GSS gebruikt kan worden om beslissingsprocessen rond “capacity building” te bevorderen. Dit alles biedt een unieke en uitdagende omgeving om onderzoek te doen naar de toepassing van GSS in Tanzania.

Het doel van dit onderzoek is derhalve om het gebruik en de toepassing van GSS in werkgroepen in Tanzania te verkennen met als doel het faciliteren van het nemen van effectieve en efficiënte beslissingen op het gebied van “capacity building”. In het bijzonder heeft dit onderzoek tot doel het bevorderen van de kennis over de waarmeebare toegevoegde waarde van het gebruik van GSS binnen organisaties, alsmede het geven van praktische overwegingen voor het gebruik en de toepassing van GSS in “capacity building” in Tanzania, en aldus het bevorderen van kennis omtrent IT toepassingen in ontwikkelingslanden. Verder bekijkt dit onderzoek de mogelijkheden van electronische vergadertechnieken in niet-westerse culturen en draagt het voorbeelden aan voor andere ontwikkelingslanden met vergelijkbare omstandigheden. Tenslotte identificeert het onderzoek een aantal onderwerpen rond het gebruik van GSS in TZ waarnaar verder onderzoek nodig is.

Onderzoeksaanpak

Studies naar werkgroepen gaan uit van verschillende uitgangspunten en volgen verschillende benaderingen. Studies naar GSS in niet Europees-Amerikaanse culturen omvatten interculturele onderwerpen die moeilijk op een puur deductieve manier te benaderen zijn. De studie van de adoptie van GSS in Tanzania, een omgeving die totaal verschillend is van de “Westerse” cultuur, beschrijft een nieuw en complex probleem. Er is weinig onderzoek gedaan naar de culturele en contextuele aspecten die voor deze studie van belang zijn. Daarom is ons onderzoek in de Tanzaniëaanse context verkennend van aard, en richt ze zich op het opbouwen van kennis omtrent de adoptie van GSS in Tanzania. Grounded theory technieken hebben de dataverzameling en -analyse vorm gegeven. Deze aanpak beoogt inductief gegronde theorieën over een fenomeen te ontwikkelen.

Een aantal GSS sessies is gepland, uitgevoerd en geëvalueerd. We hebben de verwachtingen van de verschillende deelnemers aan deze sessies onderzocht. Als onderzoekers hebben wij ook geassisteerd bij het faciliteren van de bestudeerde GSS sessies.

Tijdens de studie zijn zowel kwalitatieve als kwantitatieve gegevens verzameld vanuit verschillende databronnen om een zo rijk mogelijk inzicht te krijgen in het bestudeerde fenomeen. Om gegevens te verzamelen rond het toepassen van

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GSS in Tanzania hebben we gebruik gemaakt van diverse instrumenten zoals de *enquête Elektronisch Vergaderen*, het *Observatie Instrument* en de *Ex-Post enquête*. Deze instrumenten hebben ons in staat gesteld de verzamelde gegevens te vergelijken en tegen elkaar af te zetten en zo een rijke weergave te geven van het onderwerp van studie.

**Onderzoeksresultaten**

De studie is uitgevoerd in drie inductieve fases: de verkenning van de toepassing van GSS in Tanzania (Fase I), de dieptestudie (Fase II), en de Ex-post enquête (Fase III).

**Fase I: Verkenning**

Het doel van de verkenningsfase was het geven van een gedetailleerd verslag van de toepassing van GSS in een aantal echte Tanzaniase groepen, en om enig licht te werpen op een aantal factoren die duidelijk van invloed zijn op de acceptatie van GSS-technologie. De hieruit voortvloeiende theorie suggereert dat GSS gestimuleerd kan worden door computervaardigheid, steun vanuit het topmanagement en tevredenheid over het gebruik. Echter, de aanwezigheid van macht door referentie en de voorkeur voor mondelinge communicatie kunnen een negatieve invloed hebben op de acceptatie van de technologie.

Tijdens de studie werden we geconfronteerd met verschillende niveaus van computervaardigheid. In het algemeen waren de deelnemers niet erg vaardig met de computer. Echter, dit had geen negatieve invloed op het accepteren van de GSS-technologie. De taak van de facilitator om evenwicht te vinden binnen groepen met uiteenlopende typevaardigheden en het vermogen van de deelnemers om parallel te communiceren bleek tegenwicht te bieden aan de negatieve effecten van beperkte computervaardigheden.

Bureaucratische vertraging bij het organiseren van vergaderingen in veel organisaties kan worden gezien als een vorm van weerstand tegen het accepteren van de GSS, met name bij het top management. Echter, de meeste top managers steunden het gebruik van GSS zonder aarzeling. De aanwezigheid van top management bij de GSS vergaderingen werkte zeer motiverend voor de deelnemers. Onze bevindingen suggereren tevens dat deelnemers zeer tevreden waren met het verloop van de vergaderingen, de uitkomsten en de efficiëntie van het gebruik van GSS. Een aantal managers hebben hun tevredenheid expliciet geuit en wilden graag de mogelijkheden tot vervolgvragaderingen bespreken.
Hoewel er aanwijzingen zijn voor macht door referentie in Tanzania, hebben wij dit tijdens de GSS meetings niet kunnen waarnemen. Zelfs in vergaderingen waaraan directeuren van grote ondernemen of hoge regeringsvertegenwoordigers deelnemen konden wij geen vrees voor het beschermen van voorkeursposities waarnemen. Toch geloven wij dat GSS niet gemakkelijk geaccepteerd zal worden zolang er sprake is van macht door referentie. Het kan zijn dat mensen niet bereid zijn informatie te delen tijdens GSS bijeenkomsten uit angst voor het verstoren van relaties, die juist gekoesterd dienen te worden.

De hoeveelheid mondelinge communicatie verschilde per vergadering. Deelnemers hadden grote behoefte om onderwerpen mondeling te bespreken, met name nadat deze onderwerpen electronisch waren geïdentificeerd. Wij ontdekten dat electronische communicatie met name geprefereerd werd in vergaderingen waarin men het niet eens kon worden over bepaalde onderwerpen. Mondelinge communicatie bleek van belang om de deelnemers tijdens de vergaderingen op hun gemak te stellen. Tegelijkertijd bleek dat electronische communicatie gemakkelijk werd geaccepteerd, met name bij onderwerpen waarover men het voor de vergadering niet eens was. Daarom was het van belang een passend evenwicht te vinden tussen mondelinge en electronische communicatie.

Fase II: Dieptestudie

Nadat we inzicht hadden verkregen in enkele van de externe factoren die van invloed waren op de acceptatie van GSS, vervolgden wij de studie (fase II) naar deze factoren in relatie tot de culturele achtergrond van het onderzoeksgebied. De culturele factoren leken ook van invloed op de andere, hierboven genoemde factoren, en dus op het gebruik van GSS in Tanzania. Wij verwachtten dat het onderzoek naar deze culturele aspecten ons zou kunnen helpen om een beter inzicht te krijgen in de mechanismen rondom het accepteren van GSS en in het vergelijken van onze resultaten met die in andere culturen. Tijdens deze fase van het onderzoek hebben wij onze resultaten geplaatst binnen de context van Hofstede’s 5 culturele dimensies: machtsafstand; het vermijden van onzekerheid; individualisme versus collectivisme; mannelijkheid versus vrouwelijkheid en lange termijn versus korte termijn oriëntatie.

Machtsafstand is een bruikbare culturele variabele om effectiviteit van de toepassing van een nieuwe technologie zoals GSS te voorspellen. Resultaten van ons praktijkonderzoek tonen aan dat in Tanzania deelnemers slechts in beperkte mate betrokken zijn bij beslissingsprocessen of vergaderingen als gevolg van machtsafstand. Echter het gebruik van GSS bevordert de decentralisatie van autoriteit en het nemen van democratische en eensgezinde beslissingen. GSS
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dan mensen dus aanzetten tot meer betrokkenheid. Hoewel de mensen in
Tanzania hierdoor enthousiast lijken over het gebruik van GSS, blijkt dat de rol
van het top management doorslaggevend is. Er zal niet snel toestemming komen
voor het gebruik van GSS als het top management hun status quo wil
handhaven.

Wij verwachten dat in landen met een lage “onzekerheidsvermijding” zoals
Tanzania, bepaalde mensen, met name managers, sceptisch zouden staan tegen
over de voordelen van het gebruik van GSS omdat ze niet geloven dat techniek
in staat is iets te veranderen. In tegendeel, onze onderzoekresultaten tonen aan
dat de meeste deelnemers zeker niet sceptische staan tegenover deelname aan
een vergadering die geheel wordt ondersteund door technologie. GSS
bevorderde de deelname en mensen voelden zich in het geheel niet bedreigd
door de technologie. Dit kan een positieve rol spelen bij de acceptatie. Deze
resultaten tonen aan dat een lage “onzekerheidsvermijding” positieve invloed
can hebben op de adoptie van GSS.

Tanzanianen kunnen gekarakteriseerd worden als tamelijk collectivistisch, ze
zijn sterk gericht op samenwerking en bescheidenheid. Mensen hebben sterk de
neiging om conflicten te vermijden en gaan niet zo snel confrontaties aan om zo
tot meer overeenstemming te komen. Mondelinge communicatie kan bij het
nastreven van consensus namelijk “machtsafstand-effecten” oproepen, alsmede
dominantie, conformatiedwang en angst voor evaluatie. Omdat GSS
omgevingen sociale en interactieve signalen, zoals bij een traditionele
vergadering, tot een minimum terugbrengen, verwachten we op basis van het
bovenstaande dat deelnemers veel sneller tot consensus zouden komen. De
resultaten uit de praktijk tonen duidelijk aan dat het gebruik van GSS zeer
bevorderend werkt voor het functioneren van groepen. Er was veel
samenwerking tussen de deelnemers, zij gingen zich meer collectief gedragen.
Ook dit kan mensen aanmoedigen om GSS te accepteren en te adopteren, mits
zij zich daarbij gesteund weten door het top management.

Onze ervaring leert dat in de Tanzaniaanse samenleving geldt: “voor wat hoort
wat”. Onze waarnemingen toonden niet duidelijk aan dat deze houding ook van
invloed was op het gebruik van GSS. Ook was het niet geheel duidelijk te zien
of het gebruik van GSS van invloed was op de korte- of lange termijn orientatie
met betrekking tot gegenereerde ideeën. Dit kwam met name door de
samenstelling van de groep. Wat wel heel erg belangrijk bleek voor Tanzania is
het vermijden van gezichtsverlies. Met GSS kan dit ook eenvoudig vermeden
worden.

Het theoretisch raamwerk dat onstond uit de gegevensanalyse en fase II van het
onderzoek, bevatte drie nieuwe contextuele aspecten: computerbedienings-

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vaardigheden, typevaardigheden en de gedecentraliseerdheid van het beslissings-proces. Wij verwachten dat grotere computerbedieningsvaardigheid en typevaar-digheid de algemene computervaardigheid zal bevorderen. Wij hadden verwacht dat ruimere kennis van de computer, alsmede steun vanuit het top management en gebruikerstevredenheid, een positieve invloed zouden hebben op de invoering en adoptie van GSS in Tanzania, terwijl een voorkeur voor mondelinge communicatie, de aanwezigheid van macht door referentie en de gedecentraliseerdheid van besluitvorming juist een negatieve invloed zouden hebben.

Computerbedieningsvaardigheden en typevaardigheden hebben een directe positieve invloed op algemene computervaardigheid en dat heeft weer een positieve invloed op het gebruik van GSS. Tijdens de vergaderingen in Tanzania kregen wij niet de indruk dat mensen zich lieten weerhouden deel te nemen aan vergaderingen omdat ze daarbij computers zouden moeten gebruiken. Het geven van een goede introductie en instructies voor het gebruik van GSS, namen negatieve effecten van mogelijk computeranalfabetisme vrijwel geheel weg. Het werd opgemerkt dat de betrekkelijk geringe kennis van computers in Tanzania geen negatieve invloed had op de GSS vergaderingen.

Resultaten uit Fase I van het onderzoek tonen aan dat het top management in Tanzania kan worden gekarakteriseerd als conservatief en bureaucratisch. Het is bewezen dat dit uiterst remmend werkte op het gebruik van GSS bij talrijke gelegenheden. Deze uitkomsten werden verder bevestigd tijdens Fase II van het onderzoek. De uiteindelijke beslissing omtrent het goedkeuren van GSS-gebruik ligt altijd bij het top management. Daar waar het gebruik van GSS werd gesteund door het top management, was de acceptatie en de tevredenheid zeer groot. De toenemende steun vanuit het top management voor het gebruik van GSS zal, naar verwachting een positieve stimulans zijn voor de adoptie van GSS in Tanzania. Het ontbreken van deze steun zou het adoptieproces kunnen frustreren.

Van de communicatie in Tanzania is bekend dat zij zich voornamelijk richt op mondelinge communicatie. Tijdens vergaderingen heeft de fysieke aanwezigheid en de manier waarop mensen zich uitdrukken grote invloed op het nemen van beslissingen. Autoriteit, status en macht zijn bijvoorbeeld van belang bij het verwoorden van ideeën. Het anonieme karakter van GSS beperkt de invloed van deze factoren. Het onderzoek heeft uitgewezen dat veel mensen, met name in ondergeschikte posities, de voorkeur geven aan anonieme geschreven communicatie boven mondelinge communicatie wanneer de groepsleden nogal verschillen in rang. Bovendien wordt deelname aan een GSS vergadering als eenvoudiger beschouwd omdat veel mensen het moeilijk vinden om zich goed mondeling uit te drukken in het Engels, de officiële voertaal in de
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meeste Tanzaniaanse organisaties. Wanneer dan schriftelijke communicatie wordt gebruikt, hoeft men de confrontatie met anderen niet aan te gaan, terwijl er meer tijd komt om na te denken over hetgeen geschreven moet worden. GSS kan dus op veel manieren de communicatie binnen werkgroepen bevorderen. We kunnen dus concluderen dat de voorkeur voor geschreven interactie boven mondellinge communicatie de tevredenheid van mensen over het gebruik van GSS kan bevorderen en zo de adoptie van de technologie kan stimuleren.

Aanwezigheid van macht door referentie was een andere belangrijk kenmerk dat werd bestudeerd en geanalyseerd tijdens Fase II van het onderzoek. Hoewel er geen duidelijk bewijs was voor de aanwezigheid van macht door referentie, werd er tijdens interviews wel steeds op gewezen. In Tanzania ziet men het nemen van beslissingen als een politieke aangelegenheid. Resultaten tonen echter aan dat veel organisaties een GSS-achtig systeem zouden verwelkomen om besluitvorming meer rationeel vorm te geven. Het succesvol toepassen van GSS in een organisatie vraagt om steun en goedkeuring van het top management. Het feit dat veel beslissingen van het top management een politiek karakter hebben kunnen een succesvolle adoptie van GSS dus frustreren.

**Fase III: Ex-Post**

De resultaten van Fase II van onze studie zijn gebaseerd op waarnemingen en gegevens verzameld tijdens GSS vergaderingen. We waren ook geïnteresseerd om meer informatie te krijgen van de deelnemers na verloop van tijd om een aantal zaken verder te kunnen onderzoeken. Daarom hebben we een ex-post enquête gehouden tijdens Fase III van het onderzoek. Dit deel heeft ons geholpen om het onderzoek te verrijken met individuele toekomstpercepties rond de toepassing van GSS.

De gegevens van Fase III van het onderzoek tonen aan dat de meeste werknemers op hun werkplek toegang hebben tot een PC. Dit toont aan dat hoewel de GSS-technologie nieuw voor hen is, computertechnologie als zodanig niet nieuw is voor het merendeel van de werknemers in Tanzania. Daarom schrok het gebruik van computers tijdens de vergaderingen de mensen niet af en bleek een gebrek aan computerkennis geen struikelblok te zijn voor het adoptieproces. Het werd ook duidelijk dat mensen graag in een groep werken, dat ze graag op een rationele manier beslissingen nemen en dat groepspresentaties belangrijker zijn dan individuele prestaties. Over het geheel genomen waren de deelnemers zeer tevreden over GSS, hetgeen weer bevorderend werkt voor participatieve processen. De belangrijkste factoren die de adoptie van GSS in Tanzania kunnen ondernijmen zijn een mogelijk gebrek aan steun van het top management, macht door referentie en machtsafstand.
De resultaten van Fase III bevestigen de eerdere resultaten uit Fase I en II van het onderzoek. Men vond over het algemeen dat GSS de democratie en transparantie in groepsbesluitvorming zou kunnen bevorderen. Om adoptie van GSS te realiseren zijn investeringen in promotieactiviteiten en veranderingen van organisatiecultuur onvermijdelijk.

Tenslotte hebben wij de samenhang tussen de contextuele factoren en de culturele dimensies onderzocht. Het bleek bijvoorbeeld dat vrouwelijke en collectivistische cultuurkenmerken, gebruikerstevredenheid positief kan beïnvloeden en het management kan stimuleren om het gebruik van GSS te ondersteunen aangezien het bevorderend werkt voor samenwerking en het nemen van rationele beslissingen. De doorslaggevende factor voor de adoptie van GSS in Tanzania is echter machtsafstand. Weerstand tegen het gebruik van GSS is inherent aan andere contextuele factoren, zoals de gecentraliseerdheid van besluitvorming en macht door referentie hetgeen wordt beïnvloed door de aanwezigheid van machtsafstand.

Uitgaande van de resultaten die geleid hebben tot de conclusies met betrekking tot cultuur en context, zijn verschillende praktische zaken en uitdagingen met betrekking tot het houden van GSS-vergaderingen in Tanzania, die in overweging zouden moeten worden genomen. Deze betreffen onder andere de omslachtigheid van het organiseren van GSS vergaderingen in Tanzania en het niet altijd aanwezig zijn van de faciliteiten die nodig zijn voor een GSS vergaderingen, zoals airco, stroomvoorziening en reserveonderdelen. Men moet er dus op voorbereid zijn om tijdens vergaderingen in Tanzania te improviseren.

**Conclusies**

Vanuit een praktisch perspectief waren de ervaringen met GSS in Tanzania tamelijk positief. De GSS-sessies op zich stimuleerden “capacity building”. Zo werd bijvoorbeeld een groot aantal mensen getraind in computergebruik, terwijl anderen opgeleid werden om elektronische vergaderingen te begeleiden als chauffeur (i.e. technisch assistent). Met name is een aantal voorbeelden van participatieve besluitvormingsprocessen rond ontwikkelingsvraagstukken ontwikkeld en in de praktijk getest.

Er zijn aanwijzingen dat GSS in Tanzania geadopteerd gaan worden, maar het is te vroeg om te zeggen in welke mate. Wij kwamen tot de conclusie dat het grootste struikelblok voor GSS in Tanzania wordt gevormd door de machtsafstand. Weerstand tegen GSS vanwege een aantal andere contextuele factoren vindt zijn oorsprong hoofdzakelijk in de aanwezigheid van machtsafstand. De invloed van het top management bleek de sleutel te zijn tot het succesvol stimuleren van de invoering en adoptie van GSS.
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Overwegingen voor het vergroten van de mogelijkheden voor effectief gebruik van GSS in Tanzania zijn gegeven in relatie tot uitdagingen rond duurzame ontwikkeling. GSS is in toenemende mate een belangrijke bron van informatie geworden binnen duurzame ontwikkelingsprocessen. Tanzania zal daarom moeten accepteren van het gebruik van GSS onvermijdelijk is voor het verbeteren van besluitvorming, het maken van beleid, het vereenvoudigen van onderzoek en het bevorderen van de productiviteit in verschillende onderdelen van de economie. Hoewel een aantal beperkingen rond het gebruik van GSS zijn gerapporteerd, is de algemeen heersende opvatting dat de voordelen van GSS-gebruik duidelijk opwegen tegen de nadelen, en dat de adoptie ervan in Tanzania actief zal moeten worden gestimuleerd om vraagstukken rond "capacity building" effectief aan te pakken.
CURRICULUM VITAE

Rabson J. S. Mgaya was born in Mbozi, Tanzania on October 25th, 1954. He holds a BSc. and a Masters in Business Administration (MBA) from the University of Dar es Salaam. Before joining the University of Dar es Salaam in 1985, he worked for about eight years as an Air Traffic Controller in the Directorate of Civil Aviation in the defunct East African Community and later in Tanzania. Currently, he is a Lecturer at a newly established Department of Computer Science of the University of Dar es Salaam. He is responsible for the establishment of Group Support Systems project in Tanzania. His research interests include Group Support Systems, Management Information Systems and Operations Management. He has published his work in local and international refereed journals and conferences.
Groups are the key asset for smart, flexible, and cost-effective future organisations. Advances in communication technologies have drastically changed the nature of group work. The traditional individual ways of working are now giving way to contemporary group work approaches linked through relationships and technology, reaching across space, time, and organisational boundaries.

Today, groups are an established feature of distributed global companies. Made possible by technologies such as Internet, intranets and groupware, these groups are invaluable for organisations that need to bring together specialised groups of people to work on various projects.

In this dissertation, we provide a comprehensive exploratory study on the application of a particular groupware technology, Group Support Systems (GSS), in Tanzania. Beginning with a brief overview of the background and nature of GSS, we identify factors that may influence the adoption of GSS in various organisations in Tanzania.

Providing an in-depth look at an increasingly important group support technology, this study provides a window for the conditions and actions required to create and build further knowledge on the adoption and diffusion of collaborative information technologies in developing countries.