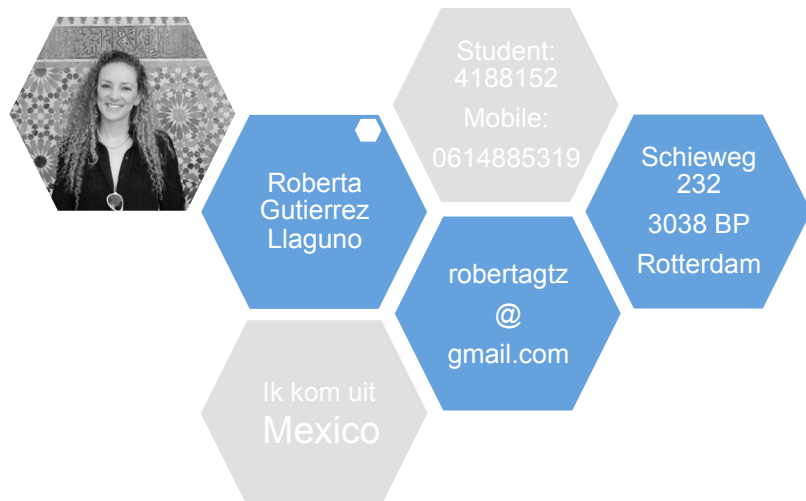


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Branding Economy of Office Building

Foreword

This report presents the research proposal of the graduation thesis titled *branding economy of office buildings*; it represents the most important project of the master program. The master track program followed is Real Estate and Housing, the track is divided in four terms and has a total duration of two years. After a general introduction of the complete range of training courses, in MSc3 there is possibility to choose one out of four specializations. The research proposed is elaborated within the MSc Laboratory of Real Estate Management (REM) under the supervision of Drs. P.W. Koppels and Drs. J.L. Heintz.

PART I: INTRODUCTION

1. Research Introduction

Motivation

Architecture and Real Estate are two professions that have the possibility of complementing each other, be alienated from each other or be enemies of each other. Nevertheless they have the same finite raw material to work with (land) and produce the same output (the built environment).

The core activities of real estate management are to plan, develop, acquire, sell and maintain properties. Properties are objects, specifically buildings, which though serving different purposes and hosting distinct activities have one characteristic in common: tangibility. This specific characteristic gives the architect a special position and sensitivity towards the real estate business, since architects have been educated to design and can easily think in spatial terms.

Having an architectural background and currently studying real estate provided the initial curiosity for the proposed research subject. But something was missing, living in a rapidly changing world, witnessing transformation of cities at a never before seen pace, our generation of architects, designers and developers must make an effort to stop and digest our surroundings.

Architecture and development need new critical frameworks that support the shifts in culture and economy that have revolutionized architecture in function and aesthetics. Branding is perhaps an important mean to transform how people perceive and experience the tangibility – and sometimes intangibility – of architecture.

Scientific Relevance

The most important thing about real estate is commonly believed to be: location, location, and location. Little scientific attention has been given to specific characteristics of building that contribute to the overall value of the property. Let alone less has been analyzed on the characteristics of physical building appearances, branding or image that most certainly have a contribution. It is widely recognized that some buildings are more appealing than others, but few efforts have been done on demonstrating with empirical evidence that there could be a significant relationship. The limited body of knowledge provides a lot of grey areas on what is understood as quality, image and branding and more importantly in how to operationalize such concepts in order to measure them in a scientific manner.

Moreover there have been numerous studies that measure in obvious and unproblematic ways the quality of design and/or architecture. Quantitative approaches have been done to measure costs, performance, energy labels, circulation, efficiency, structural efficiency, area efficiency as so forth. These studies are believed to measure engineering efficiency and are rarely related to the user as a social being that interacts with the building. The relevance that results of this research could yield to is the awareness of empirically proven benefits that architects and real estate investors can provide to the built environment.

Societal Relevance

The external form of a building is generally neither rival nor excludable, and therefore can be considered a public good (Millhouse, 2005). Buildings are daily experienced not only by users (corporate employees, residents or shoppers) but also by society itself. The concept of architecture as a public good explains the importance of historic districts, government-imposed aesthetic requirements and regulations. Buildings have the possibility to impact the image of neighborhoods and even cities.

Though this research will not directly improve the built environment, it can provide to developers and brokers with vital information on importance and

impact of new value adding criterion of office buildings that are not only related to location. This information could in time be transmitted to knowledge of better - financially - performing designs and strategies that will not only benefit investors and developers but user and the city as whole.

The research also intends to inspire architects to search for new opportunities and trends that transcend the current discourses of stylistic debates.

Utilization Potential

The research is relevant for real estate investors (private developers, funds, banks, REITS) that have or plan on having part of their portfolio on office buildings, so they can have a better informed decision on the performance of office building based not only on location theory.

The results can also be of use by consulting agencies that give advice on accommodation strategies, leaseholds, rents and transactions. The information hereby provided could help brokers promote and differentiate better-defined attributes that add value to the leaseholders. This companies in Mexico include CBRE, Jones Land LaSalle, Colliers International, Cushman and Wakefield, etc.

Developers could also benefit from the elasticity analysis on how much each building class can support as investment for certain attributes and if the markets are willing to pay for such rental premiums.

Furthermore architects that design office buildings and/or interiors of them can understand better the trends that are being tacitly required by the quickly changing market.

The research is also relevant to the general body of knowledge of valuing specific characteristics of office buildings through not typically employed valuation methods for office buildings, as is the hedonic pricing method.

Embedding into RE+H Program

The investigation fits the wider curriculum of real estate and housing current research in two areas: urban economics and design and construction management. The urban economics area specifically with the PhD dissertation of drs. P.W. Koppels, who is currently investigating the main office building features that determine the willingness to pay for individuals and the relationship they have on building cost.

Furthermore the ongoing research on architectural design management, has the main objective to 'create value through design' where the management of and through values (key performance indicators) is preferred to management on risk and traditional management concerns, such as time, costs and quality.

Research Objective

Main objective:

The main objective of the research is to test the ability of branding to add value to office buildings in the city of Monterrey, through increased rents that should, in turn, be transmitted to increased capital value.

Sub Objectives:

1. Define branding in the context of real estate, specifically office buildings.
2. Determine the characteristics that influence value of office buildings.
3. Define the indicator of hardware, software and humanware and translate them into researchable variables of office buildings.

4. Explore the economic impact of humanware attributes on office buildings.
5. Measure the impact of branding attributes on financial performance of office buildings.

Study population:

The office buildings market in the Metropolitan Area of Monterrey.

Intended end product

The outcome of the study is of two natures: 1) descriptive of the past situation, so consulting companies and researchers have more theory to build up for the value of aesthetics and 2) a prescriptive approach translated to a series of solid recommendations for the near future for decision makers of developing and designing office buildings, and for those on the corporate side whom require the office space.

Problem Analysis:

'If one wants to solve a problem, one must generally know what the problem is. It can be said that a large part of the problem lies in knowing what one is trying to do.' (Kerlinger 1986:17; in Kumar 2011)

According to Dunse (2009) an office is an example of a heterogeneous good. Its value depends upon many characteristics associated with the property. Examples of this are lettable floor area, age, materials, lease terms and a long list of quality attributes. Valuator's main activities are to identify, analyze and quantify all these characteristics in order to determine the property rental or sales value. However, as Dunse stresses, difficulties arise in weighting the influence of these characteristics on the final price. It is obvious that each attribute has an influence, but the extent or percentage of each variable in the total price is difficult to grasp at a simple glance.

It has been observed that especially when markets are in accelerated growth, as in the case of Monterrey (CBRE, 2010) developers and investors tend to

differentiate their products with unique amenities, higher quality materials and innovative designs in an effort to attract tenants over similar buildings in the area. In a hurry to do so, sometimes over spending in certain attributes can endanger overall performance of the building. Moreover, there are few cases of empirical evidence that can prove that by taking such measures the rental levels will increase.

The main objective of this research project is to investigate the dynamics behind financial performance of Monterrey's office buildings within a context of a changing supply and demand framework, measured by achieved rents over 2000 – 2011 period. Addressing the economic fundamentals of driving value of 'aesthetics'. To identify Monterrey stock of office buildings a database from CBRE is to be obtained. To address the lack of transparency in real estate sector, an observation phase of the data will be conducted along with a hand-collected database of other sources.

A key problem with investigating the effects of building characteristics on value is it is a multi-dimensional concept, which can be approached from various perspectives. The intention of the theoretical part of the research is to define which variables have an impact on the value of office buildings. These variables will be mainly divided in the previously studied variables such as location, neighborhood, spatial and building characteristics and new variables that will measure branding and humanware factors. These variables will need to be defined, but the main idea is that they happen in two levels: 1) building level and, 2) image /branding (aura) level.

According to Fuerts (2011) the nature of image and brands have become detached from the use value and are instead increasingly attached to the object's 'aura' expressing the culture and beliefs of the object itself. This shift has changed the role of designers and architects whom are now selling more than just the functionality of the space and the physical characteristics. This concept is fundamental for the current research, which intends to describe the economic value of precisely these variables that add value to the office buildings.

The hedonic pricing method is a method widely used for mass valuation of the housing markets, and has just recently started to be used for the office sector. In a nutshell the method allows us to isolate the variables that have an impact on the final value of a property, weighting the each attribute independently and analyzing its single influence on the prices.

Reader's Guide

This report has been divided into four main parts. The first part presents is subdivided into the introduction to the research proposal and the methodology employed.

The second part of the report contains the theoretical input, it is subdivided into four main areas: office markets, branding economics, location theory and the conceptual model of hardware, software and humanware. This is the main contribution to the P2 report and is intended to provide a solid framework of theory to work throughout the whole investigation.

The third part presents the methodology that will be used 'hedonic pricing', an introduction to the subject and data collection methods are explained. Although not all the data is yet available and small sample of what is intended to be collected and some ideas are presented.

Finally the last part of the report presents a work breakdown structure (WBS) to organize the upcoming work and investigation.

2. Research Methodology

Research Model

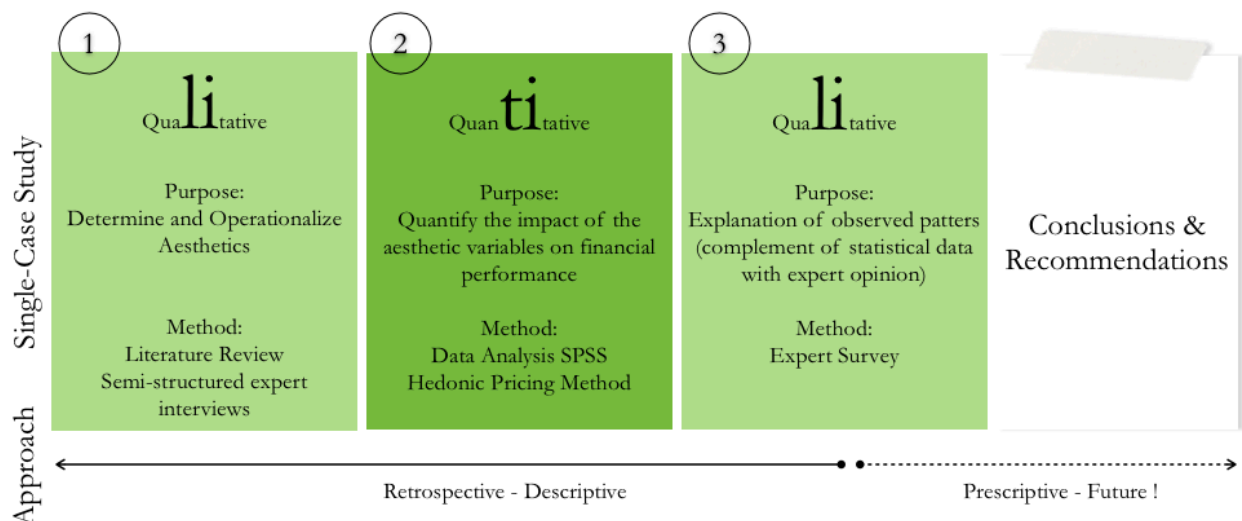
The research design (step III) selected for this study is both quantitative and qualitative; according to Kumar (2011) a combination of both can ascertain the nature and extent of the diversity and the variation in a phenomenon.

In nature the research is a single-case study. A single-case study is defined by Yin as ‘an empirical inquiry that investigates a contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not clearly evident’ (Yin, 1994, in Groat and Wang 2002). The justification for selecting only one case is that the research takes place within the built environment and it is difficult to separate the city context from the phenomenon of office rental levels and aesthetics of buildings.

It is also considered retrospective, since it analyses a phenomenon or situation that has happened in the past. The data that will be collected even though is very recent, can only explain us what has happened in the last 10 years. The goal of the research is not only to understand and describe the past, but also to be prescriptive and make solid recommendations for improvements in the near future.

Though a single method is used, multiple methods will be employed for the collection of data (next section), which are important aspects to the case study. It is here that the qualitative-quantitative-qualitative approach will be demonstrated. However throughout the process it is important to consider that a single case is being discussed.

Along with the case study a literature research is conducted in order to construct a robust theoretical framework, this exercise will most probably be longitudinal, which means the researcher will constantly return to literature at different points in time, to assure the scientific nature of the research.



Data Collection Methods Selected

The data collection methods are as mentioned before on a qualitative-quantitative-qualitative approach. It is then subdivided in three main areas. The third being an optional step, in case there is still time available to conduct it.

1. Qualitative approach to determine and operationalize hardware, software and humanware into variables.

Primary sources of data will be utilized through the conduction of interviews in a semi-structured way; the main objective is to have a local insight of the market and the current conditions of office buildings transactions and development processes. These interviews have been conducted in Mexico and include: 3 developers and 4 real estate consulting companies. The interviews though very early in the process are a good way of having direct contact in Mexico. Spanish language also allows better flow of information of the current situation. An advantage of such contact is also that these interviewees can be contacted later in the process as local experts for judgment and assessment of more specific matters.

2. Quantitative approach to measure the impact of aesthetic variables on financial performance.

To identify Monterrey stock of office buildings a database of Alles Group (consulting and broker company) will be utilized. This database comprehends over 80 buildings of type A+, A and B, with multiple observations from 2002 until today. To address the lack of transparency in real estate sector, a hand-collected database using information of other sources and observation will be conducted. With the proper database a hedonic model will be designed and analyzed with a statistics program.

Some problems for this stage is that the efforts to homologate the database of the given data plus the observed data can be time consuming. Other disadvantages with the observation method as a source of data collection is

the possibility of incomplete recordings or observations, as well as personal inferences drawn by them that could alter the data.

Nonetheless advantages of methods for observation nowadays are the technology such as 'Google Street-View' that allows us to virtually visit buildings in Mexico from our computers in The Netherlands.

3. Qualitative approach to explain the observed patterns. This step is primarily optional, due to the fact that time is limited.

A direct survey of expert judgments could be conducted in the final phase. The survey has two objectives: 1) the evaluation of certain variables that require to be weighted with a qualitative approach from experts and; 2) specialized opinion on the statistical output of the model. This survey will most likely take place in the Netherlands or via Internet to experts previously contacted in the preliminary interviews. Advantages of the direct survey are as stated before that they can be easily sent via Internet. Disadvantages include a low response rate.

Mentorship

The first mentor for the research is drs. Philip Koppels. His current dissertation for a PhD degree is directly related to the proposed investigation, and utilizes the same hedonic pricing model.

The second mentor for the investigation is drs. John L. Heintz: his area of expertise related to design and construction management, he has conducted research on the value of aesthetics and design for real estate. He native language is English, which is helpful as an international student to have access to information that is not in Dutch.

PART II: THEORETICAL INPUT

1. Fields of Study: Office Markets

Commercial Real Estate

This sub-chapter aims to explain the basics of commercial real estate. First, the main interest relays in defining the office market. Moreover analyzing the dynamics of supply and demand that define the market conditions, which will in turn facilitate the understanding of the willingness-to-pay. Finally special interest has been given to the transformation of theory into variables.

Office Markets and Value

Markets are perhaps the most basic of all economic phenomena (D. M. Geltner, 2007). In essence a market is a mechanism in which goods are exchanged voluntarily from owners to buyers. In office markets, office space (or space for corporate purposes) is either leased or sold under certain circumstances and acquisition processes to satisfy consumer's needs.

In order to properly achieve a leasing or selling transaction of office space, the first and most important thing is to have a proper market value of the property. Though it may sound like an obvious and easy task, defining the market value of real estate assets is a complete and complex profession: valuation.

Valuation theory according to (Lusht, 2012) has provided the following definition of market value. 'Market value is the most probable selling price which a specified interest in real property is likely to bring under all the following conditions:

1. Consummation of a sale as of a specified date.
2. Open and competitive market for the property interest appraised.
3. Buyer and seller each acting prudently and knowledgeably
4. Price not affected by undue stimulus
5. Buyer and seller typically motivated
6. Both parties acting in what they consider their best interest.

7. Adequate marketing efforts made and a reasonable time allowed for exposure to open market.
8. Payment made in cash or in terms of financial arrangements.
9. Price represents the normal consideration for the property sold, unaffected by special or creative financing or sale concessions granted by anyone associated with the sale.'

Nevertheless, when valuating (determining the market value) of office spaces, certain confusion arises because offices are an example of heterogeneous goods. In other words, the value of office space depends on many characteristics associated with the property. Dunse (2009) stresses that the main difficulty for valuers arises in weighting the influence of each characteristic on the final price. That is each attribute contributes to the value, but the extent or level of importance of each variable is difficult to grasp at simple glance.

Supply and Demand

As in any market, real estate markets have a cyclical nature. That is the process of slowdown and acceleration is normal and in some cases even predictable. Recognizing the patterns in cycles is vital for detecting opportunities in the real estate industry. Various cycles have been identified from a historical perspective, the long-wave theory in Fig.1 discussed by Nicolai Kondratiev, proposes a 50-60 year cycle of boom followed by depression. Nowadays and according to Fig. 1 the economy is a depression phase, 5th wave, but this will probably turn into a new way, it is just a matter of time.

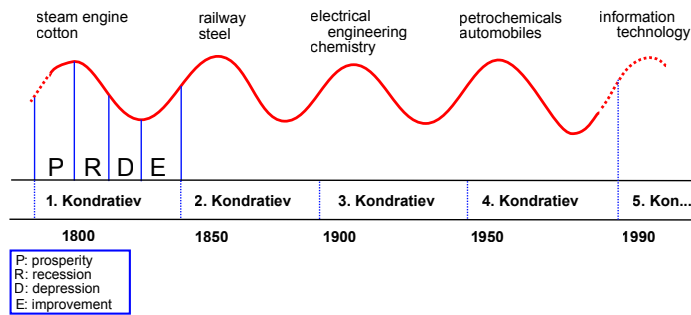


Fig. 1 Kondratiev Wave (1938)

Real estate and property markets have also their own cycle affecting supply, demand and rental levels. A graphic representation of the real estate system has been developed by DiPasquale and Wheaton (1992) and latter adapted by Soeter and Koppels (2008), the model consists of a four-quadrant graph, as shown in Fig. 2. The model represents the linkage between space and asset markets, and construction and development market, and describes the equilibrium state. The long-run equilibrium involves allowing sufficient time for the supply of the built space to adjust to the demand (Geltner, 2007). The interesting thing about the model is that it shows that a single change in one of the quadrants influences all of the markets.

When translating the model to the current research, the focus lies mainly on the market affected by the rent developments, as rental levels are the main variable of analysis. Looking at the current Mexican situation the demand is higher than the supply and the valuation of the current properties is higher. The market is in an accelerated situation in which apparently everything seems to be selling.

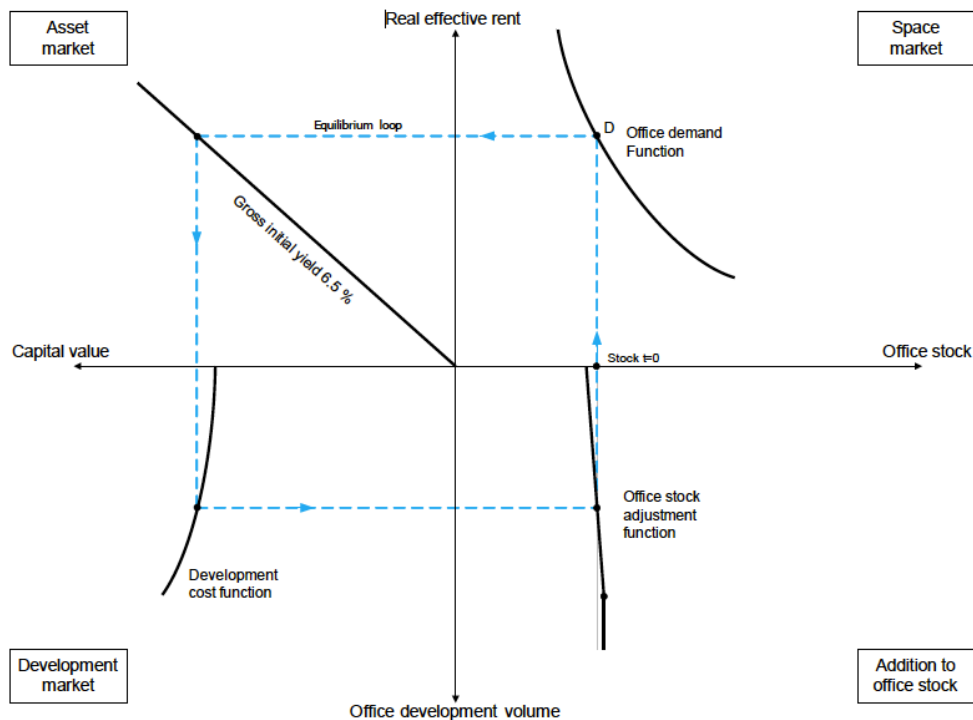


Fig. 2 The four-quadrant model of DiPasquale and Wheaton (1996), modified by Soeter and Koppels (2008)

Willingness to pay

The willingness-to-pay is the main concept behind the dependent variable of the study. The objective of the quantitative research is to analyze if aesthetic quality of office building in Monterrey lead to an increase in the willingness-to-pay. Numerous studies have analyzed the relationship between the willingness-to-pay and various independent variables. Typically this studies use hedonic pricing models, since it allows the isolation variables and decomposition of the price of an item (generally a homogeneous good) into separate components that determine the actual price.

Mexican Office Market

Current Economic Situation

The global economic environment has been lately depending on effective implementation of economic policy measures taken to reduce global effects of the financial crisis in various markets of the European area. U.S.A, Mexico's largest trading partner is expected to enter into a more stable phase one the

election period is over and the new administration of Obama is set, this will lead to increased consumption and improved market conditions that ultimately will have a positive impact in exports and imports with Mexico. As for Mexico's national finance, with our new administration and president recently elected the forecast remains optimistic and positive, with a growth rate of 4%.

Office Market

The office market in Monterrey is subdivided into 7 submarkets, all concentrated mainly in the southern part of the city. Monterrey being the 2nd largest city in Mexico concentrates a lot of financial activities and corporate head quarters, including CEMEX, FEMSA, Cerveceria Cuauhtemoc Moctezuma, VITRO, ALFA, Oxxo, Mabe, etc. And is home of international offices Toyota, Phillips, Mercedes Benz, Sony, Nokia, just to mention a few. According to the local newspaper (El Norte, 2008) Mexico City has around 4,632,099 M2 of office space with an availability of 6.9% while Monterrey has around 923,576 M2 of office space with an availability rate of 9%. Prices of office space per M2 in Monterrey range between 12 USD and 31 USD (CBRE, 2010).

The most demanded corridor in the city is Valle Oriente, located in the San Pedro area (luxurious and wealthy municipality of the city). Most buildings within this corridor are built as A+ type and have the highest prices per square meter. In 2012, 22,000 sqm were sold alone in this corridor. The largest transaction during the first quarter of 2012 was of above 1300 sqm from CH Robinson in the Valle Oriente area.

The figure below (Fig.3) presents the submarkets inventory and vacancy rates in 2012 Q1 according to CBRE.

Office Inventory Class A/A+				
Submarket	Inventory (sqm)	Vacancy (sqm)	Vacancy Rate	Average Lease Asking Rent (US\$/sqm/month)
Contry	30,241	-	0.0%	-
Margain-Gómez Morin	103,886	895	0.9%	\$ 30.00
Monterrey Centro	126,050	19,017	15.1%	\$ 15.63
San Jeronimo-Constitucion	43,416	6,350	14.6%	\$ 14.81
Santa Maria	71,737	9,920	13.8%	\$ 20.11
Valle	25,904	750	2.9%	\$ 16.00
Valle Oriente	297,814	43,809	14.7%	\$ 20.45
Total	699,048	80,741	11.6%	\$ 18.90

Fig. 3 CBRE, 2012 Q1 Market Overview Report

2. Fields of Study: Branding Economics

“Architecture is the only art that is wholly related to economics. The architect can virtually build nothing – and so cannot express his creative art – without incurring definite ‘costs’, which have an economic ‘value’”

I.E.D. Jefferiss Matthews OBE: Address to the RIBA Conference, 1956

Architecture, real estate and the experience economy

Appraising the intrinsic value of art, architecture or design-oriented objects is a difficult task; high degrees of subjectivity are always involved when dealing with aesthetics and beauty of objects. In 1986 Baumol argued that art was not a good investment because the demand and supply levels could not adjust to an equilibrium level, later other studies analyzed the volatile growth of patterns of art objects and concluded that indeed art represented an attractive and interesting investment (Mei and Moses, 2002).

Architecture as mentioned before is recognized as a public good and responds to social, economic and organizational needs than need shelter for diverse activities like working, living and leisure.

During the past century architecture and how it is developed has evolved due changes in the economy, before it was associated with growth and production, words like simplification, standardization and precision were core for the industrial period, where a lowering manufacturing costs and thus price inevitably neglected the people's need for individual expression. An increasing focus in homogenization of consumer preferences lead to production in series of everything from cars to houses, some examples include Fordism, mass production and scientific management.

Nowadays times have changed and individuality and self-expression have become core values of our society. Architecture has become a product, where the customer or end-user has been set first, and everything evolves around them. Since the emphasis on architecture as means of increasing production efficiency declined, increasing pressure was placed on architecture to perform as marketable commodity (Klingmann, 2007). Engaging the customer personally into the projects linked to a wide variety of services that generates the 'experience economy'.

Branding is a tool that allows architecture and real estate to adapt to this new trend of experience economics. Brandings are persuasive lifestyle packages that mold our ideas into what our identity should be. Branding in architecture means the expression of identity, enhancing image and generating economic growth (Klingmann, 2007). We have seen branding grow over the past years in everything from personal computers to corporations head quarters.

Experience economy

People nowadays understand the world through their senses and experiences. Starbucks – is one of the pioneers in catering to the customer's total experience. They not only consider coffee as a commodity, but they have

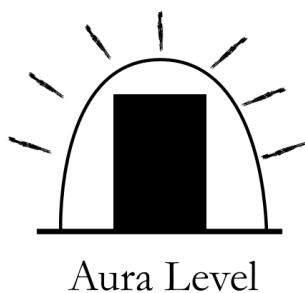
branded an empire that is more about comfortable seating, themed merchandise and environmental music. Every store is carefully designed for customers to see, touch, hear, smell and taste. The overpriced cup of the coffee is the least of your concerns when you are submerged in the Starbucks lifestyle and culture. As Bruce Mau contends in *lifestyle* (2001): 'Style is not superficial, it is a philosophical project of the deepest order'.

Architecture is doomed for failure if it lacks to understand that its survival kit relies in the ability to build a relevant emotional experience at different contact points for the end-user. The contact points can be physical, programmatic and even human (see conceptual model section 2.4).

Architecture used to be a profession that dictated a rigid aesthetic ideology; now-a-days people find satisfaction not only in contemplating but also in engaging in the environments. This relates directly to the products attributes that now seek to create a holistic experience for consumers. Some architectural products that come to mind in this line of thinking include: the thermal baths in Vals, Switzerland by Peter Zumthor and OMA's architecture in Prada Stores or the Kunsthal in Rotterdam.

Architecture by nature has the advantage of long-lasting effects that through tangibility endure over time. Media saturates us and architecture presents an opportunity to generate direct esthetic experiences of the reality.

Brands



Brands are not products since they lack tangibility. They happen on an aura level. The value of objects has increasingly become detached from the use value and has instead increasingly been attached to the objects 'aura' expressing the cultural values and beliefs (Fuerts, 2009). This shift has suggested that the

role of design has also changed and designers are expected to provide 'brand equity' for their products (Foster, 2002).

Although brands are not new, their nature has evolved significantly. Traditionally brands were a symbol of production, they represented the know-how and skills of the manufacturer. However recently brands are no longer bundled to functional characteristics but rather to providing a certain identity.

In architecture this identity and symbolic connotation has been developed mainly by coincidence, and this is the main difference between an architect and a branding specialist. Corporations strategically plan the message they intend to transmit, where as architects rely on the hope that symbolism and value will emerge by default.

Brands hold the potential to boost the general interest in design and planning, increasing investment and money in building and real estate that generates a positive build environment (Klingmann, 2007).

Adding value

What distinguishes architecture from plain development is – added value (Klingmann, 2007). Value in architecture according to Millhouse (2005) and adopted from Carmona et Al. can be separated into three key issues:

- 1) Direct economic performance: pure investment value based on project rents, sales, absorptions, and vacancy. This is also later referred as financial performance.
- 2) Direct operational performance: value associated with design of the building, operating efficiencies, layout, management, security, among others.
- 3) Social costs and benefits: refers to the direct and indirect value of the development on a wider economic scale like the neighborhood and the

environmental impact, and also refers to the human factor of the users their level of satisfaction, energy consumptions, accessibility etc.

The challenge is to use architecture as tool to achieve competitive advantages for people and places, and to discover the true potential of changing political, cultural, social and economic status of the beneficiaries or users, as well as investors and developers.

Corporations and branding

In an effort to pinpoint added value of real estate, De Jonge (Jonge, 2009) described seven elements of added value that shifted mere costs of doing business to true corporate assets. Nourse and Roulac (1993) mentioned increase in productivity by introducing workplace innovations. The return of the real estate assets would not be equivalent to the return on the core business but may add value in themes like image and identity. Business and brands as Krumm (2003) states are important ingredients to corporate identity.

Within this process architecture must be used to constructively implement sensitive connections and identities that can enhance socioeconomic potential of cities and regions beyond the corporate marketing. Corporations based on a thinking globally and acting locally (Geddes, 1915) mentality should make a balance with cities that strive to think locally and act globally (Klingmann, 2007), through strategies on city marketing and image that intend to use their local differences as equity.

3. Fields of Study: Location Theory

Location theory is concerned with geographic location of economic activity. Real estate is believed to be mainly about 'location, location, location'.

Valuation of a property is intimately related to its location, the theory explains that all forms of services and economic activity will find their optimal location. Geltner (2007) describes three main theories:

- 1) Central place theory: concerns development around business, civic or religious cores.
- 2) Axial theory: development along topographical and/or transportation features – this theory exemplifies the city of the case study: Monterrey.
- 3) 3) Centric circle theory: development of central business districts and concentric developments or urban nodes, sprawls or edge cities.

Location features that have been included in previous office market research (Gijselaar, 2010) include:

Spatial Relationships: choices of offices to bring along a set of spatial relationships, within central business districts (CBD) key relationships mainly include distance to prestigious office addresses, proximity to train stations, links with bus or metro network, distance to major roads or highways, or closeness to shopping areas or food courts.

Business Environments: CBD allow agglomeration economies, giving access to face-to-face contact or closeness to potential clients. There is also a common belief that when located in the 'right address' this prestige contributes to income of the firm. Within the CBD the rent sometimes increases or decreases with distance, but this is not always the rule since hierarchy sometimes develops around neighborhoods or areas associated with a given profession.

Built Environment: the physical environment is directly influenced by the state of the surrounding buildings, land-use plans, density of buildings and surrounding green areas. Positive scores of these variables are likely to be associated with prestigious locations. An interesting example within the

context of Monterrey is the fact that the most demanded submarket is located in a non-height- restriction zone, which was an incentive for the government to densify the area.

4. Conceptual Model: Hardware, Software and Humanware

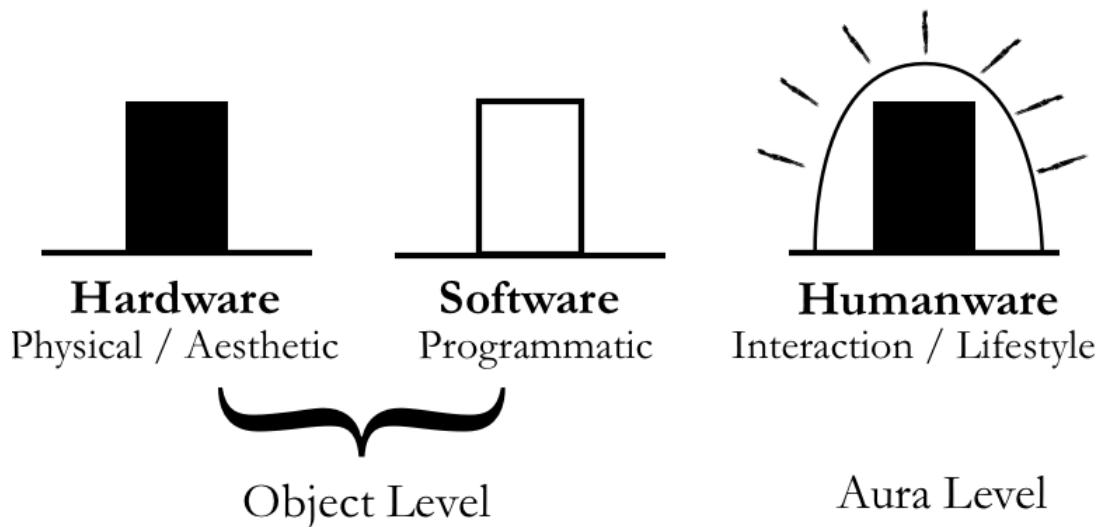
The research argues that contrary to what most theory and common knowledge states it is not all about location, location and location. Little scientific relevance has been given to specific characteristics of the building. The innovation of this research relays in the perspective or 'glasses' through which the building characteristics are analyzed. An adaptation of Klingmann's (2007) concepts is utilized to understand buildings and the value generating characteristics. The conceptual model is subdivided into:

- 1) Hardware: physical or aesthetic characteristics of the building
'What the building has'

- 2) Software: programmatic configuration and amenities.
'What the building does'

- 3) Humanware: the design of the personal interaction or services provided.
'What the building makes you feel'

The hardware and software of the building occur on an object (tangible level) while the humanware occurs on an aura level and are related to branding concepts discussed previously.



Hardware:

The physical characteristics of the buildings deal with the cladding and standard of the exterior and structure. These concepts add to the image and subsequently to repairs and maintenance expenditure. Major influence for this is the age of the buildings, if buildings have been refurbished is also a key issue.

Variables on Hardware

The following concepts are translated into variables to be quantifiable for the hedonic pricing approach.

Concept	How to measure?	What it indicates?
Age	Development or renovation year minus year of transaction. (P.W. Koppels, 2009)	The effect of time on the buildings
Number of Floors	Count of usable levels of the building	Height is commonly associated with status, recognition and iconic characteristics of the building.
Façade Material	Observation of used material	Certain materials are

	for the façade of the building. Glass, Steel, Concrete, Mix-use.	associated with charisma of the buildings. As well as providing level of maintenance.
Façade Shape	Observation of round, rectangular shaped buildings for classification	Shape of the buildings describes de exterior and readability of the building
Volume	Observation of the footprint of the building Box, LTX Shaped, Multiple Rectangles or Other. (Gijsleaar, 2010)	Convenient arrangements are believed to host improved layouts. Efficiency.
Building Type	Observation to distinguish high-rise, stand-alone or office park arrangements.	The arrangement help classify the buildings into comparable units.

Table 1 – Hardware Variables

Software:

Programmatic characteristics of the building that deal with features such as:

- 1) Capacity, the floor area of the building that can be influenced by constraints design, layouts etc. Modern offices typically are designed as flexible spaces that can be adaptable according to the tenants needs.
- 2) Internal Accessibility, especially in high-rise; location of the lifts can determine the efficiency of the floor space and the lettable floor area. The existence of a lobby is also considered an attractive feature that sums to the charisma of the building.
- 3) Amenities, different common areas add value to a certain degree. Cooking areas, resting areas, toilets, washing facilities etc. According to the British Council of Office (1994) if the correct configuration of amenities is set on a building the occupier is likely to pay a rental premium.

Variables on Software

The following concepts are translated into variables to be quantifiable for the hedonic pricing approach.

Concept	How to Measure?	What it indicates?
Flexibility	Observation of floor plans Range or weighting system from: no – medium – very (adjustability)	Possibility to (re) accommodate layouts and adapt quickly to change
User	Observation of only one tenant or multiple tenants	Level of exclusivity of the building rights
Hybrid	Observation of uses of the building. Only offices or mix- use functions (such as residential, commercial etc.)	Multifunctionality of the building, easy access or closeness to leisure and commercial activities.
Spatial Layout	Inside of the layout, observation o floor plans. Domestic, Spinal or Deep Plan (Gijsselaar, 2005)	Efficiency of the internal office area.

Table 2 – Software Variables

Humanware:

Humanware is the innovative area of research of the project it relates to *brandism*[™] a term by Klingmann (2007), which refers to the strategy for architecture to gain significance as a marketing tool for the production of symbolic capital. This term attaches partially to the fame of the architect and partially to the consumer's rising desire to live or work in a uniquely designed building. As a result a new wave of profit-driven 'design buildings' are the common trend worldwide. Humanware represent an opportunity for developers to target specific demographics and an opportunity for architects to serve as vehicles of self-expression and personal identity.

Few other studies present comparable data. A list of the literature review of research that has analyzed some of these aspects is presented below:

	Journal / Year	Author	Title	Keywords
1	Journal of Property valuation & Investment, Vol. 16 No. 3 1988 pg. 297-312 MCB University Press	N. Dunse, C. Jones	A hedonic price model of office rents	Hedonic pricing approach, methodology
2	Journal of Urban Economics 14, 40-54 (1983)	D.E. Hough	Can 'good' architecture meet the market test?	Architecture, Office market.
3	Environmental and Planning A 43 (1) 166-184 (2011)	F. Fuerts, P. McAllister, C. B. Murray	Designer buildings: estimating the economic value of 'signature architecture'	Hedonic pricing approach, branding, Star-architects.
4	Journal of Real Estate Research Vol. 7, No. 2, 1992, pg.147-156	J. Doiron, J.D. Shilling, C.F. Sirmans	Do market rents reflect the value of special building features? The case of office atriums	Hedonic pricing, very specific, physical characteristics.
5	Real Estate Research Quarterly 8(3): 6.2009	H. Remoy, P. Koppels	Location and Building: The economic value of Image.	Amsterdam, location is not all. Physical appearance at object level.
6	TU Delft Repository	W.S. Muijderman	To rent or not to rent: determinants of structural vacancy in Haarlemmermeer	Structural vacancy, regression approach.

Table 3 - Literature Research

After conducting preliminary interviews with developers and brokers of the city of Monterrey a list of variables that could determine the level of 'humanware' present in office building was designed. With the help of their opinion the list was perfected and improved. Variables that came up during the interviews were: presence of a renowned architect, branding efforts (branding name, logo, tagline) and lifestyle attributes. The opinions are discussed below, afterwards the conclusions will be done to select only those variables that represent the greater opportunity to compare data and analyze the humanware concept.

1) Renowned Architect:

Developers mentioned that while some research indicates that the architect's name 'star-architects' is considered important as a branding strategy few cases in city present national or international famed architects and thus comparable information was difficult to assess.

There is no record of local architects rankings, so ranking the building according to the designer represents a difficult task.

They agreed that the presence of a star-architect provides brand awareness and that currently in the city it was a trend for upcoming building, this buildings are not built yet and could not be considered in the sample.

This variable was hence removed from the list of researchable variables.

2) Branding Efforts of the Building

Brokers and developers considered this to be an important variable for the selling phases of the building. And in previous phases for recognition that is usually is associated with prestige and obviousness of the building.

The fact that a building has a logo, nickname or name on the façade reinforces the branding efforts of the building and could be analyzed as a

dummy variable. In previous studies Remoy (2007) used the logo of a company as an indicator or image that adds up value to the building.

3) Lifestyle Attributes

This concept is directly related to the branding economics explained in previous chapters. A list of currently considered lifestyle variables were drawn from the interviews, where the developers and brokers agreed that tenants currently demand the following variables that are believed to be associated with a corporate lifestyle:

- A) Terraces – green areas on different levels for various activities such as smoking, having meetings outside, eating, leisure, natural light and ventilation.

- B) Charismatic Lobbies – Obviousness, easy accessibility from the street, pleasant stay, favorable reception, spaciousness and natural light. Even though charismatic lobbies are sometimes considered a ‘waste’ of lettable floor area, currently developers and brokers have noticed preference for complexity and design in lobby areas.

- C) Services and Events – specialized services include dry-cleaning services, valet parking, personalized security, children day-care (Advenio) and in-house convenience store (café, deli, tacos) for employees. More and more office buildings have evolved to suit the employee’s needs and lifestyles, such facilities are believed to be associated with higher performing employees.

Developers agreed that lifestyle amenities are usually associated with high-end projects of class A+, where tenants are willing-to-pay a rental premium for an identity.

These variables will also be considered dummy variables, where values take 0 or 1 to indicate the absence or presence of some categorical effect that may be expected to shift the outcome.

PART III: METHODOLOGY

Hedonic Pricing

In order to properly conduct the statistical analysis for this research methods and models needed to be selected. The justification of the collected data is presented in the next section.

Regression

Regression techniques were selected to analyze the data, in which one dependent and various independent were selected. The essence of regression analysis is a way of predicting some kind of outcome from one or more predictor variables (Field, 2005). The model allows the isolation of variables of heterogeneous good to identify the impact of each variable in the dependent one.

Rule of thumb of 8 observations per variables, this means that if this study contemplates 18 variables, $18 \times 8 = 144$. A total of 144 observations need to be done. An observation is not necessarily only one building; it could also mean one building in different years. That is if building A had an asking rent price of X in 2002, and of Y in 2003, this building A contains two observations.

In essence multiple regression is theoretically indefinite, however the power of such model can decrease if too much variables are included in the model, since they cause unwanted noise.

Data collection

Data is collected in two ways, obtaining databases and to address the lack of transparency in real estate sector, a hand-collected database using information of other sources and observation will be conducted. With the proper database a hedonic model will be designed and analyzed with a statistics program.

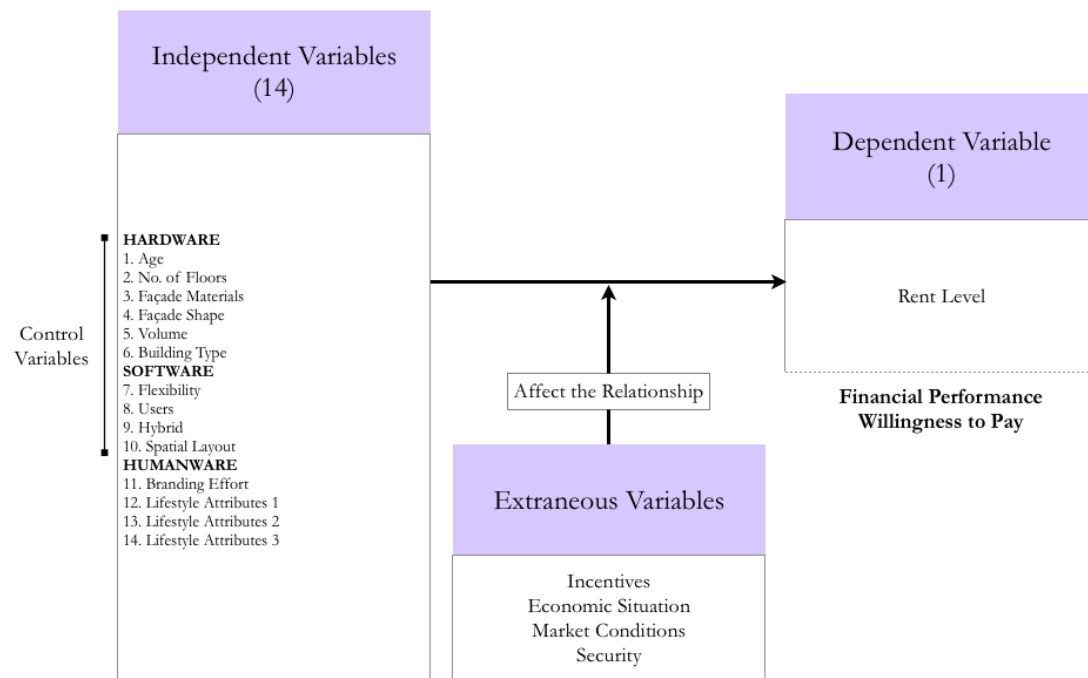
Some problems for this stage is that the efforts to homologate the database of the given data plus the observed data can be time consuming. Other disadvantages with the observation method as a source of data collection is the possibility of incomplete recordings or observations, as well as personal inferences drawn by them that could alter the data.

Sources

Alles Group, local brokerage and consulting agency, provided a database of over 105 office buildings, of class type A+, A and B. The database provides the historical prices since 2002 and up to 2012 of the office buildings. Some buildings in the database have been demolished or it is difficult to obtain more information on them. Hence the list was reduced to 88 buildings.

The historical prices obtained are asking rents, more information about the building themselves will have to be obtained personally either through observation or market research. This analysis will be done in the upcoming months, along with the SPSS models and statistical analysis.

Model



Variable Model Own Figure

Types of Variables

The types of variables utilized for the research are of causal-relationship nature, this means that change variables (independent variables) are the cause supposed to be responsible for bringing about change(s) in a phenomenon or situation (Kumar, 2011). Due to the fact that the hedonic pricing method is used, and that this method can be used to separate the contribution of each feature, a rather large number of independent variables (18) are presented.

The outcome or change brought by introducing an independent variable is known as dependent variable. In this case the dependent variable derives from the concept of financial performance and it is represented as the base contract rent.

Another type of variables known as extraneous are also considered, these are factors or real-life situations that may affect changes in the dependent variable, this factors though not measured in the study may increase or decrease the relationship between dependent and independent variables (Kumar, 2011). In this case extraneous variables considered include incentives, market and economic situation and security factors.

Dependent variables

Financial performance:

Financial performance is a measure of how the asset contributes to the return on investment. The performance is measured by the rent level (in this case: asking rents, which was provided by Alles Group). The faster the building is rented out, and the more expensive it closes a lease deal is associated to a higher contribution to the IRR (internal rate of return) for the investors.

Independent variables

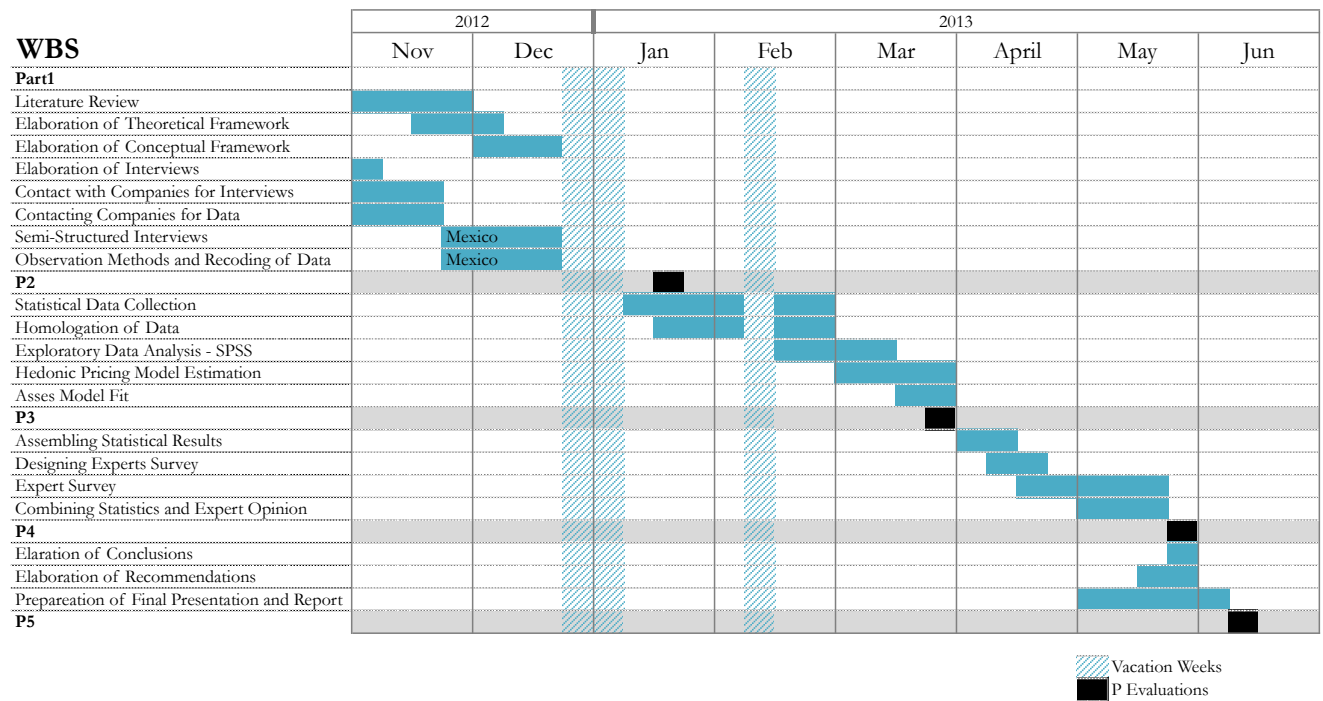
1	Age	Development or renovation year minus year of transaction. (P.W. Koppels, 2009)	Hardware
2	Number of Floors	Count of usable levels of the building	Hardware
3	Façade Material	Observation of used material for the façade of the building. Glass, Steel, Concrete, Mix-use.	Hardware
4	Façade Shape	Observation of round, rectangular shaped buildings for classification	Hardware
5	Volume	Observation of the footprint of the building Box, LTX Shaped, Multiple Rectangles or Other. (Gijsleaar, 2005)	Hardware
6	Building Type	Observation to distinguish high-rise, stand-alone or office park arrangements.	Hardware
7	Flexibility	Observation of floor plans Range or weighting system from: no – medium – very (adjustability)	Software
8	User	Observation of only one tenant or multiple tenants	Software
9	Hybrid	Observation of uses of the building. Only offices or mix-use functions (such as residential, commercial etc.)	Software
10	Spatial Layout	Inside of the layout, observation o floor plans. Domestic, Spinal or Deep Plan	Software

(Gijsselaar, 2005)

11	Branding Effort	Logo, brand name on façade	Humanware
12	Lifestyle 1	Terraces	Humanware
13	Lifestyle 2	Charismatic Lobby	Humanware
14	Lifestyle 2	Services and Events	Humanware
15	Accessibility	Distance to major roads	Location
16	Facilities	Number of restaurants and food locations in 500 mt. radius	Location
17	Cluster Type	Number of similar type businesses in the area.	Location
18	Parking	Parking ratio	Location

PART IV: NEXT STEPS

Work Break Down Structure



Time Management

The work break down structure provides an overview of the planning and time for the research. The scheme follows the research design, and is divided in four main areas: preliminary investigation (part 1), data analysis (part 2), assessment of information (part 3) and conclusions and elaboration of final results (part 4).

Problems and Limitations

The main limitation for the research is time. The main personal main is the scholarship that grants my graduate education, since it requires finishing on the time-span the program determines (2 years). This means that if the research is not finished by June – July 2013 the scholarship is cancelled and repayment for complete tuition is mandatory. Due to this research organization and time management are an important part of the proposed study.

One of the main problems concerns the validity and reliability of the collected data. The intention is to receive as much information as possible from corporative sources, as mentioned before databases from consulting agencies on real estate. Nonetheless this information, especially in Mexico, is not always available or completely homologated, this could present time consuming tasks, of arranging the data and doing some observation research on my own.

Another potential problem is that the study will be mainly conducted from the Netherlands but the sample is located in Mexico. Time difference and difficulty to travel could limit availability and quick access to information. On the other hand the fact that I am Mexican, and have worked on the real estate industry of Monterrey for two years prior to my masters study, also allows me to have contacts and understanding information quickly in my own language.

Appendix

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 - ii. Gomez Morín
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10. Conclusions

- a. Conclusions
- b. Recommendations
- c. Further Research

Appendix 2:

Interview Scheme:

Date:	Name:
Time	Function:
Place:	Company

1. Introduction to Interview:

- Permission to record
- Brief about myself
- Purpose of the interview
- Selection of Interviewees (brokers and developers of Monterrey)
- Duration: 45 min

2. Information about the interviewee (5min)

- Job
- Career
- Work (daily functions)

3. Purchase Journey (10min)

- Can you describe the process for renting a new property?
- What are the most common reasons for corporation to rent (move) space?
- What information is available when selecting a new property?
- Can tenants be peaky when selecting a new property?
- How long are leaseholds? Are there any incentives, rent free-periods?

4. Decision Criteria (10min)

- What are the criteria currently used when selecting a new property?
- To what extent is the business strategy involved? (Example)
- Are physical characteristics (building looks) relevant criteria?

- Could you mention in your opinion rational and irrational decision making criteria?

5. Branding (15min)

My research is based in branding characteristics of buildings:

- What physical properties have a positive/negative impact on the decision making process according to your experience?
- How do you think we could measure value?
- Do you think branding of the building has an effect on the final decision?
- Do you think the architects (name, brand, fame) have an effect on the decision?
- What do you understand as lifestyle attributes?
- Is there a need to learn more about the branding economics of office buildings in Monterrey?

6. Closure:

- **Ask for Quarter Reports / Database**
- Verify all has been asked
- Any question from the interviewee
- Explain what will happen with the information
- Inform and make contact afterwards
- Thanks for you time! 😊

Appendix 3

List Interviewees:

	Name	Company	Type	Set Date
1	Sergio Resendiz	Colliers International	Broker	Fri. Nov. 30 / 11:30
2	Bernardo Maldonado	One Development	Developer	Fri. Nov. 30 / 16:00
3	Juan Nuñez	Orange Investments	Developer	Mon. Dec. 3 / 13:00
4	Armando de la Fuente	Alles Group	Broker	Tue. Dec. 4 / 10:00
5	Carlos Capilla	CBRE	Broker	Thu. Nov. 29 / 11:00
6	Mercedes Delgado Garza	<i>U-Calli</i>	Developer	Thu. Nov. 29 / 16:00
7	Francisco Peña	4S	Consultant	Tue. Dec. 4 / 18:30

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‘ The uniquely architectural value of a design is ‘measurable’ in the sense of being – in principle- subject to rational decision making, which retrospectively can be subject to a comprehensive theory-led comparative assessment, guided by rational reconstruction and then normative definition of architecture’s unique societal function.’

Patrick Schumacher, from Zaha Hadid Studio