LOCATION QUALITIES AND ITS IMPACTS ON RESIDENTIAL DEVELOPMENT ATTRACTIVENESS AND ADEQUACY TO THE HOME BUYERS: A CASE STUDY IN SÃO PAULO

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Abstract

The São Paulo residential market has been experiencing a great expansion for several years. Historically, this market has been driven by both a great demand on financial resources and high levels of competitiveness among entrepreneurs.

In this way, it is very important to know how neighborhood features can affect not only the preferences of home-buyers on choosing their residences, but also the decision of the developers in selecting a site location.

In what concerns to the home buyers preferences, the research was conducted based on the Delphi Method in order to rank the neighborhood features. The questionnaires were submitted to the main local specialists on the residence market, such as: developers, architects, home brokers, users, buyers, tenants, constructors, investors and government agents.

Moreover, this article explores two districts in SÃO PAULO aiming to recognize potential relations between the developers' decision and the main aspects of the neighborhood quality. The indicators chosen to set up those relations are: new constructed area and market absorption of the residences units.

As far as those districts cases present relations strongly established, they will also enhance the results of the Delphi questionnaires that will be shown in the paper.

Introduction

This paper has the objective of recognizing the principal neighborhood features that can enhance its quality according to potential home buyers. The aim of this article was achieved by structuring a hierarchical list of such features named – matrix of location attributes. In such matrix, the main characteristics of a region are arranged in a hierarchical order where each attribute has it own relative weight in what concerns of the residential area quality as a whole. The matrix of attributes was tested in two regions of two different residential districts of SãO PAULO metropolitan area.

These location attributes are related to the followings issues: environmental conditions, urban infrastructure, services, accessibility and social-economic patterns inside the residential area.

It is important to point out that in this work the perception of location quality is based on the potential home buyer perspective. Such notion of quality by potential users can be explained in terms of how far away from work, entertainment, shopping, etc, is a specific site in comparison with alternative ones where alternatives residential projects could be developed or even taking into account those ones which have already been on development phase. Another important aspect of this paper refers to the particularity understanding of residential location quality according to the group of potential users that we select to be analyzed, therefore the simulation provided here is valid only for a specific segment of the market.

VILLAÇA (1977) defines location as "The attributes of a point in a territory that define its possibilities of relationship with the others points in the same territory", after that, when somebody make a residence acquisition is also buying the access to public services, urban equipments and infrastructure, we can also say that who buys a residence is not only getting a piece of real estate, but also a location with some degree of quality. It is also possible to conclude that differences of quality among several sites location in a specific neighborhood affects the prices of land and attractiveness for developing and buying new residential projects.

Moreover, locations' qualities are constantly affected by public and private investments. Public and private agents are continuously changing the urban tissue improving and producing new areas for new residential projects affecting the balance previously existents among the urban areas.

The spatial restructuring that has occurred in the last years in the majors cities around the world arose mainly from changing in social behavior and technological evolution, including the way people lives in a constructed environment. Specially in São Paulo the new requirements for a residence to be able to satisfy a specific kind of user, or potential owner, have intensity changed not only the concepts of housing, but also have stimulated developers to explore new areas for new projects.

In relation to users' requirements, differently from industrials and services uses, the decisions related to the location selection are not driven by scale economies, but paying special attention to the intangible structure of environmental qualities, in which clients satisfaction can be achieved (CHORLEY; HAGGETT, 1975).

The segment analyzed in this paper, in what concerns of its preferences and requirements related to residential location qualities, was conventional families – a couple with children in scholar age – having a mensal income within the interval of R$ 4,000 to R$ 6,000[1].

Thus, this article is focused on structuring a package containing the principal attributes of residential location quality for a specific public, named matrix of location attributes. The matrix was obtained by using the Delphi approach, and it was validate by applying it into two different residential areas in order to recognize if its parameters fitted with developers perception and users' needs.

Literature Review

Residential location studies have been treated under diverse perspectives. First, a considerable part of the bibliography deals with population distribution within the cities. Geographers and planners, like RICHARDSON (1971), CHORLEY and HAGGET (1975), and ELDER and ZUMPANO (1991), have tried to improve the classic models for spatial distribution of the population. Others studies are focused on the users' needs arguing which are the most important physical and location attributes for housing (LINNEMAN, 1981; HALLAM, 1992; PROVAR, 2003).

Generally these texts are based on hedonic models to explain the behavior of house prices. Such models considers prices as a dependent variable and some physical and neighborhood attributes as explained variables, in this case we can cite GOODMAN (1981), DALE-JOHNSON and PHILIPS (1984), ASABERE and HARVEY (1985) and, ARGUEA and HSIAO (2000).

In relation to users' demands, two Brazilian papers were examined, PROVAR (2003), where quite distinct of people economic and social profiles took place, and the other, FERNANDEZ (2000), researches the preferences of the market according to its life style, age and civil status.

TAJIMA (2003) gives special emphasis to the positive effect on house prices of being near from green areas and, on the other hand, the negative effect on houses within Boston when they're near from highways. VOITH (1991) points out the importance of accessibility and transport systems on residential choice. NIGRIELLO (1977) and LOW-BEER (1987) have studied the increase in the land-value and the increase in the number of new projects near from the new subway lines in São Paulo. BORBA (1992) and PROVAR (2003) have tested the decreased in house units' value while a waste recycling plant had been operating in a specific zone in São Paulo.

Others papers are related to discuss how the proximity of residential areas from shopping centers affects house prices (MASANO, 1993; DES ROSIERS et al., 1996)

Besides, there are several articles analyzing the process of site selection by entrepreneurs according to their strategies of diversification, in the middle of them, BARNETT and OKORUWA (1993), BUCKLEY (1993), ROSE (1993), DIPASQUALE and WHEATON (1996) and, CARN et al. (2001).

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[1] Nowadays 1 US$ is approximately equal to 2.4 R$.

Research Method – the Matrix of location attributes construction

The method employed in this research was the Delphi technique. By using the Delphi it is possible to achieve a certain degree of convergence among several points of view about the matrix of location attributes. This matrix consists of a hierarchical list of the attributes considered important to qualify a residential area as a whole, according to some specialists in this field.

ROWE and WRIGHT (1999) understand that the Delphi method is useful when historical data are not available, then, human judgment may be helpful. The Delphi approach is not a survey statistically valid of opinions among a specific group. It is essentially a consultation to a select and restricted group of specialists. The whole process is based on the logical ratiocination and professional experience of the participants. It also depends on providing objectives information exchange, aiming to reach a kind of convergence among different opinions about a certain subject. In theses cases statistics validation are not applicable (FERRAZ, 1993).

The Delphi starts by submitting a structured questionnaire to all participants where they must give their individual opinion about several question related to a specific issue. In a second phase, the manager of the process reveals the results of the first phase and asks if somebody would like to change the original answer related to any question placed before. The process ends up when the manager get satisfied with the degree of convergence reached until that moment.

In our investigation we finish the process with 30 participants with large experience in the SÃO PAULO's residential sector, such as developers, architects, home brokers, users, buyers, tenants, constructors, investors and government agents. We consider that their opinions are representative as the prevalent vision of the market.

We decided to start the process with a matrix that had been already structured due to time restrictions. This initial structure was obtained from the review of the literature, considering the first contacts and informal opinions of the specialists and observing the location features pointed out in the new residential projects' advertising material.

The attributes that compounded the first matrix were separated into groups. This fragmentation allows not only classifies them hierarchically but also to set up the groups scale as well. The five groups of attributes set up are the followings:

- **Environmental quality** – attributes related to both the natural and constructed environment, for example: the presence of green areas or pollution levels;

- **Accessibility and transportation systems** – deals with the availability of means of transport to connect people who lives within a neighborhood to their main activities;

- **Commerce and services** – it is the housing complementary services, including not only the less specialized and frequently used ones, like bakeries and small markets but also the most specialized ones like restaurants and cinemas;

- **Urban infrastructure** – involves all utilities systems;

- **Social and economic patterns** – embrace the attributes related to personal income patterns, average educational levels, proximity of shanties, index of violence, etc.

The preliminary matrix and instructions to fill it out as well was addressed to the participants by e-mail. In this preliminary matrix the participants scored each attribute using a 0 to 10 scale, with a variation of 0.5 points, according to their opinion about the attribute's relative importance in qualifying a residential location.

The main aspects of the Delphi are: [a] sequential answering phases mixed with feedbacks; [b] anonymity of the participants in order to avoid constrains, and; [c] very light statistics data treatment.

In this work the process have embraced two phases, mixed with one feedback to the participants, to allow them to revise their first individual scores to each attribute in the matrix. It was allowed too, on the first phase, to include new attributes that there were not present in the preliminary version of the matrix. In the same way, the attributes considered unimportant for the most of the participants were erased. At the end of the second phase we reached a satisfactory degree of convergence among opinions, so we finished the process.

The statistic approach dealt with the mode and relative frequency parameters. Based on the mode, it was possible to recognize the prevalent opinion of the group and to adopt weights for each location attribute. Then, according to their relative weight each attribute was hierarchically positioned in the matrix as follows at the table 1.

The mode of the opinions was also the information transmitted to the participants in such way they may change their scores. The relative frequency around the mode denotes the concentration points in relation to each attribute and its analysis drove the end of the process. It was still responsible for the attributes weight validation. It was considered a validated score only those ones that reached at least 30% of relative frequency. Both the relative frequency of 30% and the mode of the sample were taken into account to include or erase attributes from the final matrix.

Results

The Result of the Delphi process was synthesized at the Matrix of location attributes, as shown in the table 1. In this Matrix are displayed the most relevant features for choosing a residential location according to the demands of a specific group of users. In the first column are presented the mode of the scores obtained for each attribute while in the second one are indicated the relative weight of each attribute within the respective group. In the same way, the global score of the group is displayed in the line of the group's title followed by its individual weight in relation to the total weight of the matrix.

MATRIX OF LOCATION ATTRIBUTES	MODE	WEIGHT
ENVIRONMENTAL QUALITY	**7.6**	**20.0%**
proximity of parks (green areas)	10.0	8%
location far away from rivers and dirty streams	10.0	8%
location calm in relation to levels of noises (sonorous pollution)	10.0	8%
location where do not ocurs overflows	10.0	8%
location far away from sanitary deposits and/or strips lands	10.0	8%
location with "forested" streets	8.0	7%
location with acceptable levels of air pollution	8.0	7%
location far away from industrial areas	8.0	7%
proximity from squares	7.0	6%
location "clean" em terms of visual pollution (posters, outdoors, etc.)	7.0	6%
satisfactory conditions of the constructions in the neighborhood (maintenance)	7.0	6%
region with an expressive architectural body (projects of recognized architects)	6.0	5%
location with regular topography (without great declivities and/or aclivities in the roundnesses, etc.)	6.0	5%
location far away from energy towers and/or electromagnetic fields	6.0	5%
wide and standardized sidewalks in the region	5.0	4%
proximity from dams and/or lakes	4.0	3%
Total of sub-group environmental quality	*122.0*	*100%*
ACCESSIBILITY AND TRANSPORTATION SYSTEMS	**5.9**	**15.0%**
proximity from subways stations	8.0	9%
easy access to main avenues	8.0	9%
good size of the streets and avenues in the region (low levels of traffic jam)	8.0	9%
easiness to parking in the region	8.0	9%
proximity from taxi points	8.0	9%
easy acess to service centers (polar regions of jobs adequated to the specific income level)	7.0	8%
easy acess to roads and highways	6.0	7%
easy acess to non-stop lines	6.0	7%
good system of signalling in the region	5.0	6%
proximity from bus stop to the principais service centers	5.0	6%
proximity from train stations	5.0	6%
proximity from urban buses terminals	5.0	6%
proximity from airports	5.0	6%
easyness to circulate by bicycle (alternative of transportation system)	4.0	4%
proximity from bus stations	2.0	2%
Total of sub-group accessibility and transportation systems	*90.0*	*91%*

COMMERCE AND SERVICES	**6.0**	**15.0%**
proximity from universities	**8.0**	**5%**
proximity from fitness centers	**8.0**	**5%**
proximity from banks	**8.0**	**5%**
proximity from laundries	**8.0**	**5%**
proximity from shopping centers	**7.0**	**5%**
proximity from basic education schools	**7.0**	**5%**
proximity from bakeries and/or mini-markets	**7.0**	**5%**
proximity from drugstores	**7.0**	**5%**
proximity from commercial streets (clothes store, footwear, etc.)	**6.0**	**4%**
proximity from services streets (medical centers, lawyers, etc.)	**6.0**	**4%**
proximity from supermarkets	**6.0**	**4%**
proximity from hospitals	**6.0**	**4%**
proximity from baby schools	**6.0**	**4%**
proximity from libraries	**6.0**	**4%**
proximity from cinemas and/or theaters	**6.0**	**4%**
proximity from bar and/or restaurants	**6.0**	**4%**
proximity from clubs and/or sports centers and/or recreation centers	**6.0**	**4%**
proximity from video landlords	**6.0**	**4%**
proximity of fruits and vegetables markets	**5.0**	**3%**
proximity of police stations and/or police ranks	**5.0**	**3%**
proximity of gas stations	**5.0**	**3%**
proximity of conveniences (news-stand, post offices, etc.)	**5.0**	**3%**
proximity of free-fairs	**4.0**	**3%**
proximity of bookstores	**3.0**	**2%**
proximity of cultural centers and/or museums	**3.0**	**2%**
Total of sub-group commerce and services	*150.0*	*100%*
URBAN INFRASTRUCTURE	**10.0**	**25.0%**
location with drinking water supply	**10.0**	**8%**
location with sewerage	**10.0**	**8%**
location with pluvial water draining	**10.0**	**8%**
local with electric energy supply	**10.0**	**8%**
location with telephonic utilities supply	**10.0**	**8%**
location with cable tv supply	**10.0**	**8%**
location with canalized gas supply	**10.0**	**8%**
location with good public illumination	**10.0**	**8%**
location with paved streets	**10.0**	**8%**
local with garbage system and public cleaness	**10.0**	**8%**
location with sidewalks in good conditions (without holes, steps, etc.)	**10.0**	**8%**
location endowed with urban furniture (public mailboxes, telephones, bus stop, etc.)	**10.0**	**8%**
Total of sub-group urban infrastructure	*120.0*	*100%*
SOCIAL AND ECONOMICS PATTERNS	**9.5**	**25.0%**
locatiom far away from slum quarters	**10.0**	**18%**
location near from valued quarters	**10.0**	**18%**
neighborhood status	**10.0**	**18%**
location far away from prostitution's areas or streets	**10.0**	**18%**
low index of violence in the region	**10.0**	**18%**
quarter with historical identity	**7.0**	**12%**
Total do sub-group social and economics patterns	*57.0*	*100%*

Table 1 – Matrix of Location Attributes

The final weights related to each group of attributes expose the relative importance of each one to the residential area quality as a whole. At the end, 74 location attributes were listed. The most important groups are the urban infrastructure and social-economic patterns, each one meaning 25% of the total weight, as it can be noticed in the following figure.
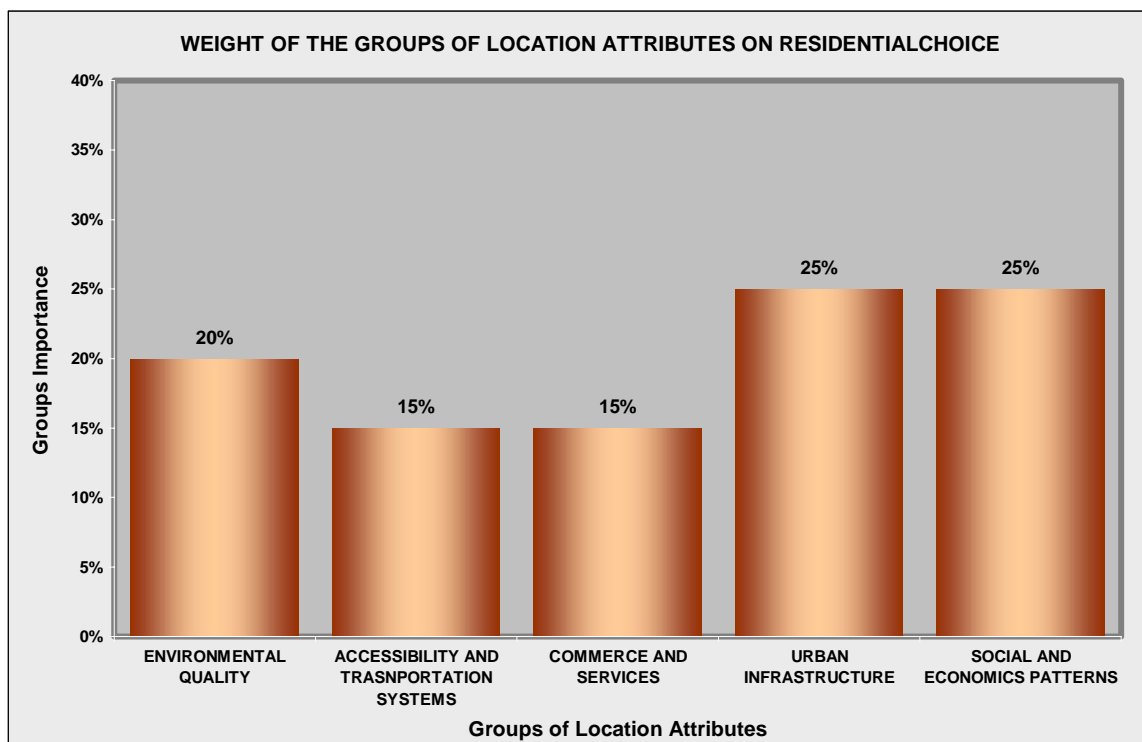
Figure 1 – Relative importance of the groups of location attributes on residential choice

The matrix of location attributes validation

The matrix was tested in two different residential areas with both distinct, the quality conditions, expressed by the parameters of the matrix, and the pattern of new buildings supply. The results have validated the general structure of the matrix and when they are analyzed with others indicators it is possible to perceive some market trends.

The selection of the two regions to be explored was based in the following factors:

- The profile employment of the people taken into account in this research, such as it was described at the page 3;

- The same type of urban zoning, where it can be developed the same type of activities and constructed area;

- A quite homogeneity among the region features in what concerns to the attributes of the matrix.

Once the two regions were picked out, named MOOCA and VILA MARIANA, both were submitted to the attributes structured in the matrix body, and subsequently we set up specific criterions to drive the scoring process of each attribute.

Many attributes of the matrix, and the criterions for scoring it as well, are related to the distance between the location and a specific kind of service, therefore, in order to allow personal judgment be straighter in filling the matrix out, we have adopted

maximum and minimum distances from any point inside of the region to get an specific place where there is this service, for instance, the measure of how far from a drugstore or a subway station is a specific site within the region. Another consideration taken into account in this test was the question of how often people uses a specific service or attribute present in the matrix.

After filling the matrix out with the grades of the region for each attribute, it is possible to calculate not only the score achieved for each group of attributes but also the total score obtained for the region considering the entire matrix.

These calculations were proceeded multiplying the balanced average of the scores obtained within a specific group of attributes by its own weight. By summing the total score of each group we reached the total score of the region.

By employing the matrix on the chosen locations it was possible to recognize its usefulness and pointed out the locations' advantages and problems to receive residential projects. In the following figure are displayed the scores obtained by the studied locations, MOOCA and VILA MARIANA, which have gotten 7.4 and 8.7 respectively.
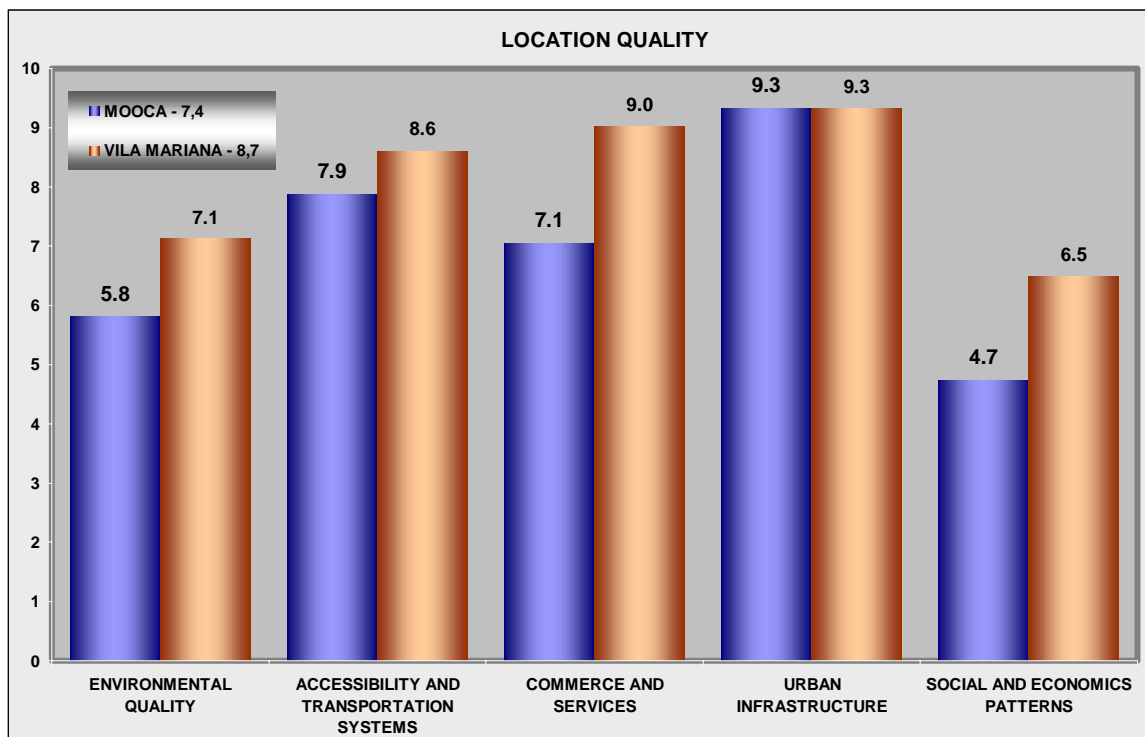

Figure 2 – Scores of the locations submitted to validate the matrix

Some preliminary conclusions was possible to get by making a cross analysis between the results of the survey and some market index, as follow.

It is well known the positive correlation between land price within an area and the own quality of this area. The land prices survey of the two regions analyzed have

confirmed that hypothesis as far as land prices in MOOCA are approximately 30% lower than in VILA MARIANA. In the same way, new residential units in VILA MARIANA are being sold nowadays at prices also 30% higher than those practiced within MOOCA.

The number of new residential projects in a specific region may be a signal of how developers notice its location attributes. In relation to the number of new residential projects, in the last ten years 67 new residential buildings were accomplished in the MOOCA location, while in VILA MARIANA the completion of new projects was 110 at the same period. These numbers may also explain for themselves the developers' perception in what concerns to the location qualities of the two areas. It is also important to point out that both regions are very similar in terms of sites availability and potential construction limits.

On the other hand, the demand data like absorption rate were not collected. Nevertheless, the informal data points toward VILA MARIANA as having better absorption rates than MOOCA. If in the future better data were collected perhaps it will be possible to confirm the strong correlation between location qualities with not only the demand preferences but also with how the supply distinguishes residential areas quality.

Final Remarks

This research identified the main location attributes for qualifying a residential region for a specific type of user.

By using the Delphi technique it was possible to achieve a certain degree of convergence among several specialists in this field in order to construct a matrix of attributes considered important to qualify a residential area as a whole. The matrix holds the preferences and demands in housing. Besides, this matrix can be used as an instrument to identify quality patterns among different locations within São Paulo metropolitan area.

The matrix was applied in two regions in two different districts in São Paulo. The composition of the attributes in the matrix was validated by this test.

The importance of recognizing location attributes is due to both, the preferences of the users and the site selection process conducted by developers for new residential projects, in this particular issue, the users' preferences identification can also support the firms' segmentation strategies.

Restrictions of the matrix

The matrix applicability is restricted to the city of São Paulo. However, its construction method and its general structure can be useful for the required adjustments to apply it in others cities.

In applying the matrix to a specific location, objective and subjective judgments are required. The matrix reflects the current list of demands and aspirations of specific group in what concerns to residential location quality, nevertheless, some factors like, the technological development, demand changes, urban space reconfiguration, etc,

suggest that the matrix updating must be carried out very often. The main improvements should be related to the inclusion of new attributes, to the exclusion of outdated attributes or revaluation of the current weight of each attribute.

Further applications

The collaboration and the interest of all participants in this research reveal the lack of good information to drive decisions related to the sites selection for new residential projects. In this way, the results of this paper can still be helpful to:

- To assist the strategic planning process in what refers to the choice of new regions for new developments driven to a specific market segment;

- To aid investors and buyers in their new acquisitions, making the relation between location and physical attributes of the new projects more balanced;

- To assist public and private partnership in renovating areas according to the parameters of the matrix in order to attend some specific demands;

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