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MOTIVATIONAL THEORY APPLIED TO REAL ESTATE

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Thesis presented to Escola de Administração de Empresas de São Paulo of Fundação Getúlio Vargas, as a requirement to obtain the title of Master in International Management (MPGI).

Knowledge Field: Management and Competitiveness in Global Enterprises.

Adviser: Prof. Dr. Carlos Eduardo Lourenço.

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ABSTRACT

This paper sets off to better understand motivation in the purchase of real estate of low-income consumers. Classical motivational theories are synergized to create a new framework on motivation on this subject. An exploratory research and a conclusive quantitative survey were carried out and it was possible to determine the profile of low-income consumers considering the real estate through this novel framework.

Keywords: real estate development, motivational theory, marketing.

RESUMO

Este artigo busca entender melhor a motivação na compra de imóveis por consumidores de baixa renda. Teorias motivacionais clássicas são alinhadas para criar um novo quadro de motivação sobre este assunto. Uma pesquisa exploratória e uma pesquisa quantitativa conclusiva foram realizadas e foi possível determinar o perfil dos consumidores de baixa renda em relação aos imóveis por meio dessa nova estrutura.

Palavras-chave: desenvolvimento imobiliário, teoria motivacional, marketing.

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1 INTRODUCTION

The research problem of this paper is the understanding of the underlying motivation in the purchase of real estate by low income families. The theories utilized to create the analysis' framework of the collected information was the *Hierarchy of Needs theory* (1943), authored by Abraham Maslow, and the *Motivator-Hygiene theory* (1964), authored by Frederick Herzberg. A synergy was established between these theories permitting a novel view towards motivation in real estate.

Thereupon, the general objectives of this paper are the elaboration of a profile of the low-income Brazilian consumer considering the real estate and also to assist fathoming motivation in the purchase of real estate. Understanding motivation and building a profile of consumers would help real estate developers to see how attributes are prioritized and thus helping them shape what they offer to the market to attain more success.

Subsequently, to achieve this general objective, specific objectives were developed: the identification of attributes of low-income real estate development project and the further categorization in motivational or hygiene factors, and finally an survey to see if the proposed theory would sustain.

Thus, two hypotheses were established. The first being a real estate development project, it should first attend to all the hygiene factors of its proposed public and then invest into motivational factors; the second being Brazilian social housing, consumers are situated in Maslow's pyramid in the need for security.

The methodology adopted to uphold or refute these hypotheses was separated into two different stages. The first being an exploratory research through which attributes of low income real estate projects were established and later a quantitative survey to determine how they were prioritized to deduce which were hygiene factors and which were motivational factors, inferring in which stage of the Maslow pyramid this segment was

located and lastly an survey was conducted to evaluate if the suggested theory could be sustained.

The application of the methodology confirmed the first and second hypothesis and resulted in the confirmation of the suggested theory and the creation of the profile of low-income Brazilian real estate consumer which will well serve real estate developers in the present future.

2 THEORETICAL FOUNDATION

The basis for the interpretation of the data collected in this paper is the *Hierarchy of Needs theory* (1943), authored by Abraham Maslow, and the *Motivator-Hygiene theory* (1964), authored by Frederick Herzberg.

2.1 MASLOW GENERAL REVIEW

In Maslow's (1943) conceptualization, there are at least five sets of goals, which we may call basic needs. These are briefly (i) physiological, (ii) safety, (iii) love, (iv) esteem, and (v) self-actualization. In addition, people are motivated by the desire to achieve or maintain the various conditions upon which these basic satisfactions rest and by certain more intellectual desires. Maslow (1943) suggested that these needs could be arranged in a hierarchical order of preeminence and the utmost need would consume consciousness, making the organism coordinate itself to achieve such need. Further on, he stated that, once a need is fulfilled, it will be forgotten, denied and minimized and the next higher need will arise and will start to dictate the consciousness and recentralize behavior because attained needs will not act as a motivator for the organism. Also, Maslow concluded that man will thus have an ever-wanting existence. The author further suggested that the achievement of these needs is rather not exclusive, but gravitates to be. Besides, he advocated that people in general would be partially satisfied and unsatisfied and, as we go up in the pyramid, we would find a lower percentage of satisfied people.

Some researchers have criticized Maslow's work such as Wahba and Bridwell (1976). Their research suggested that there is no proof of the ranking or hierarchy of the Maslow's pyramid. There has been also criticism on how he elaborated his study on self-actualization because the basis for it was a non-statistical sample of acquaintances and biographies of people he believed to be self-actualized. On the other hand, other researchers, such as Tay and Diener (2011), who conducted a survey in 155 different countries, concluded on their research that Maslow's theory is indeed largely correct nonetheless the order in which the needs were met did not impact people's happiness.

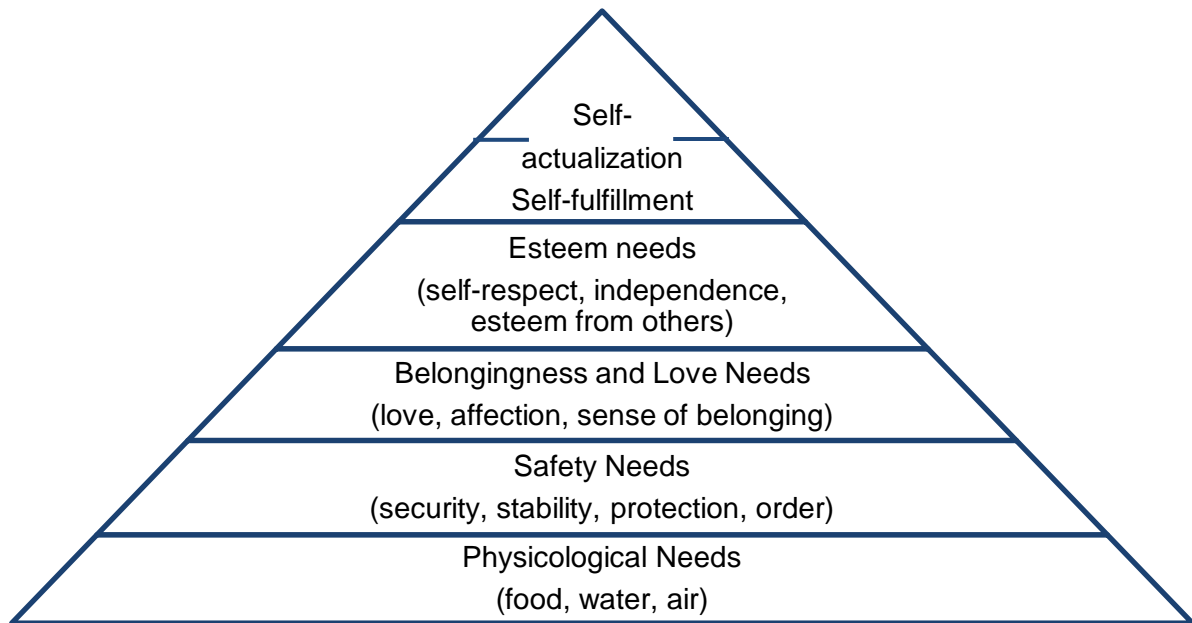
Furthermore, other researchers sought out to expand and revisit Maslow's work such as Kenrick, Griskevicius, Neuberg and Schaller (2010). The novelty of their studies is in three main points. First, they added procreational based elements to their hierarchy; second, the researches took out self-actualization as they believe it to be encapsulated in the achievement of the other needs; finally, they depicted the needs as stacked one on top of the other. Thereby, it highlights the fact that these authors suggest that goals in the base of the pyramid continue to be important as higher ones are also achieved.

2.2 MASLOW APPLIED TO REAL ESTATE

While Maslow's theory was developed to understand the general motivation of people, it has also been used to understand motivation in buying real estate, advocating that the characteristics and attributes that compose a certain real estate project can be categorized according to Maslow's hierarchy (Israel, 2003). In her studies, Israel (2003) proposed an adaptation of Maslow's hierarchy of needs into a pyramid of housing needs, where each one of Maslow's needs has a counterpart in her pyramid of housings needs.

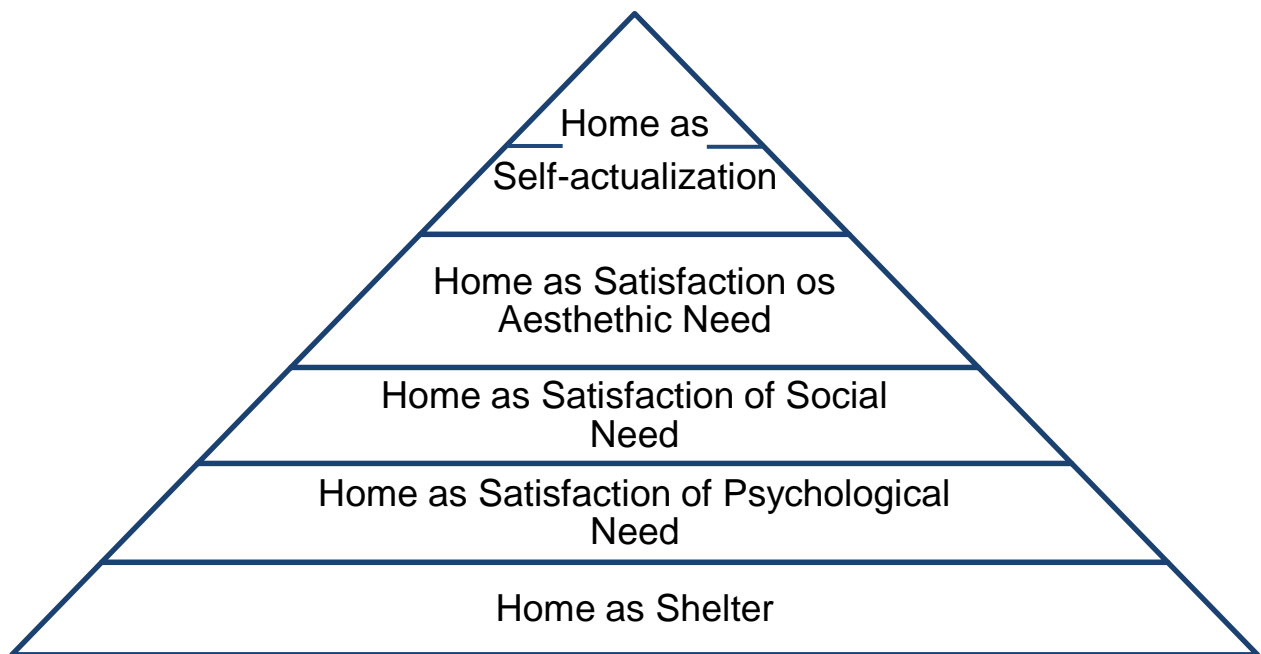
Moreover, Zavei & Jusan (2012), in their article *Exploring Housing Attributes Selection based on Maslow's Hierarchy of Needs*, utilized the original needs' pyramid regarding the real estate to develop a framework in order to establish a relationship amidst attributes of housing units and consumer needs.

Figure 1 – Maslow's Pyramid.



Source: self-elaborated.

Figure 2 – Israel's Pyramid.



Source: self-elaborated.

When approaching these works, based on the original needs' pyramid, we can understand how each need finds an expression in real estate project attributes.

Physiological needs related to a real estate project would be those that provide livable conditions. Examples of such attributes would be the ceiling height, piped water or electricity. Israel (2003) associated this tier considering everything that made a house suitable as a shelter, that would be the most basic elements a project would have to contemplate to be accepted by the consumer, being linked to basic livability.

Likewise, safety needs related to a real estate project would be those that tend to the feeling of security (Santos & Santana, 2017). These attributes could be exemplified in the doors' locking system, the closeness of communities, 24 hours doorman and even the neighborhoods in which real estate projects are located. It could be suggested that safety needs could also be associated to not losing your home, such as in natural disasters or due the incapacity of paying for it.

Moving up in Maslow's hierarchy, once physiological and safety needs have been achieved, Maslow (1943) states that the need for love, belongingness and affection will arise. This need would be manifested in the craving for relations with affection, may it be a spouse, a lover or even friends. The urge to belong to a group will be dire as Maslow (1943) described.

Love needs in a real estate development project could be understood as those that nurture the feelings of love and affection or, even more, that attribute the benefits of the customer's loves, promoting affectionate relationships and, accordingly, building up community or family living. Examples of this would be amenities such as playgrounds, gyms, pools, assembly (party) rooms, barbecue gazebos and sports courts. Moreover, these could also be some attributes of the proper housing unit such as backyards.

Following to the next step of the hierarchy, esteem needs appears. Maslow (1943) affirmed that generally members of society have a need for a formidable evaluation of themselves, for self-esteem or self-respect and for the esteem of others. This would be based on people's actual capacity, accomplishments and appreciation by peers. This need could be understood as the craving for admiration and finding a place among society. In real estate, this need would manifest in elements such as the architectural design of a project, the neighborhood in which the project is located or even some amenities like spas or squash courts, that could be seen by peers as prestigious and that could be translated into respect or admiration, which could also help someone own their place in society.

The last level of the hierarchy would be the need for self-actualization. Maslow (1943) defended that, after all previously mentioned needs were attended, a restless need would appear, being settled only when the person realizes what he is fit to do. This need refers to the greed for self-fulfillment and actualization, which is subjective to each one capacities and inclinations.

Regarding real estate projects, this would seem rather difficult to conceptualize it; not coincidentally, it appears that Israel (2003) actually forwent linking this need to actual real estate attributes in her work. In her pyramid of housing needs, Israel (2003) suggests that the top tier, which is house's actualization, would just be the culmination of the lower needs' achievement. This would indeed defeat the purpose of having another level in the pyramid because the level per se would not express a unique and different set of needs, achievements or goals. Thus, to solve this issue, it is necessary first to understand that when Maslow (1943) referred to self-actualization, he was undeniably referring to the desire for self-fulfillment. Along these lines, it is suggested that such projects, as Kibbutzim or other real estate project related to "bigger purposes", could satisfy the need for self-fulfillment.

Kibbutzim are collective communities that were established in Israel with the intent of recolonizing the country. They were created to enable a utopian society based on socialism and Zionism, representing, moreover, much more than just houses and farms:

they were the actual manifestation of ideals into real estate. Rosner, Avnat, Cohen, & Leviatan, U. (1978) concluded that the main reward desire in the kibbutzim was the self-fulfillment; the argument that they tended to self-fulfillment is reinforced by Wong (2016), who suggests that self-fulfillment comes in the form of giving your best to serving others, which would match the sense of collective living encountered in Kibbutzim.

2.2.1 MASLOW'S THEORY APPLIED TO REAL ESTATE INTERNATIONAL APPLICABILITY

Delving into Maslow's hierarchy theory would certainly elicit the doubt of cultural specificity and generality of needs, in addition to the international applicability of the theory. When Maslow (1943) authored his theory, he suggested that, while in each varied cultural group specific desires might differ, this would just be the different forms in which the same needs find expression. Superficially they would seem different, but once one examines them in detail, their common core would be revealed.

In light of this, Ozdemir (2015) studied the cultural differences in real estate projects based on Maslow's needs. Such manifestation in real estate projects could be understood as one region seeing thermal insulation as a physiological need due to harsh weather conditions, while another culture disregards this attribute as a need of any kind. Another example would be the cultural preferences for flooring: Ozdemir (2015) observed that the Turkish market had a preference for tile floors, while the Czech market had a preference for woods floors. Wood floors are seen by Czechs as luxurious, playing with the clients' esteem needs, while tiles are seen as an inferior product, even though the Turkish market considers the opposite. The underlying need in the pyramid was sustained while the forms of expression were different; thus, in most cases the hierarchy is sustained.

2.2.2 MASLOW'S THEORY APPLIED TO REAL ESTATE LIMITATIONS

Alas, it may be observed in some individuals the inversion of the hierarchy or, in some cases, the loss of subjects wanted for higher needs. This could be understood, for

example, as one subject may forgo living in a home that properly satisfies his physiological needs or safety needs to attend to a need for self-actualization. Reviving the example of the kibbutzim, people forwent living in their comfortable houses (or, speaking in general terms, they forwent their lives) to seek to realize as what they saw as a bigger calling, which was Zionism.

Therefore, we can understand how evidently Maslow's theory can be applied to real estate and, looking further into Herzberg's research (1964), we can see that a similar feat is attainable.

2.3 HERZBERG'S GENERAL REVIEW

Originally, the objective of Herzberg's studies (1964) was to understand motivation in the workplace, resulting in the elaboration of his two factors theory: the Hygiene-Motivation theory. This theory suggests that there are factors which cause dissatisfaction and those that would be responsible for satisfaction in the work environment.

Herzberg (1964) thus categorized attributes in two ways, which are: (i) "motivational factors", or what has been deemed intrinsic conditions, and (ii) "hygiene factors", or what has been deemed extrinsic conditions. The first means, in a Human Resource's perspective, that the job satisfaction is a function of the job's challenging and stimulating content or activities. As they are related to what people do and perform, motivational factors are the ones under the individuals' control; they involve feelings of individual growth, professional recognition and self-realization. Notwithstanding, hygiene factors are those which lead to dissatisfaction. In a Human Resource's perspective, these are factors administered and decided by the company, being beyond the control of people (the main factors are: salary, types of supervision, physical and environmental conditions of work, company policies and guidelines, internal regulations, etc).

Notice that:

(...) the opposite of job satisfaction is not job dissatisfaction but, rather, no job satisfaction; and similarly, the opposite of job dissatisfaction is not job satisfaction, but no job dissatisfaction. (Herzberg, 1964, p. 64)

2.4 HERZBERG APPLIED TO REAL ESTATE

This theory can also be extrapolated to understand real estate development projects attributes and how they cause satisfaction and dissatisfaction. Donnely (1980) was the first to suggest this, alerting to the benefits that applying Herzberg's theory might have for housing development. He was keen to explicit that, although the dual factor theory has its limitations such as dividing all factors in only two areas without a gray zone it, proved as a substantial theoretical basis for how management has improved job satisfaction, and he further questioned if this would not be the case for real estate projects also. However, only much later on, Chan & Baum (2007), in their article *Determination of satisfiers and dissatisfiers using Herzberg's motivator and hygiene factor theory: An exploratory*, studied and applied Herzberg's dual factor theory to a subject that did not refer to job satisfaction and which referred to real estate; the article explored customer satisfaction considering an ecolodge. Expanding on Herzberg's theory, underlying satisfaction and dissatisfaction dimensions were interpreted as a result of two presuppositions: hygiene factors (dissatisfiers), which lead to the condition of dissatisfaction (prevention); and motivators (satisfiers), which lead to a condition of satisfaction.

2.5 COMBINED THEORY

Ergo, it would be possible to combine both theories to give a better understanding on how motivation works for the purchase of real estate. Combining these theories suggests that real estate clients will consider attributes of a project corresponding to the level of needs on which they are closest to realize; in Maslow's pyramid, they surpassed as the hygiene factors, while they have yet to be surpassed as motivators. The lack of the hygiene factors (already achieved and closest to realize needs) would cause dissatisfaction, while the presence of motivator (needs that have not been achieved) would generate satisfaction in a real estate project.

As it can be logically assumed that clients will, to the best of their budget and efforts, choose a product that will satisfy themselves the most, it can be assumed that they will cross out, if possible, all the options that do not fulfill their hygiene factors (which would cause them dissatisfaction); only once they have crossed these out, clients will then start to delve into motivators. This is quite evident when we look at high end consumers and the fact that they will not even consider an option that does not have an appealing design, which tends to esteem needs, while someone in the base of the income pyramid would not give such importance to this need. Thus, what might seem as motivation to one subject, is a hygiene factor to another.

Interesting to note is that specific dissatisfaction caused by the non-achievement of hygiene factors could be overcome with very strong incentives in place to overcome per se factors. Typically, these incentives come in the form of discounts to the commonly practiced price for a similar housing unit that does fulfill these hygiene factors.

Furthermore, the availability of options would be uniform according to economic groups, since they present the same acquisition power. Thus, it would be possible to group clients per economic class and, hence the higher the economical group, the more options would be available, making higher groups more judicious.

In such way, it would be essential for real estate developers to understand and study their clients to see in which economical group they are situated and, moreover, where in the needs' pyramid such group is localized because, comprehending this, it would consequently help them understand what attributes to focus on their projects. For example, it would not make sense for a real estate developer to invest heavily on an attribute such as the design of a project that tends to esteem needs to a public which has not yet attained standards related to physiological needs.

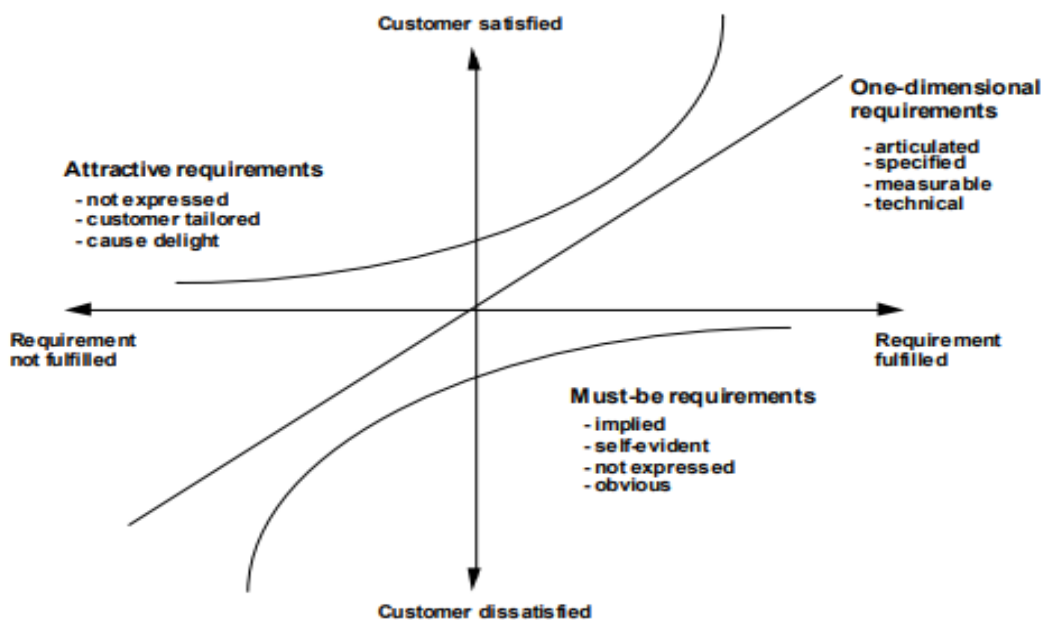
Accordingly, it is proposed H1: a real estate development project should first attend to all the hygiene factors of its proposed public and then invest into motivational factors. Thus,

proving H1 would contribute to prove the combined theory; proving H1 would also be the basis of proving the suggested theory.

2.6 KANO THEORY

Although the combination of Herzberg's hygiene-motivator theory and Maslow's pyramid of needs has not been suggested before, Kano (1984) was the first to suggest the nonlinearity of customer satisfaction creating a similar result. Although many might argue that, in some aspects, his work is actually an expansion of Herzberg's view, Kano (1984) advocated his own form of understanding customer satisfaction through the Kano's model of satisfaction. The ingenuity of his proposal was that customer satisfaction is not linear (that is, the equation of more quality equals more satisfaction is false); he sustained this proposition through what he called the three main types of product requirements: must-be, one-dimensional and attractive. Note that one of the factors that Kano suggested for classifying these different requirements was the form in which they were demanded, requested or expected.

Figure 3 – Kano's model of customer satisfaction.



Source: Berger et al., 1993, p. 17.

Must-be requirements would be those that, when not fulfilled, caused great dissatisfaction, while their fulfillment would not increase satisfaction. Must-be requirements could thus be easily associated to Herzberg's hygiene factor: they are requirements described as the essential factors of a product or service. The fulfillment of these would generate only a state of "not dissatisfied". These would also not be explicitly demanded because customers see them as basic necessities – must-be requirements need to be fulfilled for a customer interested in the product.

One-dimensional requirements do not have a parallel in Herzberg's theory, being those that actually follow a linearity: the more the fulfilment, the more the satisfaction, and vice-versa. These would normally be categorically demanded by the customer.

Attractive requirements would be those that influence the most how customers will be satisfied. These requirements are neither explicitly expressed nor expected by the customer. The fulfilment of these generates more than proportional satisfaction; when they are not met, however, there is no feeling of dissatisfaction. The parallel with Herzberg's would be with his proposed "motivators".

Kano also suggested that there were two more classifications of requirements: reverse requirements, which would produce a negative effect if they were present, and indifferent requirements, which presence would not have any impact in the product.

2.7 KANO'S THEORY APPLIED TO REAL ESTATE

Although Kano's methodology has been successfully applied by authors such as Llinares and Page (2011) to evaluate the weight of different real estate development projects attributes in order to better understand customer satisfaction and purchase decisions, the main limitations of Kano's theory persist. These would be that, whilst satisfaction is not linear, customers in this model would be perceived as static in their tastes, that is, when a client achieves a sort of satisfaction, he will stay satisfied and not start to search a higher

level of satisfaction. Also, segmentation of clients is understood as given in this model and there would be a lack of guidance of what would be the next point to focus on a product or in service design regarding satisfaction.

2.8 REAL ESTATE IN BRAZIL

Further on, in order to see the applicability of the joint Maslow and Herzberg's theory considering the real estate, it was chosen to focus the analysis on the Brazilian real estate market – being this the market which the author of this paper had closer contact – and, even more specifically, the social housing market in Brazil being the sector, as stated by Santos & Santana (2017), of the market with the largest deficit and, thus, which would see the largest growth in years to come.

Regarding specifically the Brazilian market and the motivational theory previously studied, the concept of desired value as a stimulus for change in social housing in Brazil, conducted by Kowaltowski & Granja (2011), sought out to identify what attributes social housing consumers (one to nine minimum wages) valued most in real estate projects through a methodology of a card based game. The authors discovered that the only attribute that had statistical significance was those related to security. Thus, it is proposed H2: Brazilian social housing consumers are situated in Maslow's pyramid in the need for security.

Therefore, this paper proposed to research even further where real estate consumers in the lowest economical group in Brazil (which is the market for social housing) find themselves situated in regard to Maslow's pyramid, determining what would be hygiene or motivation factors for this public and, further on, test the proposed combined theory by proving or refuting H1.

With this challenge in hand, to set out to discover how customers classify attributes, a qualitative survey was developed to determine what exactly are attributes related to real estate development projects. Then, a quantitative survey was developed to see how these

attributes were prioritized to establish where in the pyramid this group was localized, enabling us to determine which were hygiene or motivator factors. Finally, a test was applied regarding a certain motivator attribute to see if the combined theory was sustained. The focus of the study was families with incomes that are less than 9 minimum wages.

3 METHODOLOGY

According to the definition given by Malhorta (2012), marketing research is sought out for two reasons: (i) to identify and (ii) to solve a marketing problem. A research to identify a marketing issue is developed to identify a problem that does not appear on the surface, or that will appear in the short future. Examples of types of research from this category would be market potential, a company's image and markets' tendencies. Once this problem has been identified, a new research is fashioned to solve this identified marketing problem. Examples would be researches for segmentation, product or communication. The results from this kind of research will be used to take decisions to solve the previously identified problem.

Theoretically, this means that research is often divided into two spectrums: exploratory and conclusive (Malhorta, 2012). The main objective of an exploratory research is to help comprehending a problem that the researcher faces. The exploratory research is used in cases where it is necessary to define the problem with more precision; the necessary information is defined in a broad manner in this step, and the research process is flexible and not structured. The sample is selected to generate maximum discernment and is small and not representative. On the other hand, conclusive (or so called) quantitative research tries to quantify data and normally applies statistical analyses to generate conclusions.

This paper's surveys look for identifying in which level of the Maslow's pyramid social housing consumer in Brazil are located and thus qualify for them which attributes of low income real estate development projects are motivational or hygiene factors. Accordingly, to be able to categorize such attributes, first it would be necessary to define which are these attributes. Considering what has been stated above, this could be best classified as an initial pursuit of an identification of a marketing problem and as a later quest to solve this identified problem. So being, the opted methodology for this survey is one of an exploratory conception, followed up with a quantitative structured survey and an survey to validate the suggested theory.

Research theory suggests (Malhorta, 2012) that exploratory research is divided into mainly two procedural groups: the direct approach and the indirect approach. In the direct approach, the objectives of the research are set out for the participants (or the elaborated questions make them obvious). On the contrary, in the indirect approach, the objectives are covered up. The choice of which procedure to use is relative to the subject at hand and whether participants will feel inhibited to answer. Regarding the subject of this paper, the logical choice is that of a direct approach as no conflicts of interest or motives for the participants to feel redrawn could be conjured.

Furthermore, the direct approach technique that was chosen is in-depth interviews. The participants chosen for the interviews are a Superintendent of the Caixa Econômica Federal Bank, a Correspondente Bancário da Caixa, several low-income real estate clients and real estate developers that work in the low-income segment.

Therefore, focusing on a quantitative survey without a previous exploratory phase would be imprudent, once a single point would be prioritized before the whole picture could be mastered. Also, the sheer fact of the lack of access to secondary data samples considering this subject makes it quite impossible to create an in depth quantitative survey from scratch. Thus, after the exploratory phase was conducted, it was possible to determine which characteristics the survey would research to evaluate preferences regarding the characteristics associated with low-income real estate projects.

Subsequently, a quantitative survey was developed with the objective of evaluating preferences for attributes associated with real estate development projects to enable the further categorization of these into hygiene factors or motivational factors. This quantitative survey took place in the municipality of Itatiba, in the state of São Paulo, with a sample of 300 people. The period in which the survey took place was from May 26th to 30th, 2018. The chosen universe for this survey was all the residents of Itatiba whose monthly family income is less than nine minimum wages. The interviews were conducted in person, through structured questionnaires, and the sample was obtained in a way that was representative of the studied population. Later on, it was stratified with a proportional

allocation according to the gender of the interviewees and distributed by 16 residential sectors of the city. The information was collected from personal domicile interviews using a questionnaire structured according to the objectives of this paper. The team of interviewers was composed of undergraduate and graduate students from the Universidade Federal de Lavras - UFLA (Federal University of Lavras), specifically trained for the survey. The questionnaires were filtered after the interviews and a telephone verification was carried out in approximately 10% of the interviewees to control the veracity of the data. Accordingly, the confidence interval is of a degree of 95% reliability, with an associated margin of error of 5.6 percentage points approximately (this margin of error is not valid for crosses between stratification variables).

After this quantitative survey was applied, it was possible to determine what attributes were classified by this segment as hygiene or motivational. Moreover, it was possible with this information to infer that this segment was situated in the safety needs level of the pyramid. With this information in hand, another quantitative survey was created in order to see if the proposed theory would sustain.

According to the suggested theory, clients would see some items that were on a higher level as they find themselves on the Maslow's pyramid as motivators and others as less important than hygiene factors. In order to test this hypothesis, another quantitative survey was created and applied. The objective of this survey was to test how subjects from this segment react to an attribute associated with a higher tier of Maslow's pyramid than the one they were on. If this attribute were to be much appreciated, the theory would not sustain; however, if it were to be regarded as not important, the theory would sustain, proving H1. The chosen independent variable was a fully decorated and furnished home because this has been associated with the highest tier of the Maslow's pyramid (Israel, 2003) and, as was identified in the first quantitative survey, the subjects of this segment are on the safety needs level. Accordingly, if the interviewees were to perceive a fully decorated house with contempt, the theory would sustain.

Hernandez and Brandão (2014), in their paper *Pesquisa experimental em marketing*, lay the groundwork in conducting experimental research considering the marketing. In their paper, they argue that the central element of the experiment, which distinguishes it from other types of research designs, is the manipulation of independent variables. The expectation of the researchers is to demonstrate that certain levels of the independent variable cause different responses in the dependent variable; but for this to be considered true, it is necessary to establish a relationship of causality. On the other hand, for a relationship of causality to be confirmed, it is necessary that three conditions be presented: temporal sequence, concomitant variation, non-spurious association and technical support. By temporal sequence it must be understood that the variable responsible for the cause, also called an independent or explanatory variable, must precede a variable responsible for the effect, that can be called dependent variable or criterion. The second condition to infer causality, the concomitant variation, suggests that changes in the level or presence of the cause-variable should be systematically associated with changes at the level or presence of the effect variable. To ensure that the relationship between cause and effect is not spurious, the third condition to infer causality is that there must be no variable in which, when introduced as an explanatory variable, eliminates the systematic between cause and effect variables. All of this was taken into consideration in the elaboration of the survey.

Henceforth, the interviewees were divided into two distinct samples, each with 200 interviews, deemed group A and B. The difference between the two samples was only the inclusion of an information, the independent variable, in the description of the product in group B: "the units will be fully furnished and decorated with furniture and home appliances, and the client can opt for one of the five presented options." The same images were shown to both groups.

Considering the classification of this survey, it is classified as a between-subjects survey in the real environment. It is classified as so because the researcher exposed each subject to only one experimental treatment and compared the measures among subjects exposed to different treatments. It is classified as an survey because it involved a random attribution

of the subjects to the variable. It is also classified in the real environment because it was not applied in a controlled environment such as a laboratory.

Another survey was carried out with reference to all the residents of the city of Sorocaba, São Paulo – Brazil, whose monthly family income is less than nine minimum wages from October 9th to 13th, 2018. The interviews were conducted in person, through questionnaires structured, the sample being obtained in a way that is representative of the population in study, being stratified and allocated proportionally to the gender of the interviewee and distributed by the four residential sectors of the city. The information was collected from personal domiciliary interviews using a questionnaire structured according to the survey objectives. The team of interviewers was composed of undergraduate and graduate students from the Federal University of Lavras (UFLA), trained specifically for this survey. Filtering of the questionnaires was carried out after the interviews and a verification, by telephone, in approximately 10% of the interviewees was done. The confidence interval, with a degree of reliability of 95%, has an associated error of 4.9 percentage points approximately (this margin of error is not valid for crosses between stratification variables).

Finally, after this quantitative survey was applied, the questions which were related to the description of the project were evaluated in order to allow the comparison of the results between samples A and B, and the impact of the highlighted information was verified above in the opinion and perception of the interviewees on the product. The impact of this variable was measured in three questions: (i) the evaluation of the condominium, (ii) if the interviewee would buy the product independent of the price and (iii) the estimated price for the product.

3.1 HYPOTHESIS 1 TEST

Hypothesis 1: a real estate development project should first attend to all the hygiene factors of its proposed public and then invest into motivational factors.

In order to test H1, it was necessary to see how social housing consumers evaluated an attribute deemed to be of a higher level of the Maslow pyramid than the one they were situated. An attribute of a higher level would be considered as a motivational factor for this group and, consequently, would not be given such importance. Thus, it was necessary to first prove or refute H2 to see in which level of the pyramid the target audience was situated to then test H1. Furthermore, in order to prove or refute H1, an survey with an independent variable, attribute of a higher level of the Maslow's pyramid, was conducted with two sample groups and an independent student t test was applied to the answers of these three questions. Proving H1 would prove the combined theory: if the presence of the variable had no effect or a negative effect, H1 is confirmed and, also, the suggested theory is sustained.

3.1.1 QUESTION 1: EVALUATION OF THE PROJECT

This question had the objective of seeing how the presence of an independent variable, a motivational factor, would impact the evaluation of the project. The interviewees had the option of evaluating the project as terrible, not good, regular, good or great. For statistical analysis purposes, *terrible* was considered as one point; *not good*, two points; *regular*, three; *good*, four; and *great*, five.

Null Hypothesis for question 1: $\mu_a < \mu_b$. Sample B is better evaluated than sample A.

Alternative Hypothesis for question 1: $\mu_a \Rightarrow \mu_b$. Sample A is better or equally evaluated as sample B.

If sample A is better or equally evaluated as sample B, then consumers do not focus on motivational factors and H1 is sustained; a real estate development project should first attend to all the hygiene factors of its proposed public and then invest into motivational factors.

3.1.2 QUESTION 2: CHANCE OF BUYING A UNIT REGARDLESS THE PRICE

This question had the objective of seeing how the presence of an independent variable, a motivational factor, would impact the inclination to buy a unit regardless the price. The interviewees had the option of responding if they would not buy, do not tend to buy, tend to buy and would buy. For statistical analysis purposes, *not buy* was considered as one point; *do not tend to buy*, two points; *tend to buy*, three; and *would buy*, four.

Null Hypothesis for question 2: $\mu_a < \mu_b$. Sample B demonstrate a larger inclination to buy than sample A.

Alternative Hypothesis for question 2: $1\mu_a \Rightarrow \mu_b$. Sample A demonstrate a larger or an equal inclination to buy compared to sample B.

If sample A demonstrates a larger or an equal inclination to buy compared to sample B, then consumers do not focus on motivational factors and H1 is sustained; a real estate development project should first attend to all the hygiene factors of its proposed public and then invest into motivational factors.

3.1.3 QUESTION 3: ESTIMATION OF WHAT THE FAIR PRICE FOR THE PROPERTY

This question had the objective of seeing how the presence of an independent variable, a motivational factor, would impact the pricing of a unit. The interviewees had the option of responding (i) up to R\$150.000,00; (ii) between R\$151.000,00 and R\$200.000,00; (iii) between R\$201.000,00 and R\$250.000,00; (iv) between R\$251.000,00 and R\$300.000,00; (v) between R\$301.000,00 and R\$400.000,00; (vi) between R\$401.000,00 and R\$500.000,00; and (vii) more than R\$500.000,00. For statistical analysis purposes, (i) was considered as R\$150.000,00; (ii) was considered as R\$175.000,00; (iii) was considered as R\$225.000,00; (iv) was considered as R\$275.000,00; (v) was considered as R\$350.000,00; (vi) was considered as R\$450.000,00; and (vii) was considered as R\$500.000,00.

Null Hypothesis for question 3: $\mu_a < \mu_b$. Sample B prices the unit with a higher value than sample A.

Alternative Hypothesis for question 3: $1\mu_a \Rightarrow \mu_b$. Sample A prices the unit higher or equally compared to sample B.

If sample A prices the unit higher or equally compared to sample B, then consumers do not focus on motivational factors and H1 is sustained; a real estate development project should first attend to all the hygiene factors of its proposed public and then invest into motivational factors.

3.2 HYPOTHESIS 2 TEST

Hypothesis 2: social housing consumers are situated in Maslow's pyramid in the need for security.

In order to test H2, it was necessary to apply a quantitative survey to see how attributes, differentials and location characteristics (all associated with different levels of the Maslow's pyramid) were mentioned. The most mentioned attributes, differentials and location characteristics associated to a certain level of the pyramid would indicate where this target audience was situated; as Maslow (1943) specified on his research, the utmost need would consume consciousness, making the organism coordinate itself to achieve such need.

4. RESULTS

4.1 QUALITATIVE RESEARCH

Table 1 – Important remarks by interviewees.

Interviewee	Important Remarks
Superintendent of the Caixa Econômica Federal Bank	“Location, location and location: that is the success of any real estate project.”
Banking Correspondent	“When low-income consumers are buying real estate, the thing they find the most important is not even the price, it is the installments they can afford.”
Low-Income Real Estate Client 1	“I only want to live in a safe neighborhood.”
Low-Income Real Estate Client 2	“I would not live in a condominium that does not have security.”
Low-Income Real Estate Client 3	“I need at least one parking space.”
Low-Income Developer 1	“It is important to offer the most recreational areas and equipment as your margin permits. Such as playgrounds, pools and assembly rooms.”
Low-Income Developer 2	“Some other developers do not even do the floors in these projects, that is why they do not sell as well as me.”

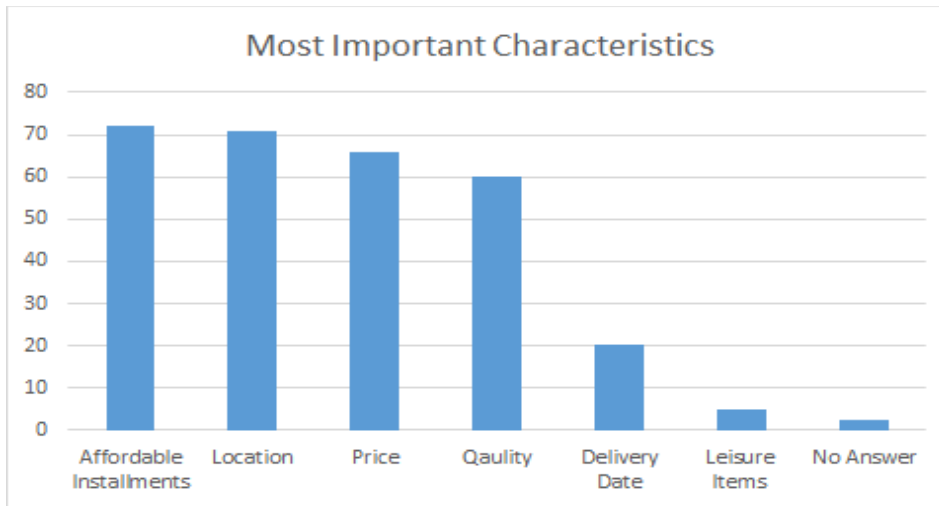
Source: self-elaborated.

4.2. RESULTS FIRST QUANTITATIVE SURVEY

4.2.1 MOST IMPORTANT CHARACTERISTICS

When asked in a stimulated way about which characteristics were most important when buying a housing unit and allowing the interviewee to choose more than one option, the most mentioned was *affordable installments*, with 72.1%, followed by *location* (70.7%), *price* (65.9%) and *quality* (60.1%).

Graph 1 – Most important characteristics when buying a housing unit.

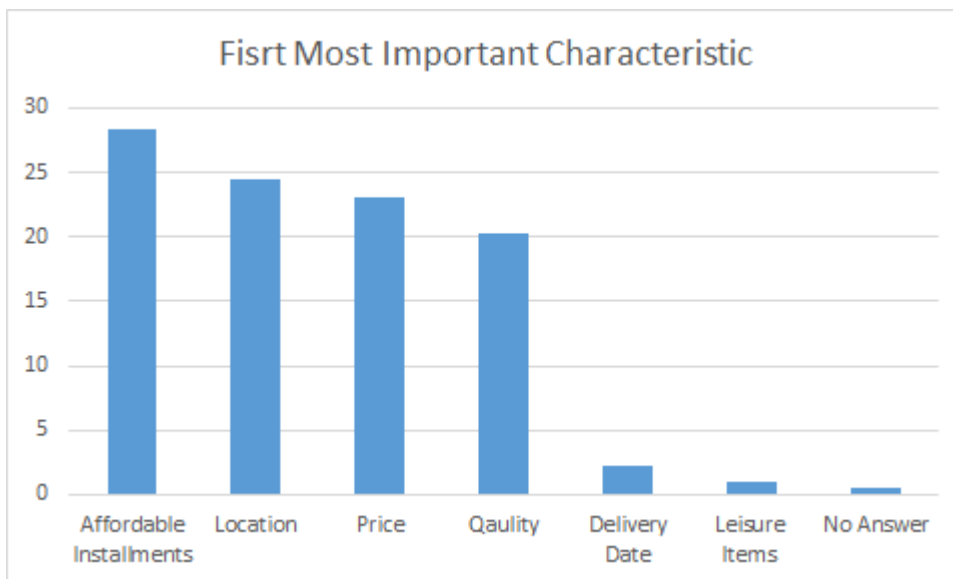


Source: self-elaborated.

4.2.2 FIRST MOST IMPORTANT CHARACTERISTIC

Considering only the characteristic mentioned as the *first* most important, *affordable installments* was the most mentioned, with 28.4%, followed by *location* (24.5%), *price* (23.1%) and *quality* (20, 2%).

Graph 2 – First most important characteristic when buying a housing unit.

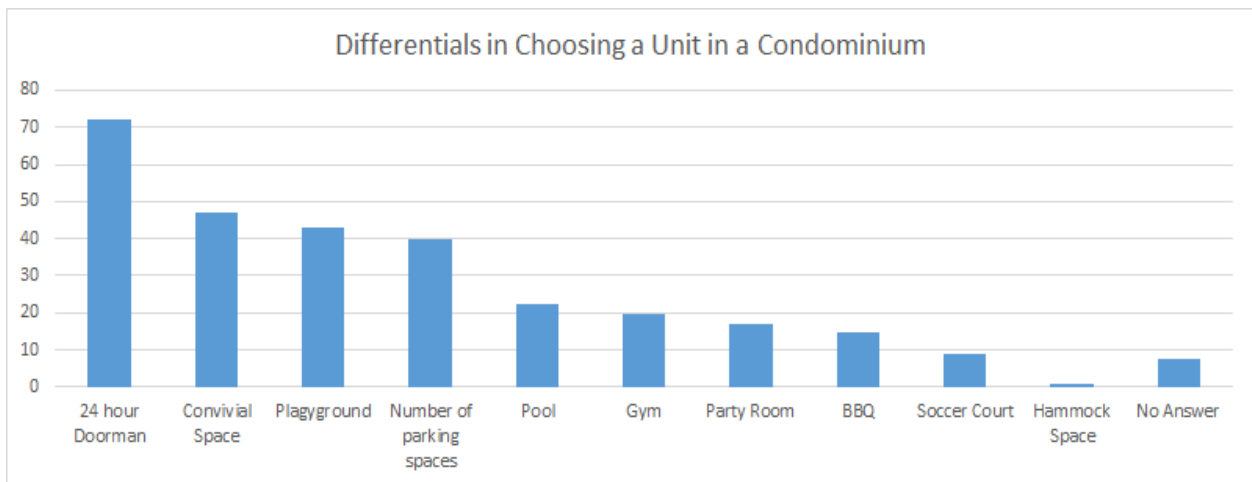


Source: self-elaborated.

4.2.3 DIFFERENTIALS IN CHOOSING A UNIT IN A CONDOMINIUM

When mentioned by the interviewer some differentials (attributes) that may be relevant in choosing a housing unit in a condominium, *having a 24-hour doorman* was the most mentioned with 72.0%, followed by *convivial space* (47.0%), *playground* (43.0%) and *number of parking spaces* (39.7%). The least mentioned differential was *hammock space*, with 0.7%.

Graph 3 – Differentials in choosing a unit in a condominium.

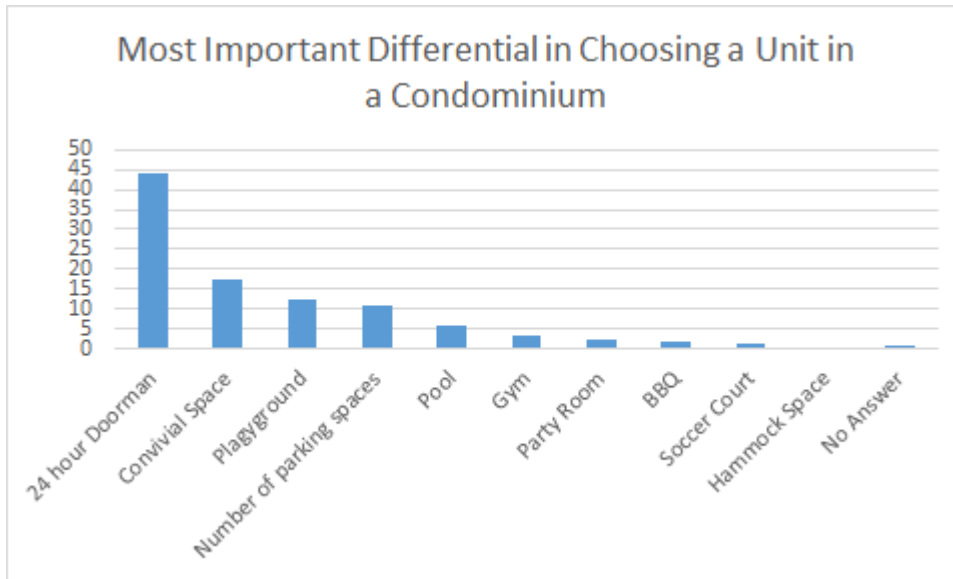


Source: self-elaborated.

4.2.4 MOST IMPORTANT DIFFERENTIALS IN CHOOSING A UNIT IN A CONDOMINIUM

When some differentials (attributes) were mentioned by the interviewer, considering the most important differential in choosing a housing unit in a condominium, the *24-hour doorman* was the most mentioned as the *first* most important, with 44.3%. Next, it was *convivial space* (17.3%), *playground* (12.3%) and *number of parking spaces* (11.0%). The least mentioned feature was *soccer court*, with 1.3%.

Graph 4 – Most important differential in choosing a unit in a condominium.

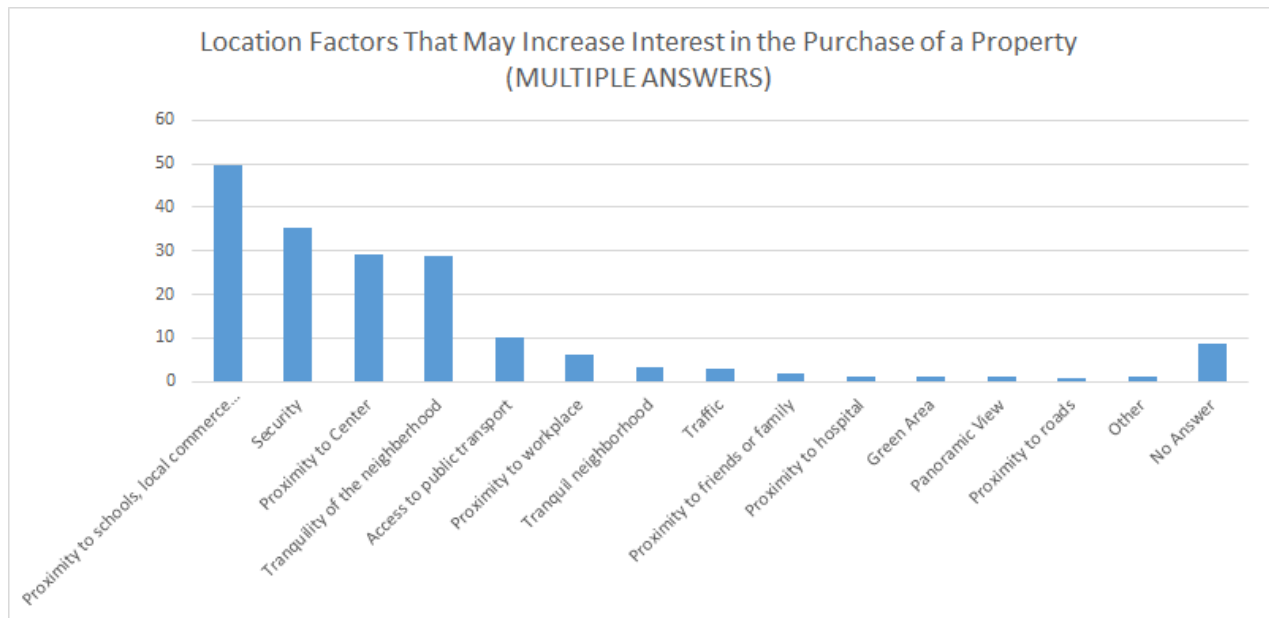


Source: self-elaborated.

4.2.5 LOCATION FACTORS

Specifically in relation to the location of a property or home, respondents spontaneously were questioned the main factors that may increase their interest in the purchase, being the *proximity of schools, local commerce and conveniences* mentioned by 49.7%, followed by *security* with 35.3%, *proximity to the center* with 29.3% and *tranquility of the neighborhood* with 28.7%.

Graph 5 – Location factors that may increase interest in the purchase of a property.



Source: self-elaborated.

4.3. RESULTS OF THE QUANTITATIVE SURVEY

4.3.1 EVALUATION OF PROJECT

When asked to evaluate the project participants of sample A, 96.5% evaluated positively (optimal + good), while only 0.5% evaluated poorly; also, 3.0% evaluated the presented project as regular. The average grade is 4.53 out of 5. Regarding sample B, 95.5% evaluated positively and 4.5% regular; the average grade being also 4.50 out of 5.

4.3.2 CHANCE OF BUYING A HOUSING UNIT

Considering what was presented, the interviewee was asked about the chance of buying a unit regardless the price. Considering the possibility of buying a house, among respondents from sample A, 53.0% said they *would buy*, 18.0% *tend to buy*, 4.0% *do not tend to buy* and 22.0% *would not buy*. For sample B, 55.5% *would buy*, 12.5% *tend to buy*, 3.0% *do not tend to buy* and 27.5% *would not buy*.

4.3.3 PRICE ESTIMATION

Afterwards, the interviewees were asked to estimate what the fair price for the property would be, according to what was presented and regardless the interest on the property. Only 82,5% from sample A and 86,5% from B responded this question estimating a price. The most mentioned range of values for sample A was *between R\$ 151,000 and R\$ 200,000*, with 42.4%, and 14.5% *between R\$ 201,000 and R\$ 250,000*. Likewise, the most common range of values for sample B was *between R\$ 151,000 and R\$ 200,000*, with 36.4%, and 17.9% *between R\$ 201,000 and R\$ 250,000*. Considering only those that indicated some value, the average price estimated for group A is R\$ 240,661.00 and for group B is R\$ 238,092.00.

4.4 RESULTS HYPOTHESIS 1 TEST

The proving or refuting of Hypothesis 1 involved, as stated in the methodology, the statistical analysis, t student test, of three different questions.

4.4.1 T STUDENT RESULT QUESTION 1

The evaluation by sample B ($M=4,50$, $SD=0,58$, $n=200$) was hypothesized to be greater than the evaluation by sample A ($M=4,53$, $SD=0,58$, $n=200$). This difference was not significant, $t(398)=0,42$, $p=0,33$ (1 tail), thus the null hypothesis for this question was rejected.

Table 2 – Statistical analysis and t student test result for question 1.

	Sample A	Sample B
Mean	4,53	4,505
Variance	0,34080402	0,341683417
Observations	200	200
Hypothesized Mean Difference	0	
Df	398	
t Stat	0,427964431	
P(T<=t) one-tail	0,334454249	
t critical one-tail	1,283682271	
P(T<=t) two-tail	0,668908497	
t critical two-tail	1,648691174	
Standard Deviation	0,583784224	0,584536925

Source: self-elaborated.

4.4.2 T STUDENT RESULT QUESTION 2

The inclination to buy a unit regardless the price by sample B ($M=2,94$, $SD=1,32$, $n=200$) was hypothesized to be greater than the inclination to buy a unit regardless the price by sample A ($M=2,99$, $SD=1,25$, $n=200$). This difference was not significant, $t(398)=0,34$, $p=0,36$ (1 tail), thus the null hypothesis for this question was rejected.

Table 3 – Statistical analysis and t student test result for question 2.

	Sample A	Sample B
Mean	2,99	2,945
Variance	1,577788945	1,750728643
Observations	200	200
Hypothesized Mean Difference	0	
Df	398	
t Stat	0,348820567	
P(T<=t) one-tail	0,363704472	
t critical one-tail	1,283687647	
P(T<=t) two-tail	0,727408943	
t critical two-tail	1,648700863	
Standard Deviation	1,256100691	1,323151028

Source: self-elaborated.

4.4.3 T STUDENT RESULT QUESTION 3

The pricing of a unit by sample B ($M=R\$215.751,45$, $SD=R\$80.023,69$, $n=173$) was hypothesized to be greater than the pricing of a unit by sample A ($M=R\$222.727.27,50$, $SD=R\$84.139,21$, $n=165$). This difference was not significant, $t(333)=0,78$, $p=0,21$ (1 tail), thus the null hypothesis for this question was rejected.

Table 4 – Statistical analysis and t student test result for question 3.

	Sample A	Sample B
Mean	R\$222.727,27	R\$215.751,45
Variance	R\$7.079.406.873,61	R\$6.403.792.512,43
Observations	165	173
Hypothesized Mean Difference	0	
Df	333	
t Stat	0,780303498	
P(T<=t) one-tail	0,217883272	
t critical one-tail	1,284099017	
P(T<=t) two-tail	0,435766544	
t critical two-tail	1,649442344	
Standard Deviation	84139,21127	80023,69969

Source: self-elaborated.

4.4.4 JOINT ANALYSIS OF QUESTION 1, 2 AND 3

As the specific null hypothesis of question one, two and three were rejected, it is possible to affirm that social housing consumers do not focus on motivational factors and H1 is sustained: a real estate development project should first attend to all the hygiene factors of its proposed public and then invest into motivational factors.

4.5 RESULTS HYPOTHESIS 2 TEST

When looking into results 4.2.1 and 4.2.3 that refer to the most important (1st citation) and important characteristics (multiple answers), we can use these responses to understand this consumer group, low-income earners, that is situated in the Maslow's pyramid considering the real estate and, consequently, how they classify their hygiene and motivational factors.

If the theory were to sustain, there would exist a huge discrepancy between attribute groups (hygiene and motivation) with those that are regarded as hygiene factors, being the primarily picked items owing to the fact that, when choosing a real estate project, clients will pursue the utmost satisfaction, crossing out, if possible, all the options that do not fulfill their hygiene factors which cause dissatisfaction. Thus, the hygiene factors would score high numbers because they would be of utmost importance and motivational factors would be less important with a notable discrepancy between these two groups scoring. Hence, *affordable installments* followed by *location*, *price* and *quality* were the highest scorers with almost similar marks, revealing them to be the hygiene factors of this group.

Moreover, we can understand that *affordable installments* and *price* are referring to the same subject which is the financial capacity to acquire and pay for a housing unit. This would make this item by far the most representative item when choosing a housing unit and would help, furthermore, to prove the H2, that this segment is in the security's needs level of the Maslow's pyramid once, when these individuals are referring to the price and conditions of financing, they are expressing also their fear of losing their homes when they cannot uphold their financing.

Further on, it is possible to understand that, when referring to quality subjects, they are referring to the livable conditions of the project which is an attribute related to their physiological needs level. The fact that this also had high marks suggests that this item, which is the base of Maslow's pyramid, is a hygiene factor for this social group. This information is aligned with H2 and the suggested theory, then it is possible to state that

this consumer group has already climbed Maslow's pyramid and has begun to look at this lower end need, physiological need, as a hygiene factor. Thus, this would contribute to prove H2.

Additionally, when analyzing location's high mark and anticipating the fact that location might score high, subjects were also asked considering the location (results 4.2.5) of a property, what are the main factors that may increase the interest in the purchase. The *proximity of schools, local commerce and conveniences* were mentioned by 49.7%, followed by *security* with 35.3%, *proximity to the center* with 29.3% and *tranquility of the neighborhood* with 28.7%. The general high score of location would indicate that this is a hygiene factor. This could be understood that condominium too far from the city center or without consolidated neighborhoods would be impractical to live in and can be associated to the physiological needs level. Moreover, the high score of security of the neighborhood in location factors also further sustains H2.

Furthermore, the results 4.2.3 and 4.2.4 can help in a further inferring on how this consumer group categorizes items. *Twenty-four-hours doorman* was by far the most mentioned, followed by convivial areas and playground. It is possible to relate 24-hours doorman obviously to security needs, while convivial space and playground space playing to emotional needs. The fact that the item related to emotional needs scored after the item related to safety needs reinforces the veracity of H2.

Thus, what is most remarkable on the deduction from results 4.2.1, 4.2.2, 4.2.3, 4.2.4 and 4.2.5 is the importance given to items that tend to security needs. This suggests that this consumer group has climbed Maslow's pyramid and is situated in the security needs level of the pyramid, confirming H2.

Therefore, analyzing all the results, it is possible to infer the profile of a low-income house buyer, confirming H2. This consumer has climbed Maslow's pyramid and looks at physiological needs as lower end needs (and, thus, as hygiene factors). Besides that, he is situated on the safety level of the pyramid and it is not coincidentally that attributes

related to this level are the most mentioned item. As Maslow (1943) explained, the utmost need would consume consciousness, making the organism coordinate itself to achieve such need. Further on, he stated that, once a need is fulfilled, it will be forgotten, denied and minimized and the next higher need will arise and will start to dictate the consciousness and recent behavior because attained needs will not act as a motivator for the organism.

5. CONCLUSION

Thus, the general objectives of this paper – which were the profiling of the low-income Brazilian consumer considering the real estate and also assisting in fathoming motivation in the purchase of real estate – have been achieved. Additionally, the hypotheses were confirmed and, thus, it is possible to state that a real estate development project for Brazilian low-income earners would obligatorily have to tend to safety needs to be seen as a viable option. Only when these conditions have been met, the importance can be given by real estate developers to motivational factors. In this case, it would be those associated with love, esteem and self-actualization.

5.1 THEORETICAL CONTRIBUTION

Regarding the theoretical contribution of this paper, and the collection and analysis of prior works about the application of Herzberg's theory to real estate and Maslow's theory to real estate have been presented, it is possible to state that through this paper it has been proved that Maslow's theory and Herzberg's theory can both be combined to form a novel framework to analyze motivation. Furthermore, it is possible to apply this novel combination to the field of study of real estate development and it is possible to apply it on other fields of knowledge. Finally, it has also been confirmed in which part of the Maslow's pyramid are Brazilian social housing consumers situated.

5.2 MANAGERIAL CONTRIBUTION

This paper has helped real estate developers by targeting of how motivation in the purchase of real estate works; it has helped real estate developers see how attributes are prioritized and guiding them on how to shape what they offer to the market to attain more success. Also, it has built a profile of the Brazilian social housing consumer, showing them which attributes they should focus on when creating a project for this group.

5.3 FURTHER RESEARCH

Looking further on, this paper gives the substance for a wide variety of new studies. The foremost study that would be of interest would be to study other economic classes to see if the hygiene factors and motivational factors differ or sustain the hypothesis. Moreover, it could be interesting to see if this synergized framework can be used for other sectors than real estate. Additionally, it would be interesting to see how the difference would play out in different cultures and countries.

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