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Comparative Analysis of the Importance of Determining Factors in the Choice and Sale of Apartments

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Abstract: The motivation to compare the importance that buyers and sellers give to the diverse characteristics of apartments is its pertinency to grasping the housing market. The objective of this article is to compare the determining factors in the choice and sale of apartments among the potential buyers and sellers. During a sale, the realtors exhibit the dwellings' positive characteristics, the so-called amenities. The homebuyers must analyse the deal in a rational and well-weighed way, striving to know its characteristics to reduce the information asymmetry. The study focuses on two distinct samples, with the common goal of transacting housing. One of the samples is composed of individuals who are looking for apartments, and the other one of individuals who are selling apartments, both being collected in mainland Portugal. It was verified that there are statistically significant differences between buyers and sellers. Buyers give more importance to certain rooms and the inexistence of negative externalities near their future residence. Sellers emphasise positive externalities and parking spots. This study is expected to contribute to the increase in scientific knowledge on the housing market and to the decrease of the information asymmetry between sellers and buyers. Knowing the importance that buyers and sellers give to the main different factors in the Portuguese real estate market constitutes an advancement of knowledge in this area.

Keywords: real estate market; information asymmetry; housing search; market information; real estate externalities

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1. Introduction

Some of the real estate market problems come from the fact that the sellers know what they are selling thoroughly but the buyers do not have the same level of knowledge. When approaching the real estate market, one must consider its heterogeneity, quality levels, and in what cases information asymmetry can lead to an adverse choice. For many families, buying a house is the biggest deal of their life; thus, it is natural that they seek companies with a good reputation in the market. Their good reputation, which is measured by the perception of the quality of their past products, inevitably has a repercussion on the price of their products [1]. Further, since they understand that for most people, purchasing a house is the biggest investment of their lives, understanding the residential market is much more important than any other type of real estate market [1].

Furthermore, the real estate market's inefficiencies make ill-informed buyers pay higher prices for equivalent assets, in comparison with well-informed buyers [2]. According to the authors, that asymmetry stems from different factors, but since housing is mostly a local market, the most experienced local buyers benefit from it. About investments in

foreign markets, it is mentioned in [3] that the fast growth of emerging economies attracts investments, in particular in the real estate market, and these are also motivated by the macroeconomic scenarios of the host countries. However, these investments in the real estate market are subjected to the information asymmetry problem, which is more evident between domestic and foreign investors, as the latter are particularly averse to political risks [3].

Realtors and mortgage brokers recognise that although sustainability resources can be searched in many sources such as supply chain agents, evaluation reports and reports of local inspections, it will always be necessary to spend time and money obtaining information related to the property [4]. According to this line of thought, the real estate professionals must be proactive, seeking to educate people on the dwelling's sustainability characteristics, contributing to the knowledge on sustainable housing, and helping to develop and implement more effective practices in information collection and communication. Information asymmetry exists in the real estate market and results from the familiarity of buyers and sellers with that market [5]. Thus, the authors understand that both a pessimistic and an optimistic perspective affect the individuals' perceptions of housing prices and their aversion to loss. Therefore, the asymmetric position between pessimism and optimism will be heightened by the limited rationality of homebuyers and their familiarity with the housing market.

Moreover, realtors care about providing information on the positive characteristics of the property related to the leisure and rest areas, proximity to businesses (urban centrality), proximity to banks, pharmacies, supermarkets, and the closeness to bars and restaurants, as demonstrated in [6]. Realtors try to benefit from the information asymmetry, and buyers must look for data in order to reduce that asymmetry [6]. In [7] it was concluded that sellers with real estate licenses earn approximately 1.6% more for their properties sales; another conclusion was that sellers with more information seem to control the market and achieve bigger gains. Hence, information asymmetry creates disparity in the results of real estate transactions [7].

In Portugal, there is no study that compares the importance of the determining factors in the choice and sale of apartments, which is why this study is relevant for the housing market area. This article can improve the current knowledge in this field and consequently lower the information asymmetry between buyers and sellers. Therefore, the main purpose of this investigation is to compare the determining factors in the choice and sale of apartments among the potential buyers and sellers. To achieve the proposed goals, beyond this introduction, the article presents the literature review on this topic in the next section. Posteriorly, the methodology used in this study is presented, followed by the presentation and analysis of the study's results. Last but not least, the conclusions are stated.

2. Literature Review

The information asymmetry in the real estate market can be defined as the difference in the level of information, that is, as the discrepancy of information on immovable property, between the seller and the buyer [8,9]. That difference in the level of information can, on one hand, stem from the lack of liquidity in the market, and on the other hand also from the scarcity of knowledge of the dwelling's physical characteristics and quality [5,10]. Hence, there is an asymmetry in the real estate market that derives from the fact that the market is not efficient and perfect [8,9]. Moreover, it is referred in [7] that realtors emphasise that buyers hire them to sell their properties regardless of their personal opinions on the market. The sellers are advised not to speculate about the market's future conditions or give opinions on the services they are offering, for which they are not trained accordingly (for example, the property's valuation), which exacerbates information asymmetry.

It was concluded in [8] that the information that realtors give to potential buyers can be grouped into six factors, which are: negative externalities, the possibilities of having businesses located on the ground floor of the building, the dwelling's quality, the dwelling's

service areas, proximity to businesses, and positive externalities. It was verified in [11] that there was evidence of asymmetric shocks in the volatility of housing prices in almost every Finnish city included in the study. The author further observed that the asymmetric adjustment to shocks suggests that the Finnish real estate market is more sensible to bad news than to good news.

There is a strong heterogeneity in the information asymmetry in the real estate between the different regions of the United Kingdom, which can cause pernicious and snowball effects in other sectors [12]. The author observed that the house prices in the United Kingdom are influenced by variables such as rent, the level of construction of the private sector and the employment rate.

On the other hand, the Polish indicators of information asymmetry in the real estate market were concluded to be low [13]. The authors also observed that the markets that presented asymmetry in the cycle of housing prices were relatively small, for which there were few observations.

2.1. Negative Externalities

Negative externalities harm the dwelling's location, which makes people drive away and look for housing away from these areas. Several studies on this topic point out some examples of negative externalities: proximity to contaminated lands, a nearby burning solid waste site, location in areas with above-average air pollution (inferior air quality), proximity to a sewage treatment plant, landfills and degraded parks, and the existence of high-voltage powerlines and traffic noise [8,14,15].

There are important impacts on real estate sales prices when clouds of negative externalities hover over the properties [16]. Therefore, the authors state that the information asymmetry is also reflected in the adverse selection, where a low-quality asset strikes a higher price than a high-quality asset, which does not correspond to the characteristics perceived by the market.

This misinformation conveys errors in the forecasting of the prices, namely, some negative externalities such as air pollution, the dangers related to residues, and degraded parks, among others [17–19]. Therefore, it is important that public policymakers project programmes that give out information that is already public to diminish the information asymmetry. If the buyers have incomplete information on a certain attribute, then the quality of that attribute will not be capitalised into the property's value. As an example, in [17] it was concluded that the information on airport noise has a negative impact of 37% on the prices of housing nearby.

2.2. Positive Externalities and Places of Interest

Urban positive externalities are a set of a location's specific characteristics that positively contribute to the satisfaction of the individuals [20,21]. Positive externalities are not only reduced to natural characteristics such as green areas, beaches, climate, etc. The definition of externality also comprises the positive and negative aspects generated by mankind, like traffic, pollution, safety, the sources of entertainment/leisure, and the proximity to hospitals, schools, pharmacies, public services [22,23].

In [24], scenic amenities, leisure, networking possibilities, and accessibility to schools were also included in the category of urban amenities. The authors consider that the core of urban amenities is the location of gardens and parks and their "mixture" of natural landscapes, cultural heritage, green areas, open spaces, and running water (non-stagnant water). It was observed in [25] that in the choice of housing (apartments), people formed five clusters that are classified as: generic cluster, urban business cluster, urban service cluster, urban citizen cluster, and elitist cluster. These five clusters present different characteristics concerning the five dimensions of the determining factors in the choice of apartments, that is, the "generic cluster" represents the generality of the individuals who are seeking housing, as it is approximately half of the sample; the individuals of the "urban business cluster" are characterised by valuing the proximity to business and the distance to negative

externalities, preferring to inhabit in commercial areas; the individuals included in the "urban service cluster" seek housing away from negative externalities but near zones with services in the city; the "urban citizen cluster" is composed of individuals who value living close to business areas and positive externalities; lastly, the elements of the "elitist cluster" present the biggest concerns and repulse about negative externalities, value in an extreme way (they are attracted to) positive externalities, and seek proximity to public services.

Positive externalities are mentioned in [6,26,27] as externalities that are related to information that sellers give to buyers about the dwelling's amenities, particularly sea, mountain, and river views, and views of a street/square. As for the item on the dwelling's quality, it is characterised by the information given on the building's structural safety and its security, the noise in the building's common areas, the efficiency and maintenance of the facilities and the information on the property's energetic costs. Regarding the level of information given by the realtors, the variables relative to the positive externalities (sea and mountain views), the property's cosiness, and living room area are the ones that realtors give more details about. In contrast, the variables related to negative externalities such as rubbish collection, the location of the staircase, and the material used in the roof of the building are the least mentioned aspects by the realtors [6,21].

Positive externalities motivate property owners and investors to act in accordance with urban rehabilitation policies, but there are other financial and tax incentives that help people to develop urban rehabilitation [23,28]. Moreover, it was observed that opening a supermarket had a positive impact of 6.7% for properties less than 0.5 miles away [29]. From the urban planner's perspective, the issue of negative externalities has been undergoing discussion for a long time [29,30].

In the USA there is a concern for accommodating more people in the neighbourhoods of the cities and simultaneously capitalising on the economic and aesthetic benefits and the health of green areas [31]. Regarding the latter, in densely populated and hot cities, the city planning must prioritise green areas with numerous trees instead of open areas with large grass fields, with the objective of reducing environmental and maintenance costs. In [32], a study on the rental property market, it was observed that the properties associated with the realtors obtain a premium of 1.1% in their rent when compared to the remaining properties (maintaining the remaining variables constant). Therefore, the author states that when homeowners with a real estate license strike lease agreements at higher prices than other owners that do not represent themselves, it is a undoubtful sign of information asymmetry.

2.3. Rooms' Sizes, Layout, and the Quality of the Building

The housing demand is linked to variables such as income, unemployment, the number of recently built houses (housing supply) and the respective construction costs [1]. According to this study, the increase in incomes has a positive effect on housing prices; on the contrary, the number of unemployed people influences housing prices negatively. It is registered in [12] that housing prices are higher in areas with higher rents and that the construction level (quantity of housing) and unemployment rate have a statistically significant impact on housing prices. As for the rooms' sizes, it is referred in [8,25] that the most important rooms are the service areas, namely, the kitchen, bathrooms, the sunroom, the balcony, the garage areas, and the storage spaces. In [25], rest areas are defined as the living room and the bedrooms. Furthermore, the variations of the buildings' layouts originate decision-making problems in the deals because they present important variables such as more or less attractive views, the convenience of proximity to recreational facilities, noises that come from the staircase and mailboxes, solar exposure, and odours [33].

There is a big difference between the initial selling prices and the prices at which the properties are transacted, which demonstrates the information between both (offer values/final transaction values), which conveys clear implications for the properties, owners, and the market [34]. Moreover, the families' indebtedness exerts a significant impact in their consumer spending in New Zealand, where families are leveraged and have limited are limited in their investment when there are real estate booms [35]. The authors high-

light that the interaction between leverage and the effect of wealth in habitation can be asymmetric depending on whether house prices are increasing or decreasing.

In [36], a study on the housing market, it was concluded that the dissimilarities between different amenities are wrapped in imperfect information, which constitutes a problem that is difficult to solve. Moreover, the authors state that the information asymmetry is heterogeneous and very steep among individuals.

The location and structural quality of the building has a big impact on the appreciation of the housing properties [37]. When there is information about the dwelling's quality index and the possibility to engage in networking in the neighbourhood, the individuals are willing to pay higher prices [38].

Taking into consideration what was unveiled in the literature throughout this section, and according to the objectives of the study, the following hypothesis was formulated:

Hypothesis 1 (H1): *There are differences in the importance given to the determining factors between the potential homebuyers and sellers.*

3. Methodology

The present study is focused on two distinct populations that have some characteristics in common, namely, the determining factors in the choice and sale of apartments. Thus, the population P (Potential Buyers) is composed of individuals who are looking for an apartment to buy and the population S (Sellers) is composed of individuals who are selling apartments in mainland Portugal.

The data collection process occurred between November 2019 and the beginning of March 2020 and came to a stop because of the social isolation due to the COVID-19 pandemic. Initially, 290 agencies across the country were contacted via email to apply the questionnaires to their realtors and to the individuals that are looking for an apartment to buy. In the email that was sent to the agencies, the objectives of the study were explained, namely, the importance of the fact that the information that the sellers give regarding the apartments matches the interests of the potential customers. The anonymity and confidentiality of the data were also ensured, both for the sellers and the potential buyers. Out of the 50 positive responses that the agencies gave, 20 real estate agencies were randomly selected across the different regions of mainland Portugal (five agencies in each one of the regions: North, Centre, Lisbon, and Alentejo/Algarve), and questionnaires were delivered to these agencies. The convenience non-probabilistic sampling method was utilised because in each one of the agencies the respondents were the sellers that were working at that time and the people who were looking for a seller to help them buy an apartment. Note, also, that the questionnaires presented to the sellers and possible buyers contained a small introductory text where the study's objectives were explained, and the anonymity and confidentiality of the data were also insured. When the questionnaire was filled out, the respondent placed it in a box designed to receive all the questionnaires. After this process, from population P, a sample composed of 620 potential buyers was obtained, and from population S, a sample of 295 sellers was gathered.

The questionnaires applied to the sellers and possible buyers present 27 items in common that analyse the determining factors in the choice and sale of apartments (see Table 3). The questions about the sociodemographic profile are also the same (gender, age, and education level). Hence, the questionnaires only differ because the potential buyers indicate their household's gross annual income and their preference on the type of apartment they are seeking.

To assess the determining factors in the choice and sale of apartments, the items applied in common in the questionnaires of the studies [8,25] were used. The determining factors in the choice of apartments were approached in [25], and the study was applied to individuals who were looking to buy an apartment, and the information asymmetry in the real estate market was analysed in [8], and its questionnaire was applied to sales consultants.

The 27 items that evaluate the determining factors in the choice and sale of apartments were measured in a 5-point Likert scale (1—Not important to 5—Very important). Note that items 21, 22, 23, 24, 25, 26, and 27 intend to evaluate the importance of the non-existence of those externalities.

The data of the questionnaires were inserted into a database and to analyse them, the software IBM SPSS Statistics 26 was used. To characterise the profile of the potential buyers and the sellers, more precisely for the qualitative variables, an analysis on the absolute and relative frequencies was carried out, and for the quantitative variable (age), the following descriptive measurements were analysed: minimum, maximum, mean, and standard deviation.

The sensitivity of the items was assessed resorting to the skewness ($|Sk| \leq 3$) and kurtosis ($|Ku| \leq 10$) coefficients [38]. Following the indications in [39], to ascertain the suitability of the application of the exploratory factor analysis (EFA) to the sample under study, the sample suitability index of Kaiser–Meyer–Olkin (a KMO value greater than 0.8 reveals good sample suitability) and Bartlett's test of sphericity ($p < 0.05$) were utilised. The Bartlett's test of sphericity (χ^2 (351) = 14198.97, $p < 0.001$) is significant and the sample suitability index of Kaiser–Meyer–Olkin (KMO = 0.897) show that the exploratory factor analysis is appropriately applied. To extract the factors, the method of the main components was utilised and factor loads greater than 0.50 were considered, according to [40]. The rotation method used was the varimax, and to ascertain the minimum number of factors to retain, Kaiser's criterion was used (eigenvalues greater than 1).

To evaluate the reliability of the determining factors in the choice and sale of apartments, the index of Cronbach's alpha was used. If the values of Cronbach's alpha are greater than 0.7, then the reliability is considered to be acceptable [40]. In the formulated hypothesis, it is intended to compare the determining factors in the choice and sale of apartments in two independent samples (the sample of the potential buyers and the sample of the sellers), which is why the independent samples Student's t-test was used, with the differences considered statistically significant in the case of $p < 0.05$ [41]. The bootstrap procedure that is incorporated in the software IBM SPSS Statistics 26 was also employed, when the Student's t-test was carried out based on 1000 bootstrap samples to confirm the results obtained in the application of the test [42]. Furthermore, Cohen's square eta was also employed (0.01—small effect, 0.06—moderate effect, and 0.14—large effect) to study the effect size of the differences between the groups' means [43].

4. Results and Discussion

4.1. Sample Characterisation

The sample under study is composed of 915 individuals, of which 295 are apartment sellers and 620 are individuals who were looking for an apartment.

The following Tables 1 and 2 show the sociodemographic characterisation of the apartment sellers and buyers, respectively.

Table 1. Sociodemographic characterisation of the apartment sellers.

Sellers (n = 295)	Age	Extreme values Mean and Standard Deviation	18 and 72 years M = 41.69, SD = 9.88
	Gender	Male Female	60.3% (n = 178) 39.7% (n = 117)
	Education Level	Higher education degree Secondary school Basic education	48.5% (n = 43) 47.8% (n = 141) 3.7% (n = 11)

Source: Own elaboration.

Table 2. Sociodemographic characterisation of the apartment buyers.

Buyers (n = 620)	Age	Extreme values Mean and Standard Deviation	18 and 68 years M = 38.00, SD = 10.86
	Gender	Male Female	54.2% (n = 336) 45.8% (n = 284)
	Education Level	Higher education degree Secondary school Basic education	63.9% (n = 396) 29.2% (n = 181) 6.9% (n = 43)
	Annual Gross Household Income (€)	[0, 10,000] [10,000, 20,000] [20,000, 30,000] ≥30,000 Did not answer	16.0% (n = 99) 29.8% (n = 185) 24.5% (n = 152) 26.6% (n = 165) 3.1% (n = 19)
	Type of apartment wanted	0—bedroom apartment 1—bedroom apartment 2—bedroom apartment 3—bedroom apartment 4—bedroom apartment Other types	1.0% (n = 6) 5.5% (n = 34) 30.3% (n = 188) 48.4% (n = 300) 12.3% (n = 76) 2.6% (n = 16)

Source: Own elaboration.

4.2. Structure of the Determining Factors in the Choice and Sale of Apartments

The application of the exploratory factor analysis technique to the 27 items related to the determining factors in the choice and sale of apartments resulted in a solution composed of five factors (Table 3). The five retained factors explain, in total, 62.73% of the total variance. The first factor is composed of eight items (21, 22, 23, 24, 25, 26, and 27) explains 23.71% of the variance and will be named "Negative Externalities". Note that the factor weights of this factor are high (greater than 0.7), which shows that there is a strong correlation between the different places because people do not want to buy an apartment located near this type of externalities. The second factor is formed by six items (4, 5, 6, 7, 8, and 9) and explains 11.34% of the variance; since the items that compose it are referent to the sizes of some rooms in the house, it will be designated as "Rooms' sizes". The third factor, which explains 9.46% of the variance, is composed of four items (16, 17, 18, and 19) and it is apropos of observed variables about the existence of businesses or places of interest in the proximities of the dwelling's site. Therefore, this factor is labelled "Proximity to places of interest". The fourth factor is named "Positive externalities" since its three items (1, 2, and 3) are related to scenic views. This factor is responsible for 3.19% of the variance. Finally, the fifth factor explains 3.03% of the variance and is composed of six items (10, 11, 12, 13, and 14), labelled as "Layout and Quality of the Building".

The 29 items referent to the determining factors in the choice and sale of apartments present a value of Cronbach's alpha of 0.85, and the various values of the five factors' Cronbach's alpha vary between 0.71 and 0.96 (all greater than 0.7). Hence, the internal consistency is acceptable [40].

For each individual, a score that represents each one of the five determining factors in the choice and sale of apartments was obtained by calculating the arithmetic average of the items that are part of it.

Table 3. Matrix of the factor loadings of the determining factors in the choice and sale of apartments.

Items	1	2	3	4	5
21. Solid waste incineration	0.94				
20. Contaminated surrounding lands	0.93				
23. Sanitary landfill	0.91				
22. Above average air pollution	0.91				
24. Wastewater treatment plant	0.88				
25. Overhead high-voltage powerlines	0.87				
26. Degraded park	0.80				
27. Traffic noise	0.74				
5. Area of the bathrooms		0.73			
8. Area of the kitchen		0.72			
9. Area of the sunroom		0.71			
7. Area of the balcony		0.70			
4. Area of the bedrooms		0.68			
6. Area of the living room		0.58			
16. Existence of a bank nearby			0.83		
17. Existence of a pharmacy nearby			0.83		
18. Existence of a supermarket nearby			0.79		
19. Existence of a bar/restaurant nearby			0.63		
1. Mountain views				0.82	
2. Sea views				0.80	
3. Views of a square/street				0.71	
12. Location of the staircase					0.71
15. Material used in the rooftop					0.61
14. Existence of exterior green spaces					0.59
13. Rubbish collection					0.58
10. Easiness to park outside					0.55
11. Existence of an elevator					0.54
% Explained variance (62.73%)	23.71	11.34	9.46	9.19	9.03
Cronbach's Alpha (0.85)	0.96	0.79	0.79	0.81	0.71

Source: Own elaboration.

4.3. Comparative Analysis of the Determining Factors in the Choice and Sale of Apartments

Table 4 presents a comparative analysis of the determining factors in the choice and sale of apartments between the sellers and potential buyers. Regarding the factor "Negative Externalities" and all the items that compose it, it is observed that there are statistically significant differences between the sellers and the potential buyers ($p < 0.01$) since potential buyers give more importance to the non-existence of negative externalities near their future residence (the effects sizes are between 0.04 and 0.10). Negative externalities harm a house and buyers care deeply about them and try to move as far away as possible from these externalities. There is also a statistically significant difference between the importance that buyers give to negative externalities and the remaining factors because they strongly disapprove of them. This agrees with the studies presented in the literature review [6,14–16]. Thus, it is important that real estate promotors seek to minimise the effects of negative externalities in their investments.

As for the factor "Rooms' size", there are no statistically significant differences between the sellers and the potential buyers ($p > 0.05$). Regarding the items that correspond to the area of the bedrooms ($p < 0.01$, $\eta^2 = 0.01$), living room ($p < 0.01$, $\eta^2 = 0.05$) and kitchen ($p < 0.05$, $\eta^2 = 0.01$), there are statistically significant differences as sellers give more importance to the areas of these rooms. Moreover, there are statistically significant differences in the area of the bathrooms ($p < 0.05$, $\eta^2 = 0.01$) because potential buyers attribute more importance to the areas of these rooms. The areas of the balcony and sunroom do not present statistically significant differences, thus both groups (potential buyers and sellers) give identical levels of importance to these two rooms. As for the areas of the rooms, the living room and the bedrooms are defined as rest areas in [8,25]. The sellers give more importance to the dimensions of the living rooms, bedrooms, and

kitchen, whilst buyers account for the area of the bathrooms. It was referred in [33] that the dimensions and layout variations originate decision-making problems in deals, which is confirmed. This framing leads to an information asymmetry that stems from antagonistic perceptions of buyers and sellers, who struggle to make rational decisions sometimes due to the lack of familiarity with the real estate market.

Table 4. Comparative analysis.

Factors/Items	Buyers (n = 620)		Sellers (n = 295)		Test	
	M	*SD*	*M*	*SD*	*t*	*p*
Negative externalities	4.44	0.72	3.79	1.07	9.513	0.000
20. Contaminated surrounding lands	4.53	0.83	4.00	1.18	7.042	0.000
21. Solid waste incineration	4.57	0.80	3.89	1.22	8.650	0.000
22. Above average air pollution	4.51	0.81	3.77	1.22	9.554	0.000
23. Sanitary landfill	4.49	0.82	3.82	1.23	8.469	0.000
24. Wastewater treatment plant	4.45	0.86	3.77	1.20	8.726	0.000
25. Overhead high-voltage powerlines	4.34	0.94	3.88	1.21	5.759	0.000
26. Degraded park	4.29	0.86	3.52	1.16	10.182	0.000
27. Traffic noise	4.36	0.83	3.68	1.15	9.187	0.000
Rooms' sizes	3.97	0.58	4.05	0.60	−1.910	0.056
4. Area of the bedrooms	4.22	0.69	4.39	0.70	−3.333	0.001
5. Area of the bathrooms	3.88	0.80	3.72	0.94	2.587	0.010
6. Area of the living room	4.33	0.69	4.62	0.57	−6.880	0.000
7. Area of the balcony	3.67	1.02	3.79	0.91	−1.778	0.076
8. Area of the kitchen	4.25	0.74	4.37	0.69	−2.388	0.017
9. Area of the sunroom	3.44	1.03	3.38	1.03	0.878	0.380
Proximity to Places of Interest	3.22	0.88	3.93	0.78	−12.357	0.000
16. Existence of a bank nearby	3.36	1.07	3.75	0.98	−5.453	0.000
17. Existence of a pharmacy nearby	3.83	0.99	4.13	0.90	−4.469	0.000
18. Existence of a supermarket nearby	3.32	1.30	4.24	0.74	−13.566	0.000
19. Existence of a bar/restaurant nearby	2.35	1.27	3.59	1.11	−15.033	0.000
Positive Externalities	3.13	0.93	4.37	0.60	−24.287	0.000
1. Mountain views	3.10	1.17	4.46	0.66	−22.481	0.000
2. Sea views	3.44	1.24	4.65	0.53	−20.656	0.000
3. Views of a square/street	2.86	1.11	4.01	0.94	−16.248	0.000
Building's Layout and Quality	3.99	0.61	3.76	0.60	5.211	0.000
10. Easiness to park outside	3.99	0.86	4.31	0.67	−5.582	0.000
11. Existence of an elevator	4.12	0.97	4.48	0.61	−6.867	0.000
12. Location of the staircase	3.48	1.00	3.16	1.11	4.238	0.000
13. Rubbish collection	4.20	0.86	3.09	1.12	15.029	0.000
14. Existence of exterior green spaces	4.09	0.89	4.05	0.72	0.688	0.492
15. Material used in the rooftop	4.03	0.99	3.48	1.12	7.093	0.000

Source: Own elaboration.

Regarding the factor "Proximity to places of interest" and all the items that make it up, there are statistically significant differences between the sellers and potential buyers ($p < 0.01$), as sellers give more importance to the proximity to places of interest (the effects sizes are between 0.02 and 0.20). Therefore, the hypothesis is empirically supported. In the choice of apartments, five clusters of clients were formed [25]. The players accept that people choose apartments near places of interest, and since they have that knowledge, there is an exacerbated focus by the sellers on exhibiting these characteristics. Places of interest are studied in this work's literature review by citing articles such as [26,27], among others. With these results, it is seen that there is an enormous effort to present the aspects that clients seek the most.

In the factor "Positive Externalities" and in all of its items, there are statistically significant differences between the sellers and possible buyers ($p < 0.01$), as sellers give more importance to the existence of positive externalities (the effects sizes are between 0.22 and 0.39). Here, it is also verified that sellers tend to overvalue positive externalities such as views to a mountain, the sea, or to a square. The sellers tend to put the light on the unique views of the apartment. These positive externalities are broadly mentioned in the residential real estate market, namely, in [20,21,23,25], among others who were cited in the literature review.

Regarding the layout and the quality of the building, statistically significant differences are verified between the sellers and the potential buyers ($p < 0.01$, $\eta^2 = 0.03$) as potential buyers give more importance to the building's quality and layout. As for the existence of exterior green areas, both the sellers and the potential buyers agree on their level of importance, since it is the only item in this factor where no statistically significant differences were found ($p > 0.05$). In the item "easiness to park outside" ($p < 0.01$, $\eta^2 = 0.03$) and "existence of an elevator" ($p < 0.01$, $\eta^2 = 0.05$), the differences are statistically significant and the sellers give more importance to them. In the remaining items, statistically significant differences were found ($p < 0.01$), but it is not the potential buyers to consider them more important (the effects sizes are between 0.02 and 0.20). In this factor, the focus is different between buyers and sellers, which stems from the layout and quality of the building. While sellers highlight the importance of the easiness to park and the elevator, buyers focus on the building's quality, namely, on the location of the staircase (to avoid unwanted noises) and on the building's rooftop. These items were also mentioned in [25,36,37]. Thus, there is evidence of information asymmetry because what is valued by the sellers is different from what is focused by the clients.

It is highlighted that the bootstrap procedure based on 1000 samples was used and the results of the decisions obtained for the tested hypothesis were confirmed. Therefore, the hypothesis under study is partially supported; it is only not confirmed for three items of the determining factors.

5. Conclusions

The objective of this study was to compare the determining factors in the choice and sale of apartments among the sellers and the possible buyers. It was seen that five factors determine the choice and sale of apartments: (1) negative externalities; (2) rooms' size; (3) proximity to places of interest; (4) positive externalities; and (5) the building's layout and quality.

Some statistically significant differences were verified. Sellers are focused on giving information on the areas of the living room, bedrooms and kitchen. They are also focused on presenting more details on the existence of places of interest nearby, the positive externalities (sea and mountain views, and views of a square/street), as well as the existence of an elevator and the easiness to park outside. On the other hand, buyers give more importance to the non-existence of negative externalities (they seek to stay away from them), value the area of the bathrooms and the existence of green areas. Buyers are especially attentive to the location of the building's staircase, the convenience of rubbish collection and its daily frequency, and the quality of the material used on the building's rooftop. Hence, sellers tend to exacerbate the dwelling's amenities and positive aspects, so it is up to buyers to worry about obtaining information on the aspects they value the most.

After analysing the data collected for this study, the agencies that participated in the study received a report so that they can seek to get closer to the preferences of their clients, which in practical terms is extremely important for the improvement of the services that are provided in this branch of activity. It is also expected that this study motivates education policymakers to implement programmes of financial literacy and education about real estate valuation, as it will allow reducing the distortions caused by information asymmetry in the market.

Given that no known study in Portugal compares the importance of the determining factors in the choice and sale of apartments, this article is expected to contribute to the increase of scientific knowledge in the area of the habitational market and the decrease of the information asymmetry between homebuyers and sellers. Diminishing the information asymmetry in the real estate market is relevant and urgent, especially now to improve the post-COVID-19 economy, because the purchase of housing is a high investment for the families. Knowing the importance that buyers and sellers give to the different highlighted factors in the Portuguese real estate market constitutes a breakthrough in knowledge in this area.

In a future study, more items that analyse the determining factors in the choice and sale of apartments could be included.

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