

The influence of environmental factors on property buyers' choice of residential location in Poland

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Abstract. The main aim of this study was to identify the factors responsible for Polish property buyers' choice of residential location, including single-family houses and apartments. The following thesis was formulated: analysis of consumers' residential preferences based on their personal experience supports a more reliable evaluation of individual attributes of a residential location. This paper overviews the existing literature on the subject and analyzes primary data collected by the computer-assisted web-interviewing (CAWI) method. The questionnaire developed by the authors was completed by 269 residents of three Polish regions. The respondents evaluated the quality of their residential environment and identified environmental factors that could influence their health. The data were processed statistically to reveal that price is the most important factor behind the residential location choice. Other factors identified by the respondents included the sense of security and a quiet neighborhood. High scenic value was regarded as a moderately important factor, although its significance was recognized by the majority of the respondents.

Keywords: environment, quality of life, property market, Poland, residential property.

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INTRODUCTION

Studies analyzing the behavior of potential property buyers have been carried out for a long time, especially on developed markets (Alkay, 2009, Andersson et al., 2010, Hall et al., 1978, Srour et al., 2002). They revealed that buyers rely on similar criteria when choosing residential property, although they attach different importance to those factors. The most important criteria for buyers were related to the technical aspects of property, including the building's architectural style, age, usable area, number of rooms and the availability of transport and public services. The results of studies which analyzed primary data and attempted to model the property market also revealed that selected qualitative factors, which are difficult to define, may also be underestimated (Nelson and Rabianski, 1988, Fadden, 1997). The above particularly applies to the influence of residential appeal and scenic value of property on the buyers' choice of location. Such studies are important because they directly address the subject matter which may be disregarded in preference analyses. They shed a new light on the consumers' environmental awareness, pointing to neglected areas and the need for changes in environmental education.

The choice of residential location is largely determined by the consumers' financial standing, preferences and needs which arise in view of their personal circumstances, such as the number of children. The relevant literature and the applicable appraisal standards indicate that property prices are influenced not only by technical and functional considerations, but also by location, including commuting time and distance between the property and important destinations (The Appraisal..., 2008, The International, 2011, Żróbek and Belej, 2000). In most studies, property price and location were analyzed separately (Srour et al., 2002). Ideally, the accessibility of a location is a measure of how well transportation networks interact with land use attributes to satisfy household, business or other preferences. Some analyses include a dependent variable (price of residential property) and several independent variables (physical attributes and location of property) (Huderek-Glapska and Trojanek, 2013, Trojanek, 2010, 2014; Srour et al., 2002). In some publications, land prices were analyzed in view of the cost associated with commuting to market centers and network improvements. Several studies (Andersson et al., 2010, Hall et al., 1978) examined the effect of highway improvements on land values. Other authors observed that residential property prices are also influenced by the environmental attributes of a given location, including neighborhood amenities, parks, and the sense of security. Cellmer et al. (2012) identified three key environmental attributes: the presence of surface water bodies such as lakes, ponds and watercourses, forest cover and land elevation. Their study revealed that the price of properties that directly overlook a lake may be three times higher in comparison with properties that are not attractively located.

Residential development has been analyzed in the context of urban growth in many publications. According to some authors (Smersh et al. 2003, Renigier-Biłozor and Wiśniewski, 2013), developers focus on the following attributes when choosing a location for residential property:

- physical suitability for development: slopes, soils, hydrology, land availability,
- existing land use patterns and location of other residential development,
- distance to markets with employment opportunities,
- neighborhood factors: age of surrounding housing stock, schools, universities,
- health care,
- recreational areas, including parks, forests, water reservoirs,
- air pollution.

There is a growing body of research into the influence of environmental pollution on living conditions in urban areas. Lake et al. (1998) assigned monetary value to the negative impacts of road development, specifically noise and visual intrusion. Mitkus and Šostak (2009) evaluated the inconvenience resulting from

construction projects in the neighborhood. Some authors have analyzed the applicability of Geographic Information Systems for assessing the impact of noise on property prices (Cellmer and Żróbek, 2011, Huderek-Glapska and Trojanek, 2013). Maantay and McLafferty (2011) focused on a range of geospatial applications for environmental health research, including environmental justice issues, environmental health disparities, air and water contamination, and infectious diseases.

To date, very few studies have evaluated the factors that determine consumers' individual preferences and choice of residential location (apartment or single-family home). Less scientific attention is paid to the scenic value of residential and work locations, small-scale green areas in cities and their benefits. Urban sustainability and regeneration strategies focus mainly on man-made components of the urban environment. In comparison, attention to the natural components and the green spaces of the urban structure is still poor (Chiesura, 2004).

Property buyers' preferences relating to the choice of residential location based on their previous experiences have been insufficiently investigated. Adriaanse (2007) measured residential environmental satisfaction to identify factors which directly contribute to inhabitants' levels of satisfaction with their residential environment, including traffic noise, green areas and social relations.

Most researchers evaluated the preference of first-time home buyers. Studies of the type are generally conducted by developers wishing to elicit information about the most popular types of residential property, the most desirable housing standards and the relationship between the quality of the housing environment and property prices (Alkay, 2009, Stachura, 2013). For example, properties set in natural surroundings generally fetch higher prices than houses in city suburbs. The extra price is paid for the property's scenic value (Wendy and Chen, 2007). Meanwhile, few developers conduct satisfaction surveys among people who reside in completed and sold properties. Consumers' expectations are shaped based on their previous residential experience, which suggests that their choices should be analyzed in view of their present residential standards and location. Despite the above, the opinions and preferences of property users inhabiting a single-family home or an apartment have been rarely surveyed. This observation prompted the authors to survey property owners' perceptions concerning the significance of the local environment in their choice of residential property.

1. OBJECTIVE

In this study, owners of residential property were asked to list property attributes (apartments or single-family homes) which contribute to a friendly living environment as well as factors that could pose a health risk. The aim of the study was to establish a hierarchy of factors in the consumers' choice of residential location, in particular those associated with the natural environment. The responses were used to evaluate property buyers' environmental awareness.

2. RESEARCH DESIGN

Property owners were asked to participate in an anonymous online survey. The questionnaire was developed by the authors, and it was completed by the inhabitants of three Polish regions in 2013. The selected regions had to differ in their: location in Poland, environmental quality with regard to their impact on human health and residential appeal, and level of economic development. The authors' place of residence also influenced the choice of regions on the assumption that this approach would facilitate data collection and analysis. The examined regions can be ranked in the following order based on their residential appeal,

environmental quality and trends in socioeconomic development: Warmia and Mazury (northern Poland, high levels of naturalness, low economic potential), Wielkopolska (western Poland, good environmental status, above-average economic growth) and Śląsk (southern Poland, highly degraded environment, highest economic potential).

Adult respondents were asked to complete the questionnaire which comprised 9 closed-ended questions as well as questions eliciting information about the respondents. The questions were divided into four groups:

1. Factors that influenced the respondents' choice of residential location.
2. Quality of life in the present place of residence: 1) factors which determine the quality of life, 2) quality of selected environmental factors, 3) environmental factors that pose a health risk, 4) the awareness that the natural environment can influence health, 5) environmental protection measures which should be introduced to improve the quality of life, 6) other local measures that would improve the respondents' quality of life.
3. Factors that the respondents would take into account during purchase of new residential property.
4. Sources of knowledge about the environmental quality of the residential location.

The respondents were also free to share their opinions and provide information that was not elicited by the questionnaire. Their inputs were used to evaluate buyers' preferences regarding the choice of residential location as well as their awareness about environmental issues, the risks associated with environmental degradation and the relevant remedy measures. According to our best knowledge, this is the first ever study to analyze such a broad scope of data provided directly by owners of residential property. The results constitute valuable information for market participants as well as entities and authorities responsible for urban planning.

RESULTS AND DISCUSSION

The questionnaire was completed by 269 respondents. Respondents aged 21 to 35 years accounted for 74%, respondents aged 36 to 50 years – for 16%, respondents older than 50 years – for 7%, and respondents aged 18 to 20 years - for 3% of the surveyed population. The above indicates that most respondents were active participants on the real estate market who have had some experience regarding residential property (all respondents were property owners) and, due to their young age, were likely to change their place of residence in the future. This age group is most broadly represented on the housing market, and similar observations were made in studies of the Poznań housing market (Trojanek, 2013; Kempa et al., 2015).

Most respondents were university graduates (73%), and half of the surveyed subjects were white-collar workers. Singles accounted for 64%, and married couples with small children - for 28% of the surveyed population. 75% of the respondents lived in urban areas, whereas 25% were rural residents. Approximately 60% of the subjects made independent decisions regarding their present place of residence. 58% of the respondents inhabited an apartment and 42% lived in a single-family home. Women accounted for 67% of the studied population.

The results of the survey were processed. In the first step of the analysis, the authors determined the number of factors which influenced the respondents' choice of their present residential location. Their significance was ranked on a scale of 0 to 3, where 0 was "not important" and 3 was "highly important" (Fig. 1). The price was the most important factor in the buyers' choice of residential property (2.37). It was followed by "quiet neighborhood" (2.22) and "sense of security" (2.13).



Figure 1. Key determinants of the respondents' choice of residential property

Source: own elaboration.

The data presented in Figure 2 indicate that price was a very important factor for 49% of the respondents and an important factor for 41% of buyers. Only 2% of the surveyed subjects regarded the price criterion as not important.

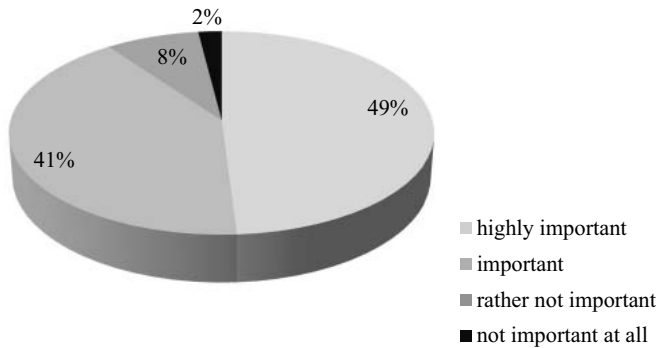


Figure 2. Importance of property price in the choice of residential location

Source: own elaboration.

The remaining determinants were the sense of security (Fig. 3) and a quiet neighborhood (Fig. 4) which were regarded as highly important and important.

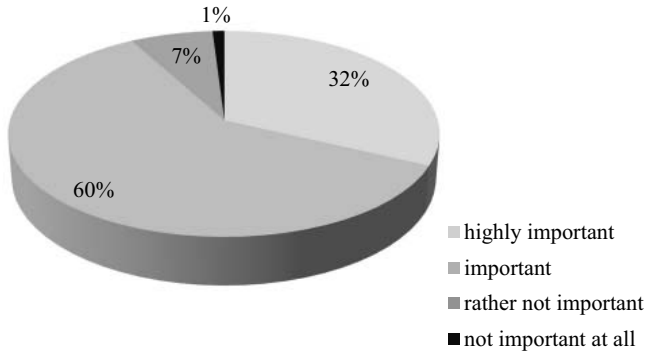


Figure 3. Importance of the sense of security in the choice of residential location
Source: own elaboration.

Respondents for whom the sense of security was a very important factor based their opinions on the following attributes: low crime rate, police patrols, proximity to family and friends, surveillance in the housing estate, gated community, low traffic, friendly neighborhood and street lighting.

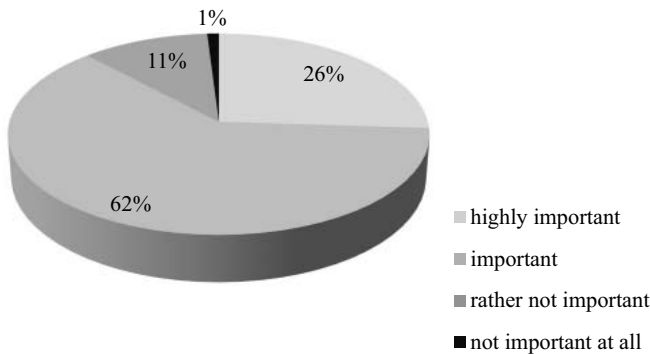


Figure 4. Importance of a quiet neighborhood in the choice of residential location
Source: own elaboration.

High scenic value, a parameter which describes the quality of the surrounding environment, was regarded as a moderately important factor (Fig. 1). For the respondents, the most important natural feature were “green belts”, including parks, leisure areas, squares, playgrounds and walking grounds. High scenic value occupied the middle place in the ranking, but it was regarded as important or highly important by most respondents (63%) (Fig. 5).

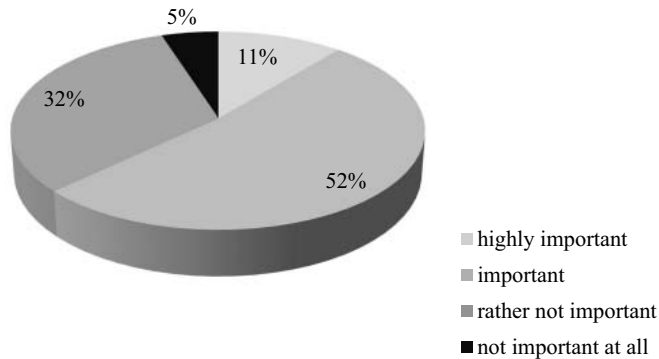


Figure 5. The importance of high scenic value in the choice of residential location

Source: own elaboration.

The remaining natural features which contribute to a property's scenic value, such as the proximity of water bodies, air quality and undeveloped space, were regarded as not important. The prestige of the neighborhood came last in the ranking (Fig. 1), but it was regarded as highly important and important by 38% of the surveyed subjects. In the respondents' opinion, prestige implies:

- 1) safety – peace and quiet, order, monitoring, security (Figure 3),
- 2) type of building – new and modern buildings, single-family housing estate, small estate, developer's market standing, high quality and comfort,
- 3) close to the city center,
- 4) availability of additional services,
- 5) fashionable and popular neighborhood and estate,
- 6) quiet neighborhood (Figure 4) and neighbors - principle of similarity or degree of prosperity.

The reason why scenic value was not regarded as an important factor determining the choice of residential location could be the respondents' young age or the general scarcity of public rankings evaluating neighborhood prestige.

In the second group of questions, the respondents were asked to evaluate the influence of various environmental factors on their quality of life. As previously, they ranked their choices on a scale of 0 to 3, where "0" was "not important" and 3 was "highly important". According to the respondents, their quality of life was most profoundly affected by the "quality of the neighborhood", followed by "industrial noise produced by power lines" and "traffic" (Fig. 6).

An analysis of Figure 6 indicates that the following environmental factors were most highly ranked by the respondents (1.5 to 2.67 points): unpleasant smell, illegal rubbish dumps, proximity of green areas and leisure grounds, traffic noise, air pollution and nature conservation areas in the neighborhood (nature reserves, areas that are part of the Natura 2000 network). Subjects residing in the regions of Wielkopolska and Śląsk were more likely to focus on the adverse effects of industrial plants. The importance of green areas and urban parks was also emphasized by Chiesura (2004) who found that access to nature is a source of positive feelings and energy for many urban residents. According to the respondents in this study, the greatest health hazard was air pollution. This factor was most frequently cited by the residents of Śląsk. The remaining factors were growing traffic and lack of access to sewage treatment plants, which were listed by subjects from all

three regions. The respondents were also aware of the threats associated with soil pollution or inappropriate agricultural practices, and those factors were more frequently indicated by the residents of the Region of Warmia and Mazury. Our findings could point to positive changes in the attitudes of property owners who are more likely to recognize the importance of environmental factors and their influence on the residents' health and quality of life.

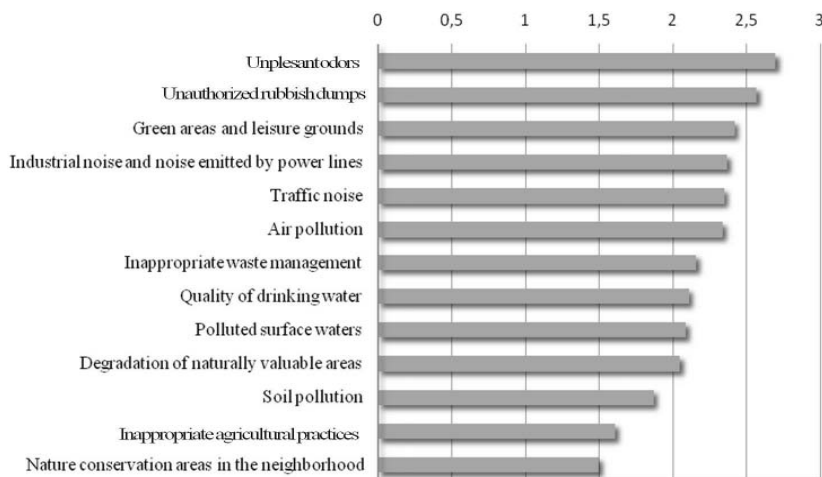


Figure 6. Influence of environmental factors on the quality of life

Source: own elaboration.

The majority of the respondents (70%) were of the opinion that the quality of the residential environment influenced their health. In their opinion, the following environmental protection measures should be initiated, in the given order, to improve the quality of life in their current place of residence: support for alternative means of transport, improvements in the quality of air and drinking water, sewer connections, waste sorting, elimination of local sources of air pollution, landscape protection, reduced use of dangerous practices and toxic chemicals in agriculture, construction of noise barriers. Other measures suggested by the respondents included financial support for organic farms, greater security monitoring, traffic speed control, organization of events for the local community, greater control over outdoor advertising and visual pollution. The aim of the survey was to determine the extent to which the respondents' perceptions of their present living conditions would influence their choice of a new residential location. The results indicate that price is the most important criterion in the decision to buy property, followed by technical and functional features of property, and the quality of the surrounding environment. Most respondents cited the Internet (31%) and the media, including the press, radio and TV (25%), as the main sources of information about the property and its surroundings. Environmental education was perceived as an important source of information by 13% of the surveyed subjects, followed by municipal offices (7.5%), schools (6.5%) and environmental organizations (3%). The Ministry of the Environment, the Chief Inspectorate of Environmental Protection and own observations were regarded as vital sources of data by 14% of the respondents.

The results of the survey indicate that despite high levels of environmental awareness among the respondents, the quality of the environment was not the main criterion determining their choice of residential

location. A quiet neighborhood and scenic value were regarded as the most important determinants in the group of non-economic factors. Middle-aged respondents (35-50) attached greater importance to environmental and social factors (scenic value and prestige) than older subjects, which could be attributed to cultural factors, and younger subjects for whom economic factors play the most important role. The proximity of health facilities was particularly important to older respondents (51+). The surveyed subjects demonstrated a rather holistic approach to environmental issues: they were aware that unsound waste management practices lead to the potential risk of water and soil pollution. The most highly ranked environmental features were associated with air quality, including unpleasant odors. Similar results were reported in a survey conducted in the Region of Kujawy and Pomorze, where waste dumping was identified as the most pressing environmental problem (Saks, 2009). The respondents attached less importance to factors that require specialist knowledge, such as soil condition reports. Intangible factors and influences have to be identified and ranked to increase the effectiveness of sustainable development strategies and to improve the quality of life, in particular in areas characterized by limited space.

CONCLUSIONS

The authors are aware that general conclusions regarding the importance of environmental factors in property buyers' choice of residential location cannot be drawn due to the rather small size of the analyzed sample. Despite the above, the following remarks can be formulated based on the results of this study:

1. Due to home-buying pressure and the present market outlook, price continues to be the main determinant of property buyers' choice of residential location, whereas environmental issues are identified as less important.
2. The study points to positive changes in the attitudes of property owners who are more likely to recognize the importance of environmental factors and their influence on the residents' health. The surveyed subjects were residents of three Polish regions that differ significantly in their industrialization levels and growth potential. This approach was used to elicit a greater number of factors that influence property buyers' choice of residential location.
3. In this study, home owners' preferences regarding the choice of residential location were surveyed based on their previous experiences; therefore, the significance of the analyzed attributes could be evaluated more reliably than if the respondents were potential property buyers or developers.
4. The influence of environmental factors on property buyers' choice of residential location cannot be accurately evaluated due to the multitude of factors which determine the final decision to buy.
5. The factors that influence property buyers' choice of residential location could constitute valuable inputs for residential design, and they could be used to minimize the potential adverse effects of housing estates on human health and the natural environment.
6. Local authorities responsible for urban planning could use the results of this study to identify priority tasks which need to be undertaken to create friendly residential environments.
7. The results of this study indicate that the quality of the surrounding environment influences the value of property. For this reason, the term "residential property" should be used in a broader context in standard appraisal practice.

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