THE RELEVANT INFLUENCE OF APPARENTLY MINOR HOUSING ATTRIBUTES IN PEOPLE'S HOUSING CHOICE

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ABSTRACT

It often argued that price, type, tenure, location and size are the most relevant housing attributes that people consider when making purchase decisions. While true, this paper utilizes qualitative data gathered through interviews to argue that these characteristics cannot fully explain people's housing choice. On the contrary, other housing attributes—even if frequently seen as irrelevant—are often those that drive people's final purchase decision. The reason for this is that, while every person's search process is different, searching in stages appears to be a common practice. Specifically, location, tenure, size and price are criteria mostly used at the beginning of the search process, when people are defining what and where to search. At the end of the search, on the contrary, all the dwellings of interest are similar with regards to these criteria, thus other attributes become more relevant at determining people's final choice.

Keywords: residential real estate, housing search, property valuation

INTRODUCTION

It is commonly agreed that the most important housing attributes influencing people's housing choice are size, type, price, tenure and location (Dieleman, 2001). Compared to these, other attributes are secondary. However, organizing housing attributes in this way presumes that, when comparing dwellings, homebuyers utilize all the housing attributes simultaneously, allowing weak attributes to be compensated by other strong ones (Gibler and Nelson, 2003; Aribarg *et al.*, 2018). For instance, the models behind Hedonic Regressions (Aroul, 2009; Sopranzetti, 2010; Adetiloye and Eke, 2014) suggest that increasing the size of the dwelling can compensate for the customer value reduced by a bad location.

Despite its popularity, assuming that people look at all the housing attributes simultaneously when searching for dwellings contradicts the fact that homebuyers are known to search in stages (Brown and Moore, 1970; Sears, Digiano and Hoagland, 1975; Gibler and Nelson, 2003; Koklic and Vida, 2009; Rashidi, Auld and Mohammadian, 2012; Dunning, 2016), utilizing different housing attributes at each stage (Brown and Moore, 1970; Gibler and Nelson, 2003). This means that, regardless of other strengths, a single weak attribute can significantly reduce the number of people who consider certain dwellings as a purchasing option. For instance, people seem to have a relatively clear idea of where they want their future homes to be located and thus they will not often see any dwellings outside of that zone (Rae, 2015; Rae and Sener, 2016).

This paper explores the temporal dimension of the housing search, arguing that homebuyers utilize different housing attributes at different stages and that those attributes utilized at the first stages (e.g. location and price) will never be contrasted with those that become relevant later (e.g. views and quality of daylight). Furthermore, this paper posits that people's housing choice and purchase decisions are often strongly driven by those attributes that only become relevant at the final stages of the housing search.

LITERATURE REVIEW

Several studies have tried to understand what housing attributes impact people's purchase decisions the most (Abdullah *et al.*, 2012; Schirmer, Van Eggermond and Axhausen, 2014; Rahadi *et al.*, 2015; Chia *et al.*, 2016).

A number of these have found that different consumers search for different attributes, reflecting the existence of different market segments (Araujo and Cheng, 2017). For instance, Sundrani (2018) found that people in India who are looking for one-bedroom flats do not rank attributes in the same order as those looking for a two- or three-bedroom flat. Similarly, a survey conducted in Canada (Spetic, Kozak and Cohen, 2008) suggested that 38% and 18% of households were considered high and moderate potential consumers of a *healthful living* concept, respectively. Differences in the attributes of interest have also been found between local and long-distance migrants to rural areas: while the former group looks for purely housing characteristics, the latter's aspirations varied (Bijker, Haartsen and Strijker, 2015).

The differences between homebuyers not only determine how they rank housing attributes in terms of importance but also the strategies they use when searching for a new home. For example, the process of search and selection will depend on the consumer's economic, cultural, social, as well as in personal and psychological factors (Jisana, 2014). This is confirmed by Dunning's (2016) study in Sheffield (England), which concludes that differences in the search process can impact multiple stages across multiple variables and household types. Similarly, Bijker et al. (2015) found that different people who search in the rural areas of the Netherlands utilize different search strategies. Dunning (2016) also mentions that there is a large variation in the number of properties viewed and the time spent on the search.

The literature also posits that people do not necessarily have clear preferences at the beginning of the searching process (Dunning, 2016, 2017). Indeed, consumers can learn from their search and modify their strategies, expectations and requirements accordingly (Brown and Moore, 1970; Flowerdew, 1976; Meyer, 1980; Smith and Mertz, 1980; Jansen, Coolen and Goetgeluk, 2012; Dunning, 2016).

Regardless of the complexity of people's housing search process, researchers tend to agree that homebuyers' search includes several phases (Brown and Moore, 1970; Sears, Digiano and Hoagland, 1975; Gibler and Nelson, 2003; Koklic and Vida, 2009; Rashidi, Auld and Mohammadian, 2012; Dunning, 2016) which do not necessarily follow a linear pattern (Read, 1993; Bijker, Haartsen and Strijker, 2015). This "problem-solving" view is also present in the marketing literature (Engel, Blackwell and Kollat, 1978; Solomon *et al.*, 2007).

When advancing through the different phases in the home-searching process, consumers will narrow down their housing possibilities from the totality of the urban space to a single unit (or none, if the final decision is not to move). This implies that searchers will often need to select one or more dwellings from larger groups (Aribarg *et al.*, 2018). However, since the searcher will rarely find a situation in which a dwelling is objectively "better" than all others (Montgomery, 1983), making an optimal choice may be challenging. Accordingly, heuristics known as decision rules are often used (Montgomery, 1983; Gibler and Nelson, 2003; Hauser, Ding and Gaskin, 2009; Aribarg *et al.*, 2018). Decision rules can be broadly separated into two types: non-compensatory and compensatory (Gibler and Nelson, 2003; Aribarg *et al.*, 2018).

The category of compensatory decision rules contains all those that do not directly eliminate a dwelling for having a single weak attribute. On the contrary, if other characteristics compensate for this flaw, it may be chosen anyway (Jansen, Coolen and Goetgeluk, 2012). Examples of this rule are the use of a weighted average or simple addition of the dwelling's attributes as a representation of its quality. The use of this decision underlies the canonical choice model in marketing (Aribarg *et al.*, 2018) and the Hedonic Regression method. That is, both use a linear (in the parameters) additive function of the attributes of dwellings, and assume that homebuyers choose dwellings by reviewing all of these attributes simultaneously.

Non-compensatory rules, on the contrary, do not allow strong housing characteristics to compensate for weak ones (Gibler and Nelson, 2003). For instance, a non-compensatory rule is used every time a searcher filters all the properties available in a property listing website by location, tenure, size and price. In such a case, it is possible the "best" dwelling might be eliminated for being slightly further away from the desired location (Rae, 2015; Rae and Sener, 2016) or because it was slightly overpriced. This strategy can explain the difference between people's *housing preference* and their *housing choice* (Jansen, Coolen and Goetgeluk, 2012). Namely, the use of non-compensatory decision rules can imply that the dwelling people end up purchasing is not the one they would have purchased if they have had the time to review all the attributes of all the properties in the housing market.

Non-compensatory decision rules can be associated with the temporal nature of the home-searching process. Namely, people will often start their search by selecting a subset of properties based on only a handful of criteria; and then, use different criteria for selecting within this subset. This indicates that explaining people's purchase decisions requires not only knowing *which* attributes are important, but also *when* they are utilized.

Specifically, this paper proposes that some arguably irrelevant attributes (e.g. the quality of daylight) might acquire a high relevance at the final stages of people's home search, when they are making their final decision on whether and where to move.

METHOD

As stated in the previous section, this paper proposes that knowing *which* housing attributes are important to consumers without being aware of *when* they are used is not enough for explaining their purchase decisions. Moreover, our research suggests that some attributes that are often regarded as secondary (e.g., views, daylight, or the hood in the kitchen) might acquire relevance at the final stages of people's home searching process, thus significantly influencing people's final decision. Thus, this study will compare the role of *primary* housing attributes—such as size, type, price, tenure and location (Dieleman, 2001)—with *secondary* ones. Specifically—because this study was part of a broader study about people's expectations from and attitude towards comfortable homes—the secondary housing attributes this study focuses on are Indoor Environmental Quality (IEQ). That is to say, thermal, acoustic and visual comfort, and air quality.

The method utilised for gathering data were informal semi-structured interviews in which respondents were asked about their search process and the sources of information they relied on. The key questions asked were "What kind of home were you looking for?", "Where do you usually get information about available homes?", "How often do you get any information about Indoor Environmental Quality?" and "Did/would you trust this information when available?" Additionally, respondents in the first stage (18, from Chile and New Zealand) were asked to describe "a warm home" and "a home with good daylight"; and those in the second stage (24, from Chile and New Zealand), "a home with a good acoustic performance", a "pleasantly cold home" home, and "a home with good air quality". While none of the questions in the interview specifically asked *which* attributes were relevant to respondents during their search process, or *when;* participants spontaneously expressed the answers to these questions in their responses.

Respondents of this study had recently gone through a home-searching process and had no specific expertise in real estate. Additionally, their home search had happened in Wellington, New Zealand or in Santiago, Chile. These locations have the advantage of being significantly different from each other and yet easy to reach by the researchers. Wellington and Santiago differ in population, density, per capita income, climate, culture, guaranteeing that the results are not constrained to a single country or culture.

All interviews were audio-recorded, and the respondents were assured that any data that could identify them would not be published. This study was approved by the Human Ethics Committee at Victoria University of Wellington.

RESULTS AND DISCUSSION

This section discusses the role that different housing attributes played in respondents' housing search process. The discussion will differentiate between the *primary* housing attributes recognized in the literature (Dieleman, 2001)—size, price, location, and typology—and *secondary* attributes. As stated earlier, since these interviews were part of a broader study about Indoor Environmental Quality attributes, secondary housing attributes will mostly refer to this kind of attribute.

The obtained responses revealed that the primary housing attributes—size, price, location, and typology—are indeed very important drivers of people's search process. Specifically, these attributes often strongly influence the beginning of the home-searching process thus significantly affecting its outcome. For instance, some sources of information were seen as less useful because they did not match the desired price and/or size.

> *"I looked at some property press magazines… They tend to be larger/pricier places, which is not really what we were looking at"*

> Respondent 12 – Stage 1, New Zealand

> *"I was in a few mailing lists for a few property real estate agents, but they were not interested in my business. They would keep trying to sell me houses that were too expensive"*

> Respondent 16 – Stage 1, New Zealand

The effect that people's preferences regarding the primary housing attributes have over their search process can be particularly severe when searchers use property listing websites that enable them to rigorously filter the available properties. Theoretically, if searchers had very strict searching criteria, their search would virtually always lead to suboptimal results. That is to say, they would never even consider purchasing any dwelling outside their search criteria even if it was "the best" one. In practice, however, this effect seems to be significantly reduced because searchers often go through an exploratory period that helps them adjusts their aspirations based on what is available in the market. This allows them to identify what Brown and Moore (1970) call the "search space". Based on respondents' answers, the search space is the geographical region in which the searcher is interested. However, this area is neither defined solely from geographical criteria nor it is meant to be an ideal location. On the contrary, people seem to define their search space by balancing what they want and what they can afford. For instance, people might not search in areas that are attractive to them geographically but that do not offer dwellings of the quality or typology they aspire to live in. Likewise, they will not consider areas that are too expensive for them.

> *"The truth is that I am always looking, although it is not so serious because we do not have enough savings yet… My search is more focused on sectors in which I am interested, with a few restrictions and filters"*

> Respondent 11 – Stage 2, Chile

> *"Initially, I was looking for a 3-bedroom + 1 bathroom in the sort of $500,000 range"… "[Price] is one of the main criteria I use for searching… I looked for what I could get for what I could afford… and that meant that I was looking outside of the CBD.*

> Respondent 16 – Stage 1, New Zealand

> *"Ideally [I wanted] a house. But, as you might know, here in Santiago that is not possible for everyone"… "What I do is: I have a certain idea of what I want and, according to that idea, I filter properties in PortalInmobiliario.com. Then, more or less, I get an idea of the areas where there might be properties."*

> Respondent 6 – Stage 2, Chile

Despite the very important role of location, price and typology, other housing attributes become relevant later in the search process. At this stage, all the dwellings in which searchers are interested in rank similarly high in terms of location, price and typology, so there is no point in comparing them based on these criteria. Also, it is at this stage—at the moment of visiting and viewing dwellings—that some of the secondary attributes can be observed for the first time. For instance, respondents expressed how orientation, insulation, dampness, the quality of the ventilation system and the availability of daylight could drastically affect their selection process.

> *"I was looking for a house built from 2008 and on because the building code changed in 2008, and there is a world of difference"*

> Respondent 1 – Stage 1, Chile

> *"I cared a lot about the hood, for instance, of the kitchen. That was something I looked for in all apartments I paid attention because… there are lots of apartments [in] which there is a hood, but it does not lead to outside"*

> Respondent 9 – Stage 2, Chile

> *"It is very clear. Because, for it to be cool [in summer], it cannot be facing west. Right away, any house facing west was ignored. We were looking for East or North. That was part of the criteria"*

> Respondent 3 – Stage 2, Chile

Respondents also expressed that some attributes are not easy to assess. In these cases, searchers will often utilize observable cues to infer the attributes of which they have no information. An example of this is inferring the quality of daylight of a property based on the number of lamps already installed in it. Likewise, people can use the number and kind of heaters available in a dwelling to infer how warm it is. Consequently, even if they are not exactly what people worry about, physical cues in dwellings will often suggest to consumers that there are concerns about the dwelling.

> *"If there is a lot of artificial lighting being used in the daytime, then it must be a dark house... even if they are not on. If you can just see that there are lots of light fixtures or too many things, either the person has a problem with lighting or, hmm, they need it"*

> Respondent 17 – Stage 1, New Zealand

> *"This person, he said, spent less energy in heating than an equivalent house made of concrete... I asked about the heating. If the boiler was working, I checked the radiators for the winter and asked how much they spent in gas. Curiously, this lady said she had made all the maintenance checks to the boiler, but she still had another heater. Curious! This is part of the risk you take"*

> Respondent 4 – Stage 1, Chile

Consequently, our research suggests that some attributes often considered of minor importance in people's home purchasing decisions can grow in significance at the final stages of their search for a new home. This implies that, even if they are arguably irrelevant at the beginning of the search process, they can strongly influence people's housing choice. This behaviour contradicts a core assumption of the Hedonic Regression method, which assumes that people have a stable utility function in which all housing attributes are weighted simultaneously. That is to say, Hedonic Regressions assume that consumers will, at some point during their search, contrast attributes utilized at the beginning of the search (e.g. location) with those used at the end (e.g. the quality of the kitchen). In reality, this might never happen. This suggests the need for new methods of evaluating the demand for properties that are more capable of representing people's search behaviour. For instance, through sequential Hedonic Regressions or discrete choice models (Train, 2002) that utilize the appropriate housing attributes for each stage. The choice of attributes can be informed by qualitative research as the one utilized in this study.

CONCLUSIONS AND IMPLICATIONS

This paper has explored the temporal dimension of the housing search, arguing that homebuyers utilize different housing attributes at different stages. Specifically, this study contrasted the role given to the most relevant housing attributes—location, price, and dwelling typology—with the often disregarded Indoor Environmental Quality attributes—air and daylight quality, and thermal and acoustic comfort. The data was gathered through interviews to 42 people—from Chile and New Zealand—who had recently searched for dwellings. During the interview, they answered questions about their home-searching process and were asked to describe a dwelling with a high Indoor Environmental Quality.

Respondents expressed how the attributes of location, price and dwelling typology strongly influence the initial stages of their home-searching process (and from that effect, everything that happens afterwards as well). However, respondent also expressed that later in the process—i.e. at the moment of visiting dwellings and making a choice—attributes such as the quality of the hood in the kitchen, orientation and insulation can become strong drivers of their purchase decisions. Moreover, when searchers are interested in housing attributes that they cannot easily assess, they can use other cues to infer them. For instance, the number of light fixtures and heaters in a dwelling might be indicators of its quality of daylight and warmness, respectively.

In summary, it would seem that some housing attributes considered virtually incapable of driving people's home purchasing decisions can grow in importance at the final stages, which means that they can strongly influence people's housing choice. Theoretically, this implies that dwellings that are weak in a single housing attribute utilized at the beginning of the search (e.g., if a dwelling is in a bad location) might see their chances of being purchased significantly reduced (e.g., because people will never visit it due to its location) regardless of how good they are when judged based on other attributes. In practice, however, this effect is not as radical because people's search includes an initial exploratory stage in which they have less strict searching criteria.

The results of this study suggest that more research is needed about the relevance that different housing attributes have at different stages of homebuyers' search process. Likewise, further research is required to understand the role that these often-disregard housing attributes play in people's purchase decisions. The results of this study also suggest that estimating the price or desirability of a dwelling through a mathematical function that aggregates all its attributes into a single score or value does not appropriately represent people's search behaviour. Namely, it contradicts what is evidenced by this study and what is documented in the literature: people search in stages, using different attributes at different times.

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