

Young Consumer Perceptions of Wooden Multistorey Construction

Anders Nytell

Degree project/Independent project • 30 hp Swedish University of Agricultural Sciences, SLU Faculty of Forest Sciences Department of Forest Economics Master Thesis Nr. 36 Uppsala 2022

Young Consumer perceptions of Wooden Multistorey Construction

Unga konsumenters uppfattningar om flervåningshus i trä

Anders Nytell

Supervisor:

Examiner:

Cecilia Mark-Herbert, Swedish University of Agricultural Sciences, Department of Forest Economics Anders Roos, Swedish University of Agricultural Sciences, Department of Forest Economics

Credits:	30 hp							
Level:	A2E							
Course title:	Master thesis in Forestry Science							
Course code:	EX0976							
Programme/education:	Forest Science							
Course coordinating dept:	Department of Forest Economics							
Place of publication:	Uppsala							
Year of publication:	2022							
Title of series:	Master Thesis							
Part number:	36							
Series:	Examensarbete							
Keywords:	apartment purchase, means end theory, perceptions, preferences, wooden multistorey construction bostadsrätt, flervåningshus i trä, lägenhetsköp, means end-teori, preferenser, uppfattningar							

Swedish University of Agricultural Sciences Faculty of Forest Sciences Department of Forest Economics

Summary

In a time when many institutions call for climate action, the housing shortage in Sweden continues to increase and therefore also the need for increased construction. Traditional construction methods that use concrete and steel emit large amounts of greenhouse gases and many call for better construction methods to meet the demand of more sustainable practices. Wooden multistorey construction is believed to be a sustainable alternative to traditional methods that could provide society with sustainably constructed housing that would still fulfill the demands of the modern consumer. Projects that make use of this method have already been implemented both in Sweden and globally but there is a need for more research concerning consumer perceptions, preferences, and behavior regarding the use of wood in multistorey construction, especially among the younger population.

This study aimed to explore young consumer perceptions of wood as a construction material in multistorey apartment buildings as well as perceptions and preferences for conventional apartment buildings. These findings were then used to give suggestions to improve marketing of said buildings and supplement research in the area. 21 young respondents living in Uppsala, Sweden were interviewed using a laddering technique. By using Means End Theory and Personal Value Theory, attributes, consequences, and values that influenced perceptions and preferences were identified in the group of respondents.

The results showed that price and location were the most important attributes for consumers considering a conventional apartment and that the material used in construction did not have an impact on their perception of said apartments. Respondents mainly perceived WMC-apartments as aesthetically appealing, and they connected those attributes with the value of well-being. WMC-apartments were also considered to be environmentally sustainable, an attribute many respondents connected to reducing climate impact and the value of universalism.

Keywords: apartment purchase, means end theory, perceptions, preferences, wooden multistorey construction

Sammanfattning

I en tid då både forskare och samhälle efterlyser stärkta klimatåtgärder fortsätter bostadsbristen i Sverige att öka och därmed också behovet av ökat byggande. Traditionella byggmetoder som nyttjar betong och stål släpper ut stora mängder växthusgaser och många efterlyser bättre byggmetoder för att möta kraven på mer hållbara metoder. Flervåningshus i trä tros vara ett mer hållbart alternativ till traditionella metoder och skulle kunna förse samhället med hållbart byggda bostäder som fortfarande skulle uppfylla kraven hos moderna konsumenter. Bostadsprojekt som använder sig av denna metod har redan genomförts både i Sverige och globalt men det finns ett behov av mer forskning kring konsumenternas uppfattningar, preferenser och beteenden kring trä i flervåningsbyggande, särskilt bland den yngre befolkningen.

Denna studie syftade till att utforska unga konsumenters uppfattningar om trä som byggmaterial i flervåningshus samt uppfattningar och preferenser för konventionella flerbostadshus. Dessa resultat användes sedan för att ge förslag för att förbättra marknadsföringen av nämnda byggnader och för att komplettera forskningen i området. 21 unga respondenter bosatta i Sverige intervjuades med hjälp av en laddering-teknik. Genom att använda means end-teori och personlig värdeteori identifierades attribut, konsekvenser och värderingar som påverkade respondenternas uppfattningar och preferenser gällande både konventionella

Resultaten visade att respondenterna ansåg att pris och läge var de viktigaste egenskaperna gällande konventionella lägenheter och att materialet som användes i konstruktionen inte hade någon inverkan på deras uppfattning om sagda lägenheter. Respondenterna uppfattade lägenheter i flervåningshus i trä som estetiskt tilltalande och de kopplade dessa egenskaper med värdet välbefinnande. WMC-lägenheter ansågs också vara miljömässigt hållbara, en egenskap som många respondenter kopplade till minskad klimatpåverkan och värdet universalism.

Nyckelord: bostadsrätt, flervåningshus i trä, lägenhetsköp, means end-teori, preferenser, uppfattningar

Preface

Firstly, I would like to take this opportunity to thank my advisor Cecilia Mark-Herbert for her wonderful support and patience during the work with this project. Our fruitful discussions and your insightful feedback helped me keep my head up throughout the semester. Secondly, I thank my family and friends who all supported me with love and kind words when I sometimes felt overwhelmed with work.

Anders Nytell

Table of contents

1	Introdu	ction	
	1.1	Problem	
	1.2	Aim and delimitations	
2	Theore	tical framework	
	2.1	Marketing perspectives and consumer behavior	13
	2.1	Personal value theory	
	2.2	The use of means-end chain theory	
	2.3	The relationship between theories	
3	Method	I	
	31	Approach	18
	3.1.	1 Qualitative approach	
	3.1.	2 Case study	
	3.2	Course of action	
	3.2.	1 Selection of respondents	
	3.2.	2 Data collection using the laddering technique	
	3.2.	3 Validity in development of the interview guide	
	3.2.	4 Soft and hard laddering	
	3.2.	5 Analysis of data using hierarchical value maps	
	3.3	Analysis	
	3.3.	1 Thematic coding and means end chain-analysis	
	3.3.	2 Validity in Coding	
	3.3.	3 Categorization according to Personal Value Theory	
	3.4	Ethical considerations of the study	
4	Literatu	ıre review	
5	Results	S	
	5.1	Respondent overview	
	5.2	Motivational factors of an apartment purchase decision	
	5.3	Motivational factors connected to WMC-apartments	
	5.4	Categorization according to Personal Value Theory	
6	Discus	sion	40
7	Conclu	sions	42
	7.1	Implications	
	7.2	Methodological reflection	
	7.3	Suggestions for future research	
Re	ferences		44
Ар	pendices	s	

1 Introduction

This chapter introduces the sustainability issues of construction and presents wooden multistory construction as part of the solution before presenting the problem, aim and delimitations of the study

The need for society to adopt more sustainable practices is becoming increasingly urgent. In a 2021 report, the Intergovernmental Panel on Climate Change (**IPCC**) concluded that the observed climate change in present time is unparalleled in relation to previous changes in the last hundreds of thousand years (IPCC 2021). In addition to this, the report presented scientific evidence that climate change has undoubtably been induced by human activities in the last hundreds of years.

At the same time as many researchers and institutions call for climate action, less consumption and increasingly sustainable practices, an equally urgent need for housing has risen in many parts of the world, including Sweden. Of the 290 municipalities in Sweden, 230 report that there is a shortage in residential housing in cities (Boverket 2021). This has led to a building boom and Swedish municipalities expect to see a three percent increase in housing construction in 2021 and eleven percent in 2022 (*ibid*.).

The need for new housing and the need for more sustainable practices may seem like two contradicting needs. Traditional building methods that use concrete and steel as structural materials are characterized by high emissions of greenhouse gases. Cement, one of the components in concrete, is responsible for eight percent of global CO2 emissions and the production of steel is a very energy intensive process (Ellis *et al.* 2020).

Increasing the rate of construction in a sustainable way is therefore a challenge and may seem like two contradicting needs that points to the need for sustainable alternatives to traditional construction methods. Wooden multi-storey construction (WMC) has the potential to satisfy housing demands of the modern consumer at the same time as having a less of a climate impact compared to other materials used in multi-story construction (Riala & Ilola 2014). The concept has gained interest in the construction industry and many actors on the property market are promoting WMC apartment buildings as a good choice for the environmentally conscious consumer. Actors in the construction market have already introduced WMC projects and many believe that this market development may be permanent with an increase of WMC projects being diffused into housing markets (Hurmekoski *et al.* 2015; Södra 2021). In a 2021 report, the Swedish Federation for Wood and Furniture Industry reported a 27 percent increase in produced apartments in buildings constructed with a wooden frame compared to the same period in 2020 (TMF 2021:3).

1.1 Problem

Increased use of WMC assumes an increased market demand for the product as well as for technological development. This includes a demand from all actors in the WMC value chain and importantly, potential residents who will ultimately be the ones paying for it (Hurmekoski *et al.* 2015). This requires both marketing and development of said buildings to be appealing to consumers and their behaviour. Consumer perceptions and behaviour is strongly linked to underlying motivational factors such as values, attributes and consequences, all important in the marketing process (Gutman 1982; Schwartz 2006).

Even though the concept of WMC has gained an increasing amount of attention, there is less information regarding how residents- or potential residents perceive the fact that the building is constructed out of wood. In a business environment such as the Swedish housing market, with a noticeable shortage in supply, there are uncertainties whether the material used in construction even has an influence on the decision making of the consumer. In addition to this, there are several Swedish examples of failure in the development of new residential areas where preferences, motivational factors and needs of potential buyers have not been considered in development and marketing (Lundgren & Lic 2010).

The fact that there is a part of recent history where the construction sector has disregarded consumer demands shows that more can be done in this field. Earlier studies call for more targeted research and marketing in the forestry sector in general and the housing sector in particular in order increase both consumer awareness and sales of wood-based goods (Lähtinen *et al.* 2019). The young consumer segment, born between the years 1990 and 2000, is believed to be an important target group due to their environmental consciousness and position as future policymakers and investors (Goldman Sachs 2021; Petruch & Walcher 2021). However, research has yet to uncover detailed descriptions of the perceptions of this generation when it comes to housing constructed out of wood (Petruch & Walcher 2021). A variety of studies suggest additional research in consumer preferences, perceptions, and motivational factors regarding timber- and WMC housing in order to achieve better more accurately targeted marketing in the field (Lähtinen et al. 2019, 2021).

There is an extensive amount of documented research concerning the consumer perspective in housing choices in general. Studies often focus on the issue of consumer preferences, but lack the perspective of underlying motivational factors of those preferences (Coolen & Hoekstra 2001; Lundgren & Lic 2010; Hu *et al.* 2016). The scientific community has yet to uncover detailed descriptions of motivational factors of Swedish young consumers when it comes to WMC housing. Therefore, a research gap can be identified about the underlying motivational factors of Swedish millennials concerning WMC-buildings.

1.2 Aim and delimitations

The aim of this study was to explore perceptions of WMC-apartments as well as apartments in conventional constructions (maily concrete) among young consumers in Uppsala, Sweden.

The study aims to contribute to the understanding of the perceptions and preferences of young consumers for WMC apartments.

The study attempted to fulfil the aim by answering the following research questions:

- 1. What attributes, consequences and values affect the perception of an apartment in the eyes of a young Swedish consumer?
- 2. What attributes, consequences and values affect the perception of a WMC-apartment in the eyes of a young Swedish consumer?

The study is limited to group of Swedish young consumers born between the year 1990 to 2000. All respondents were recruited from hallways of the Department of Business Administration at Uppsala University. This study concerns consumer perceptions and focuses on attitudes towards a hypothetical apartment purchase decision. It does not include an actual purchase decision of an apartment. The theoretical aspect of the study is limited to means-end theory as well as Schwartz personal value theory. The methods used in the study are limited to semi-structured interviews using soft laddering technique as well as means-end analysis and analytic methods connected to the theoretical framework of the study.

2 Theoretical framework

The chapter gives an introduction to theories within marketing and consumer behavior and continues to present personal value theory and means end chain theory

2.1 Marketing perspectives and consumer behavior

Consumer behavior and consumer decision research aims to understand why and how people make certain decisions that influences their consumption. Knowledge about the subject can help researchers, marketeers and other actors to understand different phenomena connected to consumption, which may be valuable for product development, improving communication or other marketing purposes. Historically, consumer behavior research can be traced back to the beginning of marketing. Early literature describes the "economic man" or "Homo economicus; a view of the consumer that was first introduced in the late nineteenth century (Persky 1995). The idea of economic man suggest that a consumer is fully aware and knowledgeable about all market information and is therefore able to make perfectly rational economical decisions (*ibid.*). However, this view also entails that the consumer has no emotional connection to her/his consumption and is completely disconnected from environmental, emotional, or other external consequences of consumption. Today, the view of the economic man is still used for applications such as modelling or textbook economics, but researchers have realized its deficiencies and limitations for real-world research (Tittenbrun 2013). In addition to the fact that no consumer is fully aware of all market factors, modern researchers agree that consumption is influenced by many other factors than just rationality and that real-world market dynamics cannot be explained by economical rationality alone (*ibid*).

In addition to that there are many different theoretical approaches to explaining consumer behavior in general, the goods that are being consumed also have an impact on the behavioral aspect. For example, a consumer deciding whether or not to purchase a product in the fast-moving consumer goods (FMCG)-segment generally acts spontaneous with little rational thinking (Ewerhard *et al.* 2019). On the other hand, a purchase decision regarding slow-moving consumer goods (SMCG) takes more rational thinking with a higher degree of cognitive involvement from the consumer (Ewerhard *et al.* 2019).

The choice of buying an apartment, or other types of housing, requires its own cognitive processes and considerations from the consumer. For a long time, a neo-classical economical perspective on consumer behavior in housing markets was used to explain these processes (Boelhouwer 2011). This perspective was similar to the economic man view of consumption modelling, stating that rationality and maximization of utility were the most influential factors in housing choice for private buyers and disregarding almost all emotional investment in the choice. Modern perspectives disregard economic rationality as the only factor influencing housing choice and propose the study of other factors as well to understand consumer behavior in the housing market (Andrew & Larceneux 2019). Although factors such as economic rationality and utility maximisation are still believed to have great influence in the decision

process of a consumer on the housing market, personal preferences and emotion are also believed to play a substantial role in these processes (Feitelson 1993; Andrew & Larceneux 2019). These factors in their turn, are believed to be heavily influenced by the personal values of the consumer (Lundgren & Lic 2010). Personal value theory is further developed in the next chapter.

2.2 Personal value theory

Personal value theory is used as a basis for the categorization of underlying values obtained from interviews and complements means-end (MEC) theory in the analysis of the present study. The theory was introduced by Schwartz (1992) and describes values as a way of characterizing the underlying factors of attitudes, behaviour and other cognitive phenomena. According to Schwartz, values are a representation of what "matters" for a person and act as emotional drivers for decisions and behaviour. Personal value theory organizes values into categories that together are believed to incapsulate all the most important values in all cultures around the world. The ten values can together be a way to categorize and explain what motivates a person to strive for a goal, buy a certain product or to behave in a certain way (Schwartz 1992, 2006). To explain each value-type, a short presentation based on Schwartz (1992) is provided below:

- 1. *Self-direction* Thinking independently and making choices based on own perception.
- 2. *Stimulation* Being challenged in life and striving for excitement.
- 3. *Hedonism* Gratification and personal pleasure.
- 4. Achievement Personal success according to social standards.
- 5. *Power* Control over people and resources. Status in society and prestige.
- 6. Security Safety and harmony in society and personal life.
- 7. *Conformity* Self-control over actions that may cross societal norms or harm others in a physical or psychic manner.
- 8. *Tradition* Conforming to customs provided by traditional norms or religion.
- 9. *Benevolence* Upholding and improving the welfare of the people in the inner circle (family, friends or similar).
- 10. Universalism Knowledge and protectiveness of nature and the human population.

The Schwartz core values are extensively used in behavioral science and other research disciplines that aim to understand cognitive processes and motivational factors in human behavior. The ten values are believed to be interconnected with varying strength and their

theoretical connections are directly linked to their proximity in Figure 1, where values that share borders have a stronger relationship to each other.



Figure 1. Structure of core values organized after their theoretical relationships, based on the theoretical structure of values in Schwartz personal value theory with minor modifications (1992:14).

Personal value theory is believed to be an effective framework for categorizing underlying motivational factors behind stated housing preferences and perceptions (Coolen & Hoekstra 2001). Since the value categories provided by the theory are commonly accepted by scholars and widely used in behavioural sciences as well as consumer behaviour research, they are believed to be well suited for the analysis of the present study and will help to provide validity to the results as well as putting them in to a real-world context.

2.3 The use of means-end chain theory

In order to find the cognitive relations between housing attributes consequences- and personal values of consumers, researchers have proposed a variety of theoretical models, one of which is means-end chain (MEC) theory.

MEC theory is a framework mainly used in consumer behaviour research and the theory is based on the previously explained personal value theory, and depends on the fact that values have a strong influence on human behaviour and consumption (Gutman 1982; Schwartz 2006). Gutman (1982) concluded earlier attempts of conceptualizing the link between values and was the first to present MEC theory, an approach that enables marketers to map the cognitive links between personal values and consumer behaviour, allowing for improved marketing of a

product or service by showcasing the values that can be satisfied by the consumption of said goods. Gutman (Gutman 1982:60) defines the components of "means-end" as:

Means – Goods or activities (products) *Ends* – A desired state of being for the consumer (end values)

Gutman states that knowing consumers' preferences for product attributes is not significant for marketing unless the underlying values that create these demands are known. By having knowledge of the elements in the means-end chain, and the connections between them, both marketing and consumer behaviour research can be improved.

According to Gutman (1982), there are two assumptions regarding consumer behaviour that must be accepted to make MEC theory functional. First, it is the assumption that values are fundamental for decision making, which is theoretically supported by personal value theory. The second assumption is that consumers cope with the diversity of products or services by placing them in categories or groups based on their function to narrow down the decision-making process. In addition to these two assumptions, there are two other assumptions about the broader context that must be made. These are that consumers know that their consumption has consequences and that they connect certain types of consumption with certain consequences. These assumptions can, according to the Gutman, be made even though consumers themselves would disagree with the consequences related to certain actions.

The core of MEC theory is that it allows the researcher to map the respondents cognitive structure and link the connections between product attributes, consequences of consumption and the personal values of the consumer. These three elements are known as underlying motivational factors and can be analysed through visualisation of hierarchical value maps (HVM) which represent the cognitive hierarchical relationship between the three categories of underlying motivational factors (Gutman 1982).

- Attributes are the visible or apparent properties of a product or service that affect a consumer's decision about obtaining it or not. This may refer to physical attributes or the function of the product/service (Gutman 1982).
- Consequences describe how the product or service affects the consumer or the environment around her/him (Gutman 1982; Peter & Olson 2010).
- Values are the core motivational values that affect the consumers decision. Values may be personal believes that motivates the consumer either consciously or unconsciously to make a decision (Gutman 1982; Schwartz 1992, 2006).

MEC-theory is often used for research in FMCG and a significant amount of the literature is based on that perspective. However, the theory is used in a variety of other research disciplines as well and has been adapted in research about SMCG and investment goods such as housing and land (Coolen & Hoekstra 2001; Kilwinger & van Dam 2021). For example, Lundgren and Lic (2010) conducted a study that evaluated Swedish consumers preferences and motivational factors regarding residential areas and aimed to explore how this could be used in residential

development. The authors used MEC-theory and the laddering interview technique to collect and analyse data. Hu, Geertman and Hooimejier (2016) compared two groups of home-buyers and used MEC-theory to investigate whether personal values were motivational factors that influenced the decision of buying sustainable housing. Coolen and Hoekstra (2001) performed a pilot study with ten respondents and used means end theory to investigate stated preferences for housing. The main goal of the study was to evaluate the theory for application in research about housing preferences. The authors concluded that the theory is feasible for evaluation of motivational factors for stated preferences and recommend the use of MEC-theory for research regarding motivational factors for housing attributes. Given the research questions and aim of this study as well as the previous uses of means-end theory in consumer research it was believed to be a relevant theory to frame this study.

2.4 The relationship between theories

Personal value theory and MEC-theory are intimately connected and where therefore chosen to together form the theoretical framework of this study. The theories provided support for one another in the analysis of the of data as personal value theory was used for interpreting the elicited values, which are arguably the most abstract part of MEC-theory.

3 Method

The chapter introduces the qualitative approach as well the laddering technique and analysis and ethical considerations of the study.

3.1 Approach

3.1.1 Qualitative approach

The aim of the study is to find expressive details regarding underlying motivational factors of the respondents. The study is therefore concerned with words and context rather than numbers, which makes the qualitative approach appropriate for the initial part of the study (Bryman & Bell 2011; Robson & McCartan 2016). However, the theoretical framework of MEC calls for a certain degree of quantitative analysis and parts of the results are quantitively interpreted when HVMs are developed of individual ladders. The present study may therefore be considered a mixed-methods approach, where a qualitative approach is combined with a quantitative approach.

3.1.2 Case study

Yin (2014) describes the reason for choosing the case study method as a need that "..arises out of the desire to understand a complex phenomenon". The method may be used for understanding contemporary events in real-world circumstances (Yin 2014). As with all research, the author stresses the importance of describing the phenomena and the unit of analysis since both these factors may affect the results. Case studies are also recommended when there is a need for adjustability since the way of conducting the study may not be initially apparent and their might be a need of adjustments along the way (Robson & McCartan 2016).

The present study attempts to find underlying motivational factors of young millennial consumers when considering a WMC apartment. The phenomenon of the study is consumer perceptions of apartments in the housing market in the context of WMC marketing and underlying motivational factors as a basis for housing perceptions.

3.2 Course of action

3.2.1 Selection of respondents

Convenience sampling was used to recruit respondents for the study. Convenience sampling is a common sampling method in business research and is widely used due to its practicality (Bryman & Bell 2011). The method makes use of the resources directly available to the researcher, which may be students at the university which she/he attends, staff on her/his workplace or just a crowd of people located conveniently to the researcher (Taherdoost 2016). Although the method is commonly used in consumer behavior research as well as other research areas, it has a notable inability to produce generalizable results (Bryman & Bell 2011; Sarstedt

et al. 2017). Generalizability may in some cases be possible to obtain through *ex-post* sample adjustments, but this was not necessary in the present study since the aim was not to produce generalizable results, but rather highlight details and apply theory to a certain case (Sarstedt et al. 2017).

The respondents chosen for the study were young Swedish young consumers born between 1990 and 2000 and living in Uppsala. Following the Austrian example of Petruch and Walruch (2021) who interviewed young millennial Austrians as respondents for a similar study, the consumers born between 1990 and 2000 are an important age group to study in the context of marketing of wooden housing and consumer housing preferences. The age group is believed to be an important demographic due to their environmental consciousness and position as future policymakers and investors (Lähtinen *et al.* 2019; Goldman Sachs 2021; Petruch & Walcher 2021). Since the criteria for respondents were that they had to be in the right age span and live in Uppsala, Sweden, the sample was taken by recruiting respondents in the hallways of the Department of Business Administration (Ekonomikum) at Uppsala University, which was also used as the daily office of the author. Potential respondents were asked to participate in the interviews either directly on site, or a later appointment was scheduled. As is further explained in chapter 3.2.2, it was vital for the validity of the study that the interview setting was as comfortable as possible for the respondents. For this reason, physical on-site interviews where applied, a method recommended for creating a relaxed atmosphere (Robson & McCartan 2016).

A sample size of 20-25 respondents is generally considered sufficient to ensure validity in the results of laddering interviews (Borgardt 2020). At that point, information saturation is usually reached, and few or no new insights are provided from interviews. It is often suggested to stop the interview process if the point of information saturation is reached early (Dworkin 2012; Borgardt 2020). For this reason, the sampling in the present study followed a process where respondents were recruited one after another until the researcher assessed that the saturation point had been reached. The saturation point was assessed to have been reached after 21 interviews, which was expected considering previous literature. The date for each of the interviews can be seen in figure 1.

	Respondent																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Date																					
17-nov																					
19-nov																					
22-nov																					
23-nov																					
24-nov																					
25-nov																					
29-nov																					
30-nov																					
02-dec																					
06-dec																					
09-dec																					
13-dec																					
14-dec																					

Figure 2. Date of each interview paired with the assigned number for each respondent.

As seen in figure 1, interviews were carried out in the months of November and December 2021 and between one to three interviews were held per day. The interviews lasted for an average of 21 minutes Only the days when interviews were carried out are included in the figure.

3.2.2 Data collection using the laddering technique

Gathering information directly from potential consumers is often necessary when trying to measure or conduct research on behavior regarding housing preferences or underlying motives (Feitelson 1993). Therefore, in- depth interviews were considered appropriate for the present study. As is common when using MEC-theory, a laddering interview technique was adapted. The laddering technique is commonly used together with MEC theory to allow for in-depth one-on-one interviews where the researcher can estimate stated cognitive structures of respondents in the a decision-making process (Reynolds & Gutman 1988; Grunert & Grunert 1995). This allows the researcher to uncover the respondent's linkage between the constructs that are attributes, consequences and values when considering a purchase or investment. Laddering can be applied to both real-life and hypothetical scenarios or products (Kilwinger & van Dam 2021).

The laddering interview technique involves asking follow-up questions connected to the attributes that have been elicited by the respondents. This is done to probe for the linkage between attributes, consequences and values and encourage the respondent to reflect about the subject in depth. This makes it possible to map the respondents cognitive structures in HVMs

which are commonly used alongside MEC to aggregate- and make interview data presentable (Reynolds & Gutman 1988; Grunert & Grunert 1995). Grunert and Grunert (1995) propose four criteria of validity that should be fulfilled when using laddering to map the cognitive structures of respondents in a MEC perspective. The four criteria are have, since their publication, been widely used by scholars to ensure validity for laddering interviews where the goal is to map the cognitive structure of respondents (Lundgren & Lic 2010). The four criteria and the procedures taken to ensure validity in the present study are presented in Table 1.

Criterion for validity by Grunert and Grunert (Grunert & Grunert 1995)	Procedures taken to ensure validity in the project					
"The collected data should not be a result of the researcher's cognitive structure and processes, but rather be the result of the respondent's cognitive structure and processes"	Respondents generated the entry points for the interviews themselves.					
"Data collection should only use processes that are common for the targeted situation"	The pictures used for informing of WMC were taken from real apartment offers. Interview questions relevant for a purchase decision were used in interviews.					
"Coding should be based on common cognitive categories shared by consumers and previous research and should not be based on the cognitive structures of the researcher"	Categories from MEC-theory and personal value theory were used in coding.					
"The algorithm used for data reduction should be based on relevant theories"	Analysis is made in the commonly used software LadderUX which uses relevant algorithms for data reduction.					

Table 1. Criteria for validity adapted from Grunert and Grunert (1995, 212-213) put in the own words of the author. Also, procedures to ensure validity in the present study are included in the table

As presented in Table 1, multiple steps were taken to ensure that the four criteria for validity were fulfilled. The respondents were encouraged to elicit the attributes of an apartment that makes it attractive to them. This helped to fulfil the first criterion since the respondents elicited the entry points for the interview themselves with very little interference. Since respondents were not expected to have a large amount of knowledge about WMC, they then were shown images taken from real WMC apartment offers. Visual aids are known for helping to produce interview results with a higher degree of richness if the subject of the interview is unknown to the respondent (Glaw *et al.* 2017).

After the short briefing of WMC, the respondents were asked to elicit what *attributes* that mattered to them. The attributes were used as entry points and consequences and values were uncovered through the following laddering interviews. To ensure the validity of the interviews,

the entry points (attributes) for the laddering interviews were generated by the respondents' answers in the first steps of the interview. This is one step to minimize issues that are explained in the first criteria presented in Table 1 (p.21). Influence and disruptions from the researcher is therefore reduced, which could otherwise result in unnecessary researcher bias (Grunert & Grunert 1995). Furthermore, allowing the respondents to freely elicit attributes in the second step is preferred when the studied object is of an abstract nature, as is the case in the present study (Costa *et al.* 2004). The images used in the interview could not be included in the published version of the study due to copyright reasons, however readers are encouraged to contact the author for more information. The interview guide is presented in Appendix 1.

3.2.3 Validity in development of the interview guide

Grunert and Grunert (1995) have developed further procedures that can improve validity in laddering interviews that are more specific to the kind of questions that are asked. The interview guide was constructed to collect data that answered the research questions and allowed for collection of background information about the respondents. All steps had a purpose in collecting the data needed to construct the means end chains of the respondents. Table 2 provides an explanation for how each step helped to fulfill these requirements. The table also includes what procedures were taken in each step to ensure the validity of the interviews.

Part of interview	Purpose of part to fulfill MEC	Research question (RQ) answered	Procedures taken to ensure validity according to Grunert & Grunert (1995)
1 Introduction	Create a relaxed atmosphere and give a brief introduction	-	Making sure the respondent feels comfortable and informing them of the process. Collecting background information from the respondents.
2 Eliciting of attributes of apartments	Eliciting attributes that are considered important by the respondent	-	Respondents are asked to elicit attributes freely, without interference from interviewer
3 Laddering	Probe for underlying motivational factors connected to attributes	What attributes, consequences and values affect the perception of an apartment in the eyes of a young Swedish consumer?	Respondents are asked open questions that does not reflect the cognitive structure of the researcher
4 Eliciting attributes of wood as a construction	Explore if and why wood influences the attractiveness of the offer	What attributes, consequences and values affect the perception of a WMC- apartment in the eyes of a young Swedish consumer?	Respondents are asked open questions that does not reflect the cognitive structure of the researcher
material and laddering of said attributes			Images used are taken from real apartment offers.

Table 2. Steps of the interviews and how each step fulfills the requirements for means end theory, research questions and taken procedures for validity for each step

The interview guide which resulted from the procedures in table 2 is added as an appendix to the study. The research questions as well as the procedures to ensure validity developed by Grunert and Grunert (Grunert & Grunert 1995) were given special attention to ensure validity and ability to use the interview guide to produce relevant data.

3.2.4 Soft and hard laddering

Soft- and hard laddering are two approaches of the laddering interview technique which can be distinguished in the field of MEC methodology. Soft laddering allows the respondent to speak fluently around the questions while hard laddering is a stricter technique which requires the respondents to provide their answers strictly in line with the question and in a way that showcases the levels of abstraction that are the essence of the interview (Grunert & Grunert 1995). The first technique requires a trained interviewer while the other can be carried out by any person with access to the questionnaire. Hard laddering is generally recommended for studies with a more quantitative approach and with large sample sizes, but the technique requires the interview to strictly follow the questionnaire and limits the possibilities to talk freely and may make the respondent feel uncomfortable due to the repetitive nature of laddering. Hard laddering is therefore not recommended for studies where the respondents may be unfamiliar with the research subject.

Since the interviews in this study aimed to map cognitive structures and uncover motivational factors of the respondents in a scenario which she/he may be unfamiliar with, the interviews in this study were carried out in accordance with the soft laddering technique. Soft laddering is preferred when the study is of an exploratory nature, vague answers are expected from the respondents and the study uses a small sample size (n<50) (Grunert & Grunert 1995; Costa *et al. 2004*).

3.2.5 Analysis of data using hierarchical value maps

Results from the laddering interviews were organized in Hierarchical Value Maps (HVMs), that were produced using LadderUX. The HVMs clearly present the underlying motivational factors that has been mentioned by the respondent. By placing the factors hierarchically and coding them after attributes, consequences and values, the theoretical cognitive structure of the respondent is easily readable and provides a practical structure for the analysis. To make the concept easier to understand for the reader, Figure 3 provides a simplified example of a HVM where the attribute *WMC-construction* was the starting point of the laddering interview.



Figure 3. Example of HVM-map where attributes (A), consequences (C) and values (V) are shown in green, blue and red.

As seen in Figure 3, the starting point *WMC-construction* is the subject of the probing in the laddering interview. Through repeated questions, with ambitions to catch expressed attributes, consequences and values in a coding procedure and put these data in the HVM. This is only a very simplified version of an HVM and the end results of this study are far more complex. The elicited consequences are commonly divided into psychosocial- and functional consequences and ladders from all the respondents in the sample are aggregated in order to find common linkages across the sample. This produces HVMs of higher complexity but with richer results.

3.3 Analysis

A common difficulty in qualitative research is how to handle the large amount of data that is collected (Bryman & Bell 2011:571). This problem is mainly due to the kind of data collection methods that are used. Interviews, field notes and documents are some of the most common methods and they can all generate vast amounts of data in the form of words, where the context of what is being said is often the area of interest for the researcher (Bryman & Bell 2011:571). This of course, can be an advantage due to the rich and nuanced nature of such data, but it presents a problem in the stage of analysis (Robson & McCartan 2016:459). How do we analyse words and context in a way that gives validity to the study, when quantitative methods are not available? Bryman and Bell (2011) argue that the well-established rules for codification and analysis that are necessary in the quantitative field are not as desirable in qualitative researcher. However, the authors suggest that a set of basic guidelines regarding analysis can be adopted rather than strict rules. Several methods to analyse qualitative data can be found in contemporary research with one of the more common ones being thematic coding analysis (Kuckartz 2014).

Thematic qualitative text analysis is widely used within the business research field (Bryman & Bell 2011; Kuckartz 2014:69). Robson and McCartan (2016) states that it can be used for either solely explanatory and descriptive purposes, or in combination with a theoretical framework, as is done in the present study. The authors conclude that thematic coding analysis can be useful in many different types of qualitative studies but emphasizes that it requires the researcher to be transparent and explanatory for every part of the analytic process. The method allows the researcher to categorize data in themes or codes and later analysis can be based on these themes instead of answers from individual respondents (Robson & McCartan 2016).

3.3.1 Thematic coding and means end chain-analysis

The analysis in this study followed the example of Grunert and Grunert, Reynolds and Gutman as well as Killwinger and van Dam (1988; 1995; 2021) who all propose a similar three step process when analysing data collected through laddering interviews and with MEC as a theoretical approach. In the first step, the data from the laddering interviews was coded using thematic qualitative text analysis following the example of Kuckartz (2014:71–80; Robson & McCartan 2016).

The thematic analysis began with establishing main categories for coding. These categories should directly reflect the research questions and/or aim of the study (Kuckartz 2014:72). Since the aim of the study was to find attributes, consequences and values of the respondents, these constructs were chosen as main categories. The interview questions were a direct representation of the research questions described in the first chapter and served as an initial structure to the vast amount of data that had been collected and was used to structure the written part of the analysis in the report (Kuckartz 2014:73). The entirety of the data set was categorized in this stage and this categorisation served as a basis for further coding as well as for the later MEC-steps of the analysis.

In the next step, sub-categories were created for each main category. These categories were developed inductively by the researcher with the purpose of reconstructing and grouping the meanings of what was being said by the respondents into categories (Grunert & Grunert 1995). The sub-categories had to be broad enough to not leave out anything important in the data at the same time as they could not be so broad that they lost to much meaning or details (Reynolds & Gutman 1988; Kuckartz 2014:72). Both the coded main- and sub-categories along with their definitions were compiled in a coding table and cross-checked by another researcher to improve the validity of the study as well as to help find any errors made by the researcher (Reynolds & Gutman 1988).

After coding was done, the coded constructs were analysed in the software Ladder UX. This allowed linkages between codes across the sample to be aggregated in an implication matrix. The implication matrix allowed the codes to be linked across different respondents whose constructs translated to the same coded category. In the last step, aggregated constructs were rendered into HVMs using the same software. This allowed the researcher as well as the reader

to see the linkages between the coded constructs visualized across all respondents. In this step, redundant linkages were removed from the analysis to make the HVMs more readable and allowing for a presentation of the dominant MECs with relevance for the aim of the study. The selection of which linkages were redundant was made by choosing an appropriate cut-of value. This value describes how many respondents that have elicited similar links between constructs. Reynolds and Gutman (1988) propose that different cut-off values should be tested in order to find the one that creates the most comprehensive, yet readable HVM. This decision is made by the researcher and in the present study, a cut-off level of 2 was found to produce an HVM which had the best balance between readability and accurate representation of data. In addition to the HVM with the cut-off value of 3, an aggregated HVM with the cut-off value of 0 was also constructed and is provided in the appendix.

3.3.2 Validity in Coding

As previously stated, qualitative analysis requires the researcher to be transparent in the analytic process, but it is also of the outmost importance to take precaution for the flaws and biases that is involved when the researcher is the interpreter of data. This can partly be done through using well documented and systematic approaches but it is important to have in mind that these deficiencies can never be completely eradicated due to the need for human interpretation of data in qualitative research (Robson & McCartan 2016). In order to improve validity when coding data collected through laddering interviews Grunert and Grunert (1995) propose that initial coding should be done in accordance with the widely accepted cognitive categories that are attributes, consequences and values which are commonly used in consumer research using MEC and laddering technique (Reynolds & Gutman 1988). The process of the coding where sub-categories was developed presented the biggest risk of influencing the results with the cognitive structures of the researcher. This threat was counteracted by cross-checking the coding table with another researcher as well as reading the transcript multiple times to not misinterpret anything.

Coding is the part of the laddering approach where the cognitive structures of the researcher are the most influential and it therefore presents a threat to the validity of the study if it is not addressed (Grunert & Grunert 1995). As seen in Table 1, a solution to this problem is to use widely shared cognitive categories, which in this study were attributes, consequences and values as is common in MEC theory with the laddering approach. Placing interview constructs into these categories required the researcher to be aware of the full context of what is being said by the respondent. Otherwise, constructs could easily be misinterpreted and wrongly categorized (Kuckartz 2014:74). To prevent misinterpretation, the choice of using in-depth interviews combined with the soft laddering technique was vital for the validity of this study. This allowed the researcher to understand the context of what was being said and made followup questions possible if it was hard to understand the context. Recording and transcribing the interviews, also had a positive impact on the validity since it was possible to go back and listen or read the material again to interpret what was being said and place constructs in the correct categories (Grunert & Grunert 1995). Validity in coding was further strengthened by crosschecking the coding table with another researcher, which is often recommended when coding laddering interviews (Grunert & Grunert 1995; Borgardt 2020)

3.3.3 Categorization according to Personal Value Theory

In addition to the analytic steps described above, the end-values obtained from the HVMs were categorized according to the ten values described in personal value theory. The results from this process allowed for the collected data to be discussed from another theoretical perspective and put it into a real-world context.

3.4 Ethical considerations of the study

Ethical aspects are important to consider in all research, especially in qualitative research where the process involves people and their opinions. To make sure that the study was conducted with ethical consideration, informed consent was applied. All respondents were informed of the aim and purpose of the study, as well as in what way their information would be used to fulfil these objectives. The respondents were then informed that participation was voluntary and anonymous and that they could withdraw their consent at any time, in which case the interview would be stopped, and their data deleted.

4 Literature review

The chapter provides a background for the study and presents an overview of existing literature.

The literature review is focused on previous research about consumer perceptions in the housing market with emphasis towards WMC-buildings as well as wooden construction in general. Literature was obtained through databases and search engines such as SLU Primo, Research Gate, Web of Science and Google Scholar. The search was conducted through using specific key words and search phrases such as "wooden multi-storey construction", "factors influencing housing purchase", "consumer behaviour in the housing market", "underlying motivational factors" "values in housing choice" and "perceptions of wooden multi-storey construction". The most relevant literature for this study is summarized in Table 3. A detailed review of those articles, as well as other relevant literature is found below Table 3.

Authors	Aim	Conclusions
Lähtinen et al. (2021)	Understand Nordic consumers' linkages between housing values and likelihood of prejudice towards wooden budlings	More customized information of wooden housing is needed to increase supply of wooden homes and enhance the positive perception among consumers.
Petruch and Walcher (2021)	Explore the attitudes towards timber construction among young millennials in Austria	Timber construction was described positively among most respondents, but doubts were expressed regarding the sourcing of the wood used in construction
Karjalainen and Ilgin (2021)	Examine the change over time in attitudes towards WMC among Finish residents in WMC buildings	Residents' attitudes regarding, eco- friendliness, aesthetics and fire safety remained positive over time but concerns regarding sound isolation were also consistent
Lähtinen <i>et al</i> . (2019)	Produce a comprehension of consumer perceptions regarding living in modern timber houses, and prejudices about wood	One group of consumers who appreciated the ecological benefits of wood and one who appreciated the aesthetics of wood were identified and consumer perceptions of wood differed depending on their previous knowledge of the material
Mark Herbert <i>et al.</i> (2019)	Book-chapter explaining consumer perspectives of WMC- housing in Växjö, Sweden.	More information of consumer perspectives is needed to improve communication of environmental benefits in WMC-construction.
Larasatie <i>et al</i> . (2018)	Explore public knowledge and opinions regarding WMC in the northwest United states	Low knowledge regarding wooden multi storey construction but the concept was generally considered aesthetically pleasing and eco-friendly however also dangerous in terms of fire safety and requiring more maintenance than other materials.
Hoibo, <i>et al</i> . (2015)	Develop an understanding of material preferences in relation to environmental attitudes and knowledge of wood	Respondents generally preferred other materials than wood. Young people with strong environmental engagement are the most positive towards wood
Gold and Rubik (2009)	Explore the perception of timber construction among the German population	Timber was perceived as aesthetically pleasing, eco-friendly and is connected to the value of well-being but there were concerns regarding fire-resistance and durability

Table 3. Summary of the most relevant articles for the present study including authors, aim and main conclusions in chronological order after publication year

Buying any form of housing is generally considered a very rational action, much different to the fast-paced and emotional driven action of buying fast moving consumer goods (FMCG). The process of a housing purchase is more similar to that of investment-goods, where both

rationality and value-maximisation play an important role in the decision. Price and location are two factors that are often considered to have the highest impact on the decision process of an apartment purchase. Zalejska-Johnson (2013), who surveyed 733 Swedes about the determinant factors of their apartment purchase, found that energy and environmental factors of apartments had minor impact on purchase decision, while price and location were the most influential factors. Furthermore, the results showed that consumers were often sceptical towards environmental-profiled buildings since such factors are not directly observable, while factors such as price and location, are. Even though rational factors still do have the highest impact on most apartment purchase decisions, studies have found that emotion and personal values still do have influence on a consumer that is making this decision. Andrew and Larceneux (2019) found that emotion and values did have noticeable impact on apartment purchases in France, even though utilitarian factors were still the most important.

Factors influencing apartment purchase can be concluded to be a widely studied area and emotions or values do have an influence, although less than utilitarian factors. However, these subjects have not been as widely covered in the WMC-apartment area and the rest of the review is therefore focused on consumer perceptions and determinant factors of wooden housing in general and is not limited to the WMC context.

Consumer perceptions of wood as a construction material have been widely studied but this review found that it is hard to find generalizable results on the subject. Lähtinen et. al (2019) found that concerns regarding the safety properties of the material may have a negative impact on willingness to live in a WMC-apartment. However, the authors also found that consumers that were well-educated about wooden materials generally had a more positive perception of living in a WMC-apartment than respondents with a lower degree of knowledge of the subject. Varied results were also obtained by Hoibo, et. al (2015) who analyzed data from a questionnaire sent out to a random sample of 503 residents in the Oslo urban area with the aim of understanding preferences of materials in apartment buildings with a special focus on timber. The authors found that most respondents preferred concrete instead of wood for structural purposes. In the discussion, the authors note that this result was expected since previous studies show that traditional materials are usually preferred by consumers. However, younger respondents with an environmental interest were more positive towards timber as a structural element in apartment buildings. Furthermore, the study found that the respondents had a negative perception of wood as a cladding material, but they also preferred bricks over the traditional material metal sheeting, which lead to the conclusion that other factors than tradition must have an impact on preferences. Similar to the study by Lähtinen et. al (2019), they also found that respondents with a low knowledge of wood as a building material had negative perceptions of the durability while respondents with a higher level of knowledge had a more positive perception of durability. However, the general level of knowledge regarding wood as a building material was found to be low, which was believed to influence preference.

Public knowledge of wood as a building material is recurringly found to be low in present research about consumer attitudes and perception. Larasatie *et. al* (2018) surveyed 502 Americans living in northern states and found that only 19 percent had knowledge about

WMC buildings. Still, most respondents were generally positive towards aesthetic and environmental properties of the material.

Gold and Rubik (2009) performed a representative study among the German population to investigate the attitudes concerning timber as construction material for general housing. The study found that respondents generally had a negative attitude regarding the durability and safety of wood as a construction material. However, they were generally positive towards the aesthetics and features of well-being of wood. Sustainability factors did not have much influence on attitudes except for when respondents were educated about the subject. Therefore, the authors suggest that marketing of wooden housing focus on other benefits than sustainability. The study highlights the respondents' attitudes regarding wood as a building material but does not investigate underlying motivational factors.

Karjalainen and Ilgin (2021) compared surveys over time among Finnish residents in WMCbuildings. The respondents were surveyed about their perceptions of living in a WMCapartment and how it was different to living in a traditional building. The questions were not exclusively linked to the aspect of wood as a building material but covered other aspect too. It was concluded that respondents were generally satisfied with the aesthetics and architecture of their housing over time. Most respondents believed wood to be a durable building material and perceived it to be superior to stone in terms of appearance and indoor climate. However, stone was perceived to be a longer lasting material and stone houses to have a longer lasting value than timber houses. The biggest issues of wood were concluded to be the inadequate sound isolation between floors. The authors believe that the positive perceptions of wood as a building material may be linked to the strong tradition of wooden construction in Finland but give no further explanations of underlying motivational factors.

Petruch and Walcher (2021) investigated Austrian young millennials perception of timber housing and attempt to find a way to divide this sample into categories based on both their perception of timber housing and the forest-based sector. The authors performed a representative online survey targeting Austrians born between the years 1990 and 2000. The results showed that the targeted group generally had a positive attitude towards timber housing. The four most mentioned advantages of timber housing were "sustainable", "beautiful", "natural" and "healthy".

5 Results

The chapter presents the analysis and results by using means end-theory and personal value theory.

5.1 Respondent overview

A total number of 21 interviews were carried out. The average birth year of respondents was 1997 and all respondents stated that they were students at Uppsala University. When asked if a wooden construction would affect a hypothetical purchase decision, three of the respondents answered that it would and 16 that it would not. The remaining two had no opinion in the matter.

5.2 Motivational factors of an apartment purchase decision

The coding process resulted in nine attribute codes, seventeen codes for functional consequences, four codes for phyco-social consequences and four end values. The total number of ladders produced were 49. The HVM provided in Figure 3 has a cut-off value of two, which was assessed to produce the most comprehensive yet readable HVM.

The aggregated HVM seen in Figure 4 can be interpreted as the simplified cognitive process of the respondents when being asked to consider the first research question. The HVM should be interpreted from the bottom up, by starting with the attributes and following the links to the corresponding consequences and thereafter values. This allows for independent analysis of each ladder, which is important since the linkage between the elements in the ladders is the most explanatory part of an HVM. The number shown after each construct is the total number of times it was mentioned during the whole interview process.



Figure 4. Hierarchical value map with cut-off value 2 (own illustration based on analysis in LadderUX).

As the cut-off value of two was applied to the coded data, a total number of eight attributes emerged as the most mentioned by the respondents. As seen in Figure 4, these were *Practicality*, *Size, Floor layout, Location, Appealing interior, Balcony, Price* and *Good investment*. These attributes can be seen as a representative collection of the attributes that where most frequently elicited by the respondents when responding to the first research question. As the HVM should be interpreted from the bottom up, the analysis follows the same structure, starting with each attribute then follows the links to the corresponding consequences and thereafter values.

The number of times an attribute was mentioned by respondents can be interpreted as an indication of its importance to the studied group of respondents when considering an apartment purchase. The two most prominent attributes were *Price* and *Location*, both mentioned sixteen times each during the interviews. *Price* was often mentioned in the context of the apartment being affordable or having a low monthly rent along with the desire of acquiring it at a fair market value. The consequences mentioned in the same ladder as *Price* were *Getting a loan*, *Being able to afford it* and *Saving money* where the first two connected to the value *Safety* and the third connected to the value *Advancement*. The attribute *Price* may be seen as related to the apartment. However, the latter was mentioned more prominently in the context of the apartment being a profitable investment rather than being bought at a fair price. *Good investment* is connected only to the consequence *Making profit* which is connected to the value *Advancement*.

Location was mentioned in the context of the respondents valuing the area where the apartment was situated which entailed the consequences *Short commute, Familiar area, Liking the area,*

Living in a nice area, Living central and *Feeling at home*. It can be noticed that all consequences except *Living central* are mentioned in ladders that end at the value *Well-being*, which is also the most common value category, mentioned 30 times during the interviews.

Mentioned seven times, *Balcony* was the third most mentioned attribute. Respondents indicated that having a balcony was of great importance to them and linked to the consequence *Being able to sit outside* which in its turn linked to the values of *Freedom* and *Well-being*.

Both mentioned five times, *Appealing interior* and *Practicality* were the fourth most mentioned attributes. *Appealing interior* was often mentioned in terms of the apartment being built with beautiful materials, wooden floors or having a freshly renovated bathroom. The consequence linked to *Appealing interior* was *Feeling at home* followed by the value Well-being. The mentioned context of *Appealing interior* was similar to the attribute *Floor layout*, mentioned three times, but the latter was more focused on structural aspects of the apartment such as the number of windows or ceiling height and linked to the consequences *Lots of sunlight* and *Enjoying living there*. The least mentioned attribute was *Size* which was only mentioned two times by respondents.

5.3 Motivational factors connected to WMC-apartments

The second part of the interviews addressed the subject of WMC-apartments. After giving a brief introduction to the concept and showing example pictures of WMC-buildings the respondents were asked if they thought WMC-construction would affect a hypothetical apartment purchase. After this, the laddering technique was once again applied with the goal of eliciting attributes, consequences and values that the respondents considered attractive, or unattractive, when hypothetically considering a WMC-apartment. The cut-off value two was once again applied since it was considered to produce a comprehensive, yet readable, HVM which can be seen in Figure 5. Just as described in chapter 5.2, the HVM is analyzed from the



Figure 5. Hierarchical value map with cut-off value 2 (own illustration based on analysis in LadderUX):

bottom up, starting with the attribute categories and following the links to consequences and thereafter values.

When analyzing the HVM in Figure 5 two most mentioned attributes were *Appealing interior* and *Appealing exterior*, both mentioned 7 times during the interviews. *Appealing interior* was mentioned in the context of wood being an appealing material for indoor use and that wooden floors, walls and decorative features were positive attributes. *Appealing exterior*, on the other hand, was mentioned in the context of wood being perceived as an appealing material for exterior cladding or visible structural components. Both attributes were linked to the consequence *Enjoying living there* which was also the single most mentioned consequence during the interviews, mentioned seven times. *Appealing exterior* was also linked to the consequence *Feels good to come home to*, often mentioned in terms of the respondents appreciating to come home to an appealing building when they had been away. Both attributes were linked to the value *Well-being* through their previously mentioned consequences. *Appealing exterior* was also directly linked to the value *Pride* four times, for which the respondents implied that they felt a sense of pride in the thought of living in a building they considered appealing from the outside.

Environmental sustainability was an attribute that was mentioned six times, often in the context of the respondents believing that WMC-construction would have advantages in terms of being less carbon intensive than other materials or just simply being "good for the environment". The attribute was mostly linked to the consequence *Reduce climate impact*, which implied that those respondents thought that a wooden construction would reduce the impact that their housing would have on the climate. The ladder was most commonly linked to the value category

Universalism, which was chosen when the respondents implied that they thought the consequence linked to protectiveness of nature or other human beings. One respondent mentioned Universalism in terms of:

"Make sure that future generations have a good climate to live in."

Two respondents also mentioned the attribute *Origin of wood resource* for which they both implied that wooden construction is positive if the resource used came from Swedish forests but negative if it comes from other sources. The attribute was often linked to the consequence *Reduce climate impact*, which in turn linked to the value *Universalism*. One of the respondents stated that:

"I would not want my apartment to be built out of wood from Brazilian rainforests."

Another attribute related to the properties of wood that was mentioned six times was *Natural Material*. The respondents expressed this attribute in terms of believing that wood is more natural than other materials. The linked consequences of this attribute were *Enjoying living there* as well as *Healthy indoor climate*. The latter was mentioned three times and in terms of wood having health benefits for the indoor climate by improving air quality or having fewer toxic substances than other materials. Both consequences linked to the value *Well-being*.

In terms of negative attributes mentioned by the respondents', *Unappealing interior* was the most prominent as it was mentioned five times during interviews. Respondents implied that that they did not find wood as an indoor material appealing, stating that it felt old fashioned or that they preferred other surface materials for indoor use. It was unclear whether the respondents knew that other surface materials than wood could be used for indoor materials in a WMC apartment. The attribute was linked four times to the consequence *Disliking living there* for which the respondents expressed that they would not like to live in a WMC-apartment due to them finding the interior unappealing. The ladder ends in the value *Well-being* for which some respondents stated that the indoor aesthetics of an apartment was important for them to feel well in their living situation.

Fire safety was another negative attribute, mentioned four times during the interviews. All mentioning were expressed in terms of wood having a low degree of fire safety and some respondents felt like they would be hesitant of living in a building constructed of wood for this reason. One respondent stated that:

"I think a lot about fire safety and I would not be comfortable living in a wooden building because of that, especially if the apartment would be located on a floor high up."

All four times the attribute *Fire safety* was mentioned, it was linked to the consequence *Health threat* and three times linked to *Worrying*, implying that the respondents thought the perceived low fire safety of WMC buildings would make them worried and pose a threat to their health.

The end value of the ladder was *Safety* for which the respondents expressed that safety was important to them when considering an apartment.

Expensive and *Durability* were two other negative attributes, both mentioned three times each by respondents. The first attribute was mentioned in relation to that respondents perceived WMC apartments to be more expensive compared to apartments located in other types of buildings. The attribute was directly linked to the value *Safety* since the respondents stated that buying an apartment of high price would affect their economic situation in a negative way, hence the safety of their lifestyle. *Durability* was mentioned in terms of wood being perceived as a weak material to build multi-story buildings out of. Two respondents linked it to the consequence *Weak structural properties*, one stated that:

"I would be worried that such a high building made out of wood would collapse."

5.4 Categorization according to personal value theory

As described in chapter 2.2, all values that influence human behavior and perceptions can be categorized according to the ten value-types developed within personal value theory (Schwartz 2006). The present study found four end-values for each area of interest, where *Well-being*, *Freedom*, *Safety* and *Advancement* were identified in the HMV in Figure 4 and *Well-Being*, *Pride*, *Universalism* and *Safety* in the HVM in Figure 5. The identified end-values along with their corresponding value-type are presented in Table 4.

End value	Figure	Value type
Well-being	4, 5	Hedonism
Freedom	4	Hedonism
Safety	4, 5	Security
Advancement	4	Achievement
Pride	5	Achievement
Universalism	5	Universalism

Table 4. Identified end-values categorized after value types in Schwartz personal value theory

As presented in table 4, both the end-values of *Well-being* and *Freedom* were categorized as being of the value-type Hedonism. Hedonism describes the strive for gratification and personal pleasure *(ibid.)* and both *Well-being* and *Freedom* were often described in the context of pleasure, such as a balcony making it possible to gain pleasure by sitting outside, or that the location of an apartment could increase pleasure since it could be located in a nice area. Since the end-value Well-being was identified in both HVMs, Hedonism may influence perceptions of both WMC-apartments and apartments without a specified construction material.

Another end-value that was identified in both HVMs was *Safety*. In the context of apartments without a specified construction material, it was often mentioned in relation to financial security while in the case of WMC-apartments, it was mentioned in relation to worrying about fire-safety or durability of said buildings. However, both end-values can be categorized as the value type Security, since it concerns safety and harmony in personal life (Schwartz 2006).

Both the end-value *Advancement* and *Pride* are categorized as the value type Achievement, which describes the strive for personal success according to societal standards (Schwartz 2006). *Advancement* was mentioned by the respondents in the context of financial success, and that they could make a profit if an apartment was a good investment while *Pride* was considered the underlying value that motivated a strive for an apartment with an appealing exterior. Both end-values can be considered to be related to the strive for personal success.

The end-value *Universalism* is already categorized since the value can also be found as a value-type in personal value theory. The choice of using Universalism as code in the analysis in chapter 5.3 was made since no better word could be found to describe how the respondents mentioned protectiveness of nature or other human-beings, which is closely related to the definition of Universalism that is found in personal value theory.

6 Discussion

This chapter revisits the research questions and discusses the results in relation to literature found in the literature review.

Increasing the sustainability in construction methods and materials is an important part in the global strive towards more sustainable practices. Wooden multi-story construction has been proven to have advantages in this field compared to traditional building methods and materials. However, scholars call for increased market research of the younger generation of consumers to understand their perceptions, preferences and behavior when it comes to WMC-housing. Since emotions and values are believed to play a substantial role in the purchase of housing, the present study aimed to gain a deeper understanding of the attributes, consequences and values that young consumer connected to their perceptions of wood as a building material in multi-story apartment buildings. Further, the study aimed to see if the young consumers considered the construction materials in an apartment to be important in the decision of purchasing an apartment.

What factors affect the perception of a WMC-apartment in the eyes of a young Swedish consumer?

The most commonly mentioned attributes where *Appealing interior* as well as *Appealing exterior*. Both these attributes can be interpreted as WMC-apartments being perceived as aesthetically appealing by the respondents. Both attributes were cognitively linked to the value *Well-being*. Lähtinen *et al.* (2019) found similar results in their study where it was indicated that many Finnish consumers saw improvement of life quality as a benefit of living in wooden apartment buildings. It should be noted that respondents may not have known what WMC-apartments looked like on the inside but the results still show what the respondents cognitively link with wood as an indoor material.

Environmental sustainability was perceived as a positive attribute of WMC-apartments by many respondents in this study. Respondents linked the attribute to the possibility of reducing their climate impact underlined by the value Universalism. Wooden housing being perceived as environmentally sustainable is in conformity with many other studies (Gold & Rubik 2009; Karjalainen & Ilgin 2021). However, the results also showed some respondents had doubts regarding the sourcing of the wood resource and respondents expressed that their perception of environmental sustainability depended on the origin of wood resource. Similar results were identified by Hoibo *et al.* (2015) and Petruch and Walcher (2021) where both studies identified concerns regarding the wood origin among younger consumers.

Some respondents expressed worries regarding the safety of living in WMC-buildings, mostly due to factors such as concerns about durability and a perception of wooden construction having a low degree of fire safety. Both Gold and Rubrik (2009) and Larasatie *et al.* (2018) also found indications of consumers being hesitant of wooden construction due to safety concerns. Since

WMC-construction in Sweden is regulated under strict legislation regarding these factors, there should be no need to worry about these factors and the findings indicate that some respondents have a low level of previous knowledge of the concept.

It should be noted that no information was collected regarding the respondents' level of knowledge of WMC-construction or the housing market in general. This means that there are uncertainties regarding what kind of previous knowledge underlined the answers in interviews. It would be interesting to repeat a similar study but also collect information regarding previous knowledge. This could make it possible to see differences in perceptions and underlying factors between respondents with varying previous knowledge of the concept as has been done in earlier studies (Lähtinen *et al.* 2021)

What factors affect the perception of an apartment in the eyes of a young Swedish consumer?

The results of the study show that multiple factors affect the respondents' perception of an apartment but that location and size where the most mentioned attributes. Interestingly for the aim of this study, the construction material was not mentioned as an important attribute by the respondents. The results instead indicated that other attributes such as price, location and size are more important in the perception of an apartment. This is in conformity with studies suggesting that location and price are two important attributes in a housing purchase, and that construction materials are rarely important factors for consumers, especially in a market where a housing shortage is present (Mark-Herbert *et al.* 2019).

7 Conclusions

This chapter revisits the aim of the study and present implications of the study as well as an methodological reflection and suggestions for future research

This study has explored the way young consumers in Uppsala perceive WMC-apartments as well as apartments without a specified construction material by mapping the simplified cognitive structure of the studied respondents. The analysis was carried out within the framework of means end chains theory and personal value theory where attributes, consequences, and values that the respondents linked to the studied objects where identified. The study set out to fulfill the following aim:

"The aim of this study was to explore perceptions of WMC-apartments as well as apartments in conventional apartments among young consumers in Uppsala, Sweden."

The results obtained from interviews and analysis showed that a vast variety of attributes, consequences and values could be identified among the perceptions of the studied objects. The main findings show that respondents did not consider the material of construction to be important when considering a hypothetical apartment purchase. Instead, factors such as location and price were found to be of greater importance and connected to the values well-being, safety, and freedom. Respondents mainly perceived WMC-apartments as aesthetically appealing, and they connected those attributes with the value of well-being. WMC-apartments were also considered to be environmentally sustainable, an attribute many respondents connected to reducing climate impact and the value of universalism.

7.1 Implications

Improving the understanding of consumer perceptions of WMC-apartments may help to improve marketing as well as providing decision makers with more nuanced information on the subject. The present study may also be of use for marketeers who want to communicate advantages of WMC-apartments by addressing underlying values, or other motivational factors of consumers.

7.2 Methodological reflection

Even though laddering is a common method to use with MEC-theory, there are no standardized research procedures to be used alongside with it and the researcher is therefore required to make informed decisions about methodological endeavors (Reynolds & Gutman 1988). This was found to be a challenging part of the present study and required a certain degree of thought in order to design a functioning study. Coolen and Hoekstra (2001) propose that laddering is too complex to use when investigating preferences regarding heterogenic and general descriptions of goods such as "housing" or "apartment preferences". However, the authors recommend the method when the study area is more specified, as in the case of WMC

apartment buildings, where the focus lies on certain aspects of housing, in this case the wooden building material. Given the aim and research questions of this study, the laddering interview technique has served the needs of the project but future studies on a similar subject could benefit from using other research methods. As an example, a more unstructured interview technique that would allow respondents to discuss the subject more freely could give more nuanced results which may add complexity to the conclusions.

It is also important to address that knowing more about consumer perceptions may not be a sufficient method of increasing the construction rate of WMC housing in Sweden. As stated by Mark Herbert *et al.* (2019), the current housing shortage may make consumers less interested in factors such as construction materials, since they have little choice in their decision. Instead, location or price factors could be of greater importance, which is also indicated by the results in the present study where *Price* and *Location* were the two most mentioned attributes.

7.3 Suggestions for future research

Research regarding consumer perceptions and behavior concerning the concept of WMC is an interesting subject and this study has shown it that might play an important role in the change towards more sustainable construction methods. Therefore, future research in the area could be of interest. During the work with this project, several thoughts for future research has evolved Firstly, repeating a similar study but also taking the respondents' previous knowledge of WMC into consideration could make for interesting results. It could then be explored how increased knowledge regarding the subject could change perceptions among consumers, which in its turn could improve marketing and communication. Secondly, repeating a similar study using a representative sample, with the aim of producing generalizable results, would give insights in how the general population perceives WMC-housing, and could give better material for marketeers and researchers aiming to improve the communication of value-adding properties of said buildings.

References

- A Means-End Chain Model Based on Consumer Categorization Processes on JSTOR (n.d.). <u>https://www.jstor.org/stable/3203341?origin=crossref&seq=1#metadata_info_tab_contents</u> [2021-09-20]
- Andrew, M. & Larceneux, F. (2019). The role of emotion in a housing purchase: An empirical analysis of the anatomy of satisfaction from off-plan apartment purchases in France. *Environment and Planning A: Economy and Space*, 51 (6), 1370–1388. <u>https://doi.org/10.1177/0308518X18817539</u>
- Boelhouwer, P. (2011). Neo-classical Economic Theory on Housing Markets and Behavioural Sciences: Ally or Opponent? *Housing*, 28. <u>https://doi.org/10.1080/14036096.2011.599173</u>
- Borgardt, E. (2020). Means-End Chain theory: a critical review of literature. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 64, 141–160. https://doi.org/10.15611/pn.2020.3.12
- Boverket (2021). *Bostadsmarknadsenkäten* 2021. *Boverket*. <u>https://www.boverket.se/sv/samhallsplanering/bostadsmarknad/bostadsmarknaden/bostadsmarknaden/bostadsmarknadsenkaten/</u>[2021-09-30]
- Bryman, A. & Bell, E. (2011). Business Research Methods. 3. ed. Oxford: Oxford University Press.
- Coolen, H. & Hoekstra, J. (2001). Values as determinants of preferences for housing attributes. *Journal of Housing and the Built Environment*, (16), 22
- Costa, A.I.A., Dekker, M. & Jongen, W.M.F. (2004). An overview of means-end theory: potential application in consumer-oriented food product design. *Trends in Food Science & Technology*, 15 (7), 403–415. <u>https://doi.org/10.1016/j.tifs.2004.02.005</u>
- Dworkin, S.L. (2012). Sample Size Policy for Qualitative Studies Using In-Depth Interviews. *Archives of Sexual Behavior*, 41 (6), 1319–1320. <u>https://doi.org/10.1007/s10508-012-0016-6</u>
- Ellis, L.D., Badel, A.F., Chiang, M.L., Park, R.J.-Y. & Chiang, Y.-M. (2020). Toward electrochemical synthesis of cement—An electrolyzer-based process for decarbonating CaCO3 while producing useful gas streams. *Proceedings of the National Academy of Sciences*, 117 (23), 12584–12591. <u>https://doi.org/10.1073/pnas.1821673116</u>
- Ewerhard, A.-C., Sisovsky, K. & Johansson, U. (2019). Consumer decision-making of slow moving consumer goods in the age of multi-channels. *The International Review of Retail, Distribution* and Consumer Research, 29 (1), 1–22. <u>https://doi.org/10.1080/09593969.2018.1537191</u>
- Feitelson, E. (1993). An Hierarchical Approach to the Segmentation of Residential Demand: Theory and Application. *Environment and Planning A: Economy and Space*, 25 (4), 553–569. <u>https://doi.org/10.1068/a250553</u>
- Glaw, X., Inder, K., Kable, A. & Hazelton, M. (2017). Visual Methodologies in Qualitative Research: Autophotography and Photo Elicitation Applied to Mental Health Research. *International Journal of Qualitative Methods*, 16 (1), 1609406917748215. <u>https://doi.org/10.1177/1609406917748215</u>
- Gold, S. & Rubik, F. (2009). Consumer attitudes towards timber as a construction material and towards timber frame houses – selected findings of a representative survey among the German population. *Journal of Cleaner Production*, 17 (2), 303–309. https://doi.org/10.1016/j.jclepro.2008.07.001

Goldman Sachs (2021). *Millennials Infographic. Goldman Sachs*. <u>https://www.goldmansachs.com/insights/archive/millennials/</u> [2021-11-16]

- Grunert, K.G. & Grunert, S.C. (1995). Measuring subjective meaning structures by the laddering method: Theoretical considerations and methodological problems. *International Journal of Research in Marketing*, 12 (3), 209–225. <u>https://doi.org/10.1016/0167-8116(95)00022-T</u>
- Gutman, J. (1982). A Means-End Chain Model Based on Consumer Categorization Processes. *Journal of Marketing*, 46 (2), 60–72. <u>https://doi.org/10.2307/3203341</u>
- Hoibo, O., Hansen, E. & Nybakk, E. (2015). Building material preferences with a focus on wood in urban housing: durability and environmental impacts. *Canadian Journal of Forest Research*, 45 (11), 1617–1627. <u>https://doi.org/10.1139/cjfr-2015-0123</u>
- Hu, H., Geertman, S. & Hooimeijer, P. (2016). Personal values that drive the choice for green apartments in Nanjing China: the limited role of environmental values. *Journal of Housing and the Built Environment*, 31 (4), 659–675. <u>https://doi.org/10.1007/s10901-016-9494-5</u>
- Hurmekoski, E., Jonsson, R. & Nord, T. (2015). Context, drivers, and future potential for woodframe multi-story construction in Europe. *Technological Forecasting and Social Change*, 99, 181–196. <u>https://doi.org/10.1016/j.techfore.2015.07.002</u>

IPCC, I.P. for C.C. (2021). Climate Change 2021 - The Physical Science Basis

- Karjalainen, M. & Ilgın, H.E. (2021). The Change over Time in Finnish Residents' Attitudes towards Multi-Story Timber Apartment Buildings. *Sustainability*, 13 (10), 5501. https://doi.org/10.3390/su13105501
- Kilwinger, F.B.M. & van Dam, Y.K. (2021). Methodological considerations on the means-end chain analysis revisited. *Psychology & Marketing*, 38 (9), 1513–1524. <u>https://doi.org/10.1002/mar.21521</u>
- Kuckartz, U. (2014). Qualitative Text Analysis: A Guide to Methods, Practice & Using Software. 1 Oliver's Yard, 55 City Road, London EC1Y 1SP United Kingdom: SAGE Publications Ltd. <u>https://doi.org/10.4135/9781446288719</u>
- Lähtinen, K., Harju, C. & Toppinen, A. (2019a). Consumers' perceptions on the properties of wood affecting their willingness to live in and prejudices against houses made of timber. Wood Material Science & Engineering, 14 (5), 325–331. https://doi.org/10.1080/17480272.2019.1615548
- Lähtinen, K., Harju, C. & Toppinen, A. (2019b). Consumers' perceptions on the properties of wood affecting their willingness to live in and prejudices against houses made of timber. *Wood Material Science & Engineering*, 14 (5), 325–331. https://doi.org/10.1080/17480272.2019.1615548
- Lähtinen, K., Häyrinen, L., Roos, A., Toppinen, A., Aguilar Cabezas, F., Thorsen, B., Hujala, T., Nyrud, A. & Hoen, H. (2021). Consumer housing values and prejudices against living in wooden homes in the Nordic region. *Silva Fennica*, 55 (2). <u>https://doi.org/10.14214/sf.10503</u>
- Larasatie, P., Guerrero, J., Conroy, K., Hall, T., Hansen, E. & Needham, M. (2018). What Does the Public Believe About Tall Wood Buildings? An Exploratory Study in the US Pacific Northwest. *Journal of Forestry -Washington-*, 116. <u>https://doi.org/10.1093/jofore/fvy025</u>
- Lundgren, B.A. & Lic, T. (2010). Customers' perspectives on a residential development using the laddering method. *Journal of Housing and the Built Environment*, 25 (1), 37–52. https://doi.org/10.1007/s10901-009-9170-0

- Mark-Herbert, C., Kvennefeldt, E. & Roos, A. (2019). Communicating Added Value in Wooden Multistorey Construction. Timber Buildings and Sustainability IntechOpen. https://doi.org/10.5772/intechopen.83498
- Markström, E., Kitek Kuzman, M., Bystedt, A. & Sandberg, D. (2019). Use of wood products in multi-storey residential buildings: views of Swedish actors and suggested measures for an increased use. *Wood Material Science & Engineering*, 14 (6), 404–419. https://doi.org/10.1080/17480272.2019.1600164
- Persky, J. (1995). The Ethology of Homo Economicus. *Journal of Economic Perspectives*, 9 (2), 221–231. https://doi.org/10.1257/jep.9.2.221
- Peter, J.P. & Olson, J.C. (2010). *Consumer behavior & marketing strategy*. 9th ed. New York: McGraw-Hill Irwin.
- Petruch, M. & Walcher, D. (2021). Timber for future? Attitudes towards timber construction by young millennials in Austria - Marketing implications from a representative study. *Journal of Cleaner Production*, 294, 126324. <u>https://doi.org/10.1016/j.jclepro.2021.126324</u>
- Reynolds, T.J. & Gutman, J. (1988). LADDERING THEORY, METHOD, ANALYSIS, AND INTERPRETATION. Journal of Advertising Research, (28), 11–31
- Riala, M. & Ilola, L. (2014). Multi-storey timber construction and bioeconomy barriers and opportunities. *Scandinavian Journal of Forest Research*, 29 (4), 367–377. <u>https://doi.org/10.1080/02827581.2014.926980</u>
- Robson, C. & McCartan, K. (2016). Real World Research. 4. ed. John Wiley & Sons Ltd.
- Sarstedt, M., Bengart, P., Shaltoni, A. & Lehmann, S. (2017). The use of sampling methods in advertising research: A gap between theory and practice. *International Journal of Advertising*,. <u>https://doi.org/10.1080/02650487.2017.1348329</u>
- SCB (2015). *Leaving the nest: a description of young people moving from home*. Örebro: Statistiska Centralbyrån.
- Schwartz, S. (2006). Basic human values: Theory, measurement, and applications. *Revue Francaise de Sociologie*, 47, 929-968+977+981
- Schwartz, S.H. (1992). Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. In: Zanna, M.P. (ed.) Advances in Experimental Social Psychology. Academic Press, 1–65. <u>https://doi.org/10.1016/S0065-2601(08)60281-6</u>
- Södra (2021). Första bostadsprojektet med flervåningshus i trä klart. <u>https://www.sodra.com/sv/se/skog-</u> <u>medlem/aktuellt/sodrakontakt/nyhetsartiklar/2021/nummer-1/forsta-bostadsprojektet-med-</u> flervaningshus-itra-klart/ [2021-09-30]
- Taherdoost, H. (2016). Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research. *SSRN Electronic Journal*,. <u>https://doi.org/10.2139/ssrn.3205035</u>
- Tittenbrun, J. (2013). The Death of Economic Man. *International Journal of Social and Humanistic Computing*, 11. <u>https://doi.org/10.18052/www.scipress.com/ILSHS.11.10</u>
- TMF (2021). TMFs marknadsrapport. (2). Swedish The Swedish Federation for Wood and Furniture Industry. <u>https://www.tmf.se/siteassets/statistik/statistiska-publikationer/tmf-i-siffror/tmf-i-siffror/tmf-i-siffror/tmf-i-siffror-2-2021.pdf</u> [2021-10-14]

- Toppinen, A., Toivonen, R., Valkeapää, A. & Rämö, A.-K. (2013). Consumer perceptions of environmental and social sustainability of wood products in the Finnish market. *Scandinavian Journal of Forest Research*, 28 (8), 775–783. <u>https://doi.org/10.1080/02827581.2013.824021</u>
- White, K., Habib, R. & Hardisty, D.J. (2019). How to SHIFT Consumer Behaviors to be More Sustainable: A Literature Review and Guiding Framework. *Journal of Marketing*, 83 (3), 22– 49. <u>https://doi.org/10.1177/0022242919825649</u>

Yin, R.K. (2014). Case study research : design and methods. London: SAGE.

Zalejska-Jonsson, A. (2013). Impact of Energy and Environmental Factors in the Decision to Purchase or Rent an Apartment: The Case of Sweden. *Journal of Sustainable Real Estate*, 5 (1), 66–85. <u>https://doi.org/10.1080/10835547.2014.12091851</u>

Appendices

1. Interview guide

Part 1 - Introduction

Age?

Occupation?

Part 2 – Eliciting attributes

A small explanation of this step of the interview is first conducted by the researcher. The respondent is asked to imagine her-/himself in the position of considering an apartment purchase.

"What are the three most important attributes that determine the attractiveness of an apartment to you?"

If the respondent is not able to produce three attributes, the next step is continued with the attributes that have been elicited.

Part 3 - Laddering

The next step is to use the laddering technique to probe for the consequences and values that make the respondent find that each of the attributes matter to them. Here, the researcher is free to use any questions that helps the respondent to elicit attributes, consequences and values as long as the question does not guide the respondents to the "right" answers. Below are examples of questions that can be used:

"Why is attribute X important to you?

"Can you elaborate?"

"Please tell me more of why X matters to you"

The probing continues until information saturation point occurs or all motivational factors are found.

Part 4 – Wood as construction material

The respondent is then shown images WMC-buildings and the concept of WMC is briefly explained. The respondent is then asked the following:

"If you consider wood as a construction material, what attributes connected to a WMC apartment do you find attractive?"

"Are there any attributes connected to the wooden construction that you find unattractive?

Another step of laddering is now conducted where the elicitated attributes related to a wooden construction are probed and motivational factors are uncovered.

Last question:

"Would the use of wood in construction matter to you when considering an hypothetical apartment offer? (YES/NO)?"

END OF INTERVIEW

2. HVM for RQ 1 with cut-off value 0



3 HVM for RQ 2 with cut-off value 0



Previous reports in this series

1. Lindström, H. 2019. Local Food Markets - consumer perspectives and values

2. Wessmark, N. 2019. Bortsättning av skotningsavstånd på ett svenskt skogsbolag - en granskning av hur väl metodstandarden för bortsättningsarbetet följts

3. Wictorin, P. 2019. Skogsvårdsstöd - växande eller igenväxande skogar?

4. Sjölund, J. 2019. Leveransservice från sågverk till bygghandel

5. Grafström, E. 2019. CSR för delade värderingar - En fallstudie av kundperspektiv hos skogsoch lantbrukskunder inom banksektorn

6. Skärberg, E. 2019. Outsourcing spare part inventory management in the paper industry - A case study on Edet paper mill

7. Bwimba, E. 2019. Multi-stakeholder collaboration in wind power planning. Intressentsamråd vid vindkraftsetablering

8. Andersson, S. 2019. Kalkylmodell för produkter inom korslimmat trä - Fallstudie inom ett träindustriellt företag. Calculation model for products within cross-laminated timber - A case study within a wood industrial company

9. Berg Rustas, C. & Nagy, E. 2019. Forest-based bioeconomy - to be or not to be? - a sociotechnical transition. Skogsbaserad bioekonomi - att vara eller inte vara? - En socio-teknisk övergång

10. Eimannsberger, M. 2019. Transition to a circular economy - the intersection of business and user enablement. Producenters och konsumenters samverkan för cirkulär ekonomi

11. Bernö, H. 2019. Educating for a sustainable future? - Perceptions of bioeconomy among forestry students in Sweden. Utbildning för en hållbar framtid? - Svenska skogsstudenters uppfattningar av bioekonomi

12. Aronsson, A. & Kjellander, P. 2019. Futureshandel av rundvirke - Möjligheter och hinder för en futureshandel av rundvirke. A futures contract on roundwood - Opportunities and barriers for a futures trade on roundwood

13. Winter, S. 2019. Customers' perceptions of self-service quality - A qualitative case study in the Swedish banking sector. Kundernas uppfattning om självbetjäningskvalitet

14. Magnusson, K. 2020. Riskanalys av hybridlärk (Larix X marschlinsii) - Möjligheter och problem. Risk analysis of hybrid larch (Larix X marchlinsii) - Opportunities and problems

15. Gyllengahm, K. 2020. Omsättningslager för förädlade träprodukter - en avvägning mellan lagerföring - och orderkostnad. Levels of cycle inventory for processed wood products - a trade-off between inventory - and order cost

16. Olovsson, K. 2020.Ledtider i sågverksindustrin – en analys av flöden och processer. Lead times in the sawmill industry – an analysis of flows and processes

17. Holfve, V. 2020. Hållbart byggande – Kommuners arbete för flerbostadshus i trä. Building in a sustainable way –Municipalities' work for wooden multistory constructions

18. Essebro, L. 2020. Ensuring legitimacy trough CSR communications in the biobased sector. Att säkerställa legitimitet genom CSR kommunikation i den biobaserade sektorn

19. Gyllengahm, K. 2020. Making material management more efficient – reduction of non-value-adding activities at a wood products company. Effektivisering av materialflödet – reducering av icke värdeadderande aktiviteter på ett trävaruföretag

20. Berg, E. 2020. Customer perceptions of equipment rental – Services for a circular economy. Kunders uppfattning av maskinuthyrning – Serviceutbud och cirkulär ekonomi

21. Emerson, O. 2020. Impacts of environmental regulations on firm performance – the development of a new perspective. Påverkan av miljökrav på företags prestanda – utvecklingen av ett nytt perspektiv

22. Essebro, L. 2020. Communicating a climate friendly business model. Att kommunicera en klimatvänlig företagsmodell

23. Halldén, A. 2020. Skogens roll i klimatfrågan – En medieanalys av Dagens Nyheter 2010–2019. The role of forests in the climate discourse – a media analysis of Dagens Nyheter 2010-2019

24. Gebre-Medhin, A. 2020. Swedish FES-related policy: Integration of national objectives and factors affecting local actors' policy respons

25. Tanse, K. 2020. The Swedish policy framework for Forest Ecosystem Service. A study of integration of objectives, policy instruments and local actor's knowledge about policies and policy objectives

26. Braunstein, G. 2020. Promoting sustainable market development – A case study of wooden multi-story buildings. Att främja en hållbar marknadsutveckling – En fallstudie om flervåningsbyggande i trä

27. Saati, N. 2021. Corporate social responsibility communication in apparel retail industry. Företagens sociala ansvars kommunikation i textila detaljhandeln

28. Fakhro, I. 2021. Leadership Contribution to Organizations During Pandemic Disruption – A case Study of Private Swedish Organizations. Ledarskapsbidrag till organisationer under pandemisk störning - en fallstudie av privata svenska organisationer

29. von Heideken, F. 2021. Municipal Construction Strategies – The promotion of wooden multi-storey construction. Kommunala byggstrategier – Främjandet av flervåningshus i trä

30. Tiwari, V. 2021. The Challenges in Public Private Partnerships and Sustainable Development. Utmaningar i hållbara utvecklingsprojekt mellan privata och publika aktörer – ej publicerad

31. Söderlund, M. 2021. Att skapa mervärde i en produktlinjeutvidgning. To create added value in a product line extension

32. Eriksson, P. 2021. Wood procurement using harvest measurement. For improved management of forest operations. Virkesanskaffning med hjälp av skördarmätning – För en förbättrad verksamhetsstyrning

33. Olsson, M. & Sparrevik, G. 2021. Commercial forestland investments. A comparative analysis of ownership objectives. Kommersiella skogsmarksinvesteringar -En jämförande studie av ägarmål

34. Dahl, P. 2021. Improving sawmill scheduling through Industry 4.0 A CASE study at VIDA AB. Förbättring av sågverksplanering genom Industry 4.0 – En fallstudie på VIDA AB

35. Leijonhufvud, E. 2022. Råvaruförsörjning av grot - Försörjningskedjan vid Södra Skog Raw material supply of logging residues -The Supply Chain at Södra Skog