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TITLE: Konsumentenes kjøpsintensjon av et grønt hjem

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ABSTRACT

This thesis aims to explore the factors that influence consumers' intention to purchase a green home in Norway. An online survey was developed where 125 respondents participated. The statistical methods for analysis that were used are descriptive analysis, one-way ANOVA, and linear regression. The results revealed that consumers' interest in sustainable infrastructure, willingness to acquire pro-environmental behavior, and receiving a recommendation on green homes increase consumers' purchase intention. Meanwhile, other aspects such as financial factors, social demographics, and environmental concerns showed no correlation with the purchase intention of green homes.

INTRODUCTION

Globalization and population growth have contributed to increase the greenhouse emissions, as most processes used to generate the energy needed and processes for providing food for a growing population with greater wealth, generate greenhouse gas emissions, thus resulting in climate changes. These changes are primarily caused by human activities, the land, oceans, forest, and other forms of natural capital are being depleted at unprecedented rates. Unless we do not change these behaviors, our natural capital will be at great risk in the future. Climate change in the twenty-first century has become a hot topic. Environmental change reinforces existing and creates new risks, which has a huge impact on people and ecosystems, posing a threat to sustainable development. Limiting the risks of climate change relies on trained management structures and improved ability to respond to the issues in different spheres of human activity.

The United Nations 17 sustainable development goals (SDGs) are the world's shared plan to end extreme poverty, reduce inequality and protect the planet by 2030. These goals are an urgent call for action by both developed and developing countries in a global partnership (United Nations, 2021). UN's 11th goal focuses on sustainable cities and communities, where it aims to, ensure access for all to adequate safe and affordable housing and basic services and upgrade slums by 2030. Moreover, it also focuses to reduce the adverse per capita environmental impact of cities including by paying special attention to air quality and municipal and other waste management (United Nations, n.d.). According to Czerwinska (2021), almost 60% of the world's population will live in urban areas by 2030, thus ensuring they are sustainable is of great importance. As buildings are the foundations of cities, thus green buildings are, therefore, a key to their long-term sustainability. The benefit of green buildings

is to not only reduce or eliminate the negative impacts on the environment but also to consume less water, energy, and natural resource by generating their own energy or increasing biodiversity. In the economic aspects, green buildings offer both economic and financial benefit, which includes cost saving on utility bills, for tenants or household's through energy and water efficiency, lower construction cost, and higher property value for building developers. Beyond the economics and the environmental benefits, green homes have also shown to bring positive social impacts (World Green Building Council, 2021).

Although green homes have existed for some time, this development has begun to be emphasized in the construction of houses in Norway recently. As this is a fairly new concept in Norway, there are little literature and studies to be found, thus this thesis is one response to this need. Our thesis focuses on exploring consumers' purchase intention of green residence and what affects consumers' purchase intention when intending to buy these homes. The outline of this thesis consists of 6 chapters, beginning with an introduction, followed by the background chapter and literature review, and theory chapter. The methodology and analysis chapter is followed by a chapter on discussion and conclusion. Limitations, references, and appendix can be found at the end.

2. BACKGROUND

Climate change is seen as one of the greatest challenges facing humanity in the twenty-first century, with significant and far-reaching impacts on climate, human well-being, and the economy (de Wilde & Coley, 2012). Researchers agree that human activities lead to climate change because we rely on fossil fuels for our energy use. Much of climate change takes place when we burn fossil fuels, causing pollutants such as CO₂, methane, and certain other gasses to rise in the atmosphere. According to the Australian Greenhouse Office, 80 percent of the world's energy needs are met by fossil fuels such as oil, coal, and natural gas. Consequently, switching from fossil fuels to other energy sources has been shown to be extremely difficult because of countries' dependence on fossil fuels (Hardy, 2003).

One aspect that has been greatly affected by climate change is the building and construction sector. The building and construction sector is a major contributor to natural resource consumption, both in terms of land use and material extraction. Buildings account for 30-40% of primary energy consumption and greenhouse gas (GHG) emissions globally, and currently represent "the largest single end-user" of energy (Ade & Rehm, 2020). For typical industrialized nations anthropogenic GHG emissions associated with buildings account for about 25-40%; 40-95% of these emissions are caused by operational energy use, with the remainder caused by construction and demolition. At the same time, the performance of buildings is affected by the climate to which they are exposed to. Their longevity (50-100 years or more) refers to the period over which the atmosphere is expected to change significantly. This means that buildings constructed today must be designed to function effectively in both current and future climates, with the aim of reducing the carbon pollution pressure they place on current and future generations (de Wilde & Coley, 2012). This is part of the concept is called the 'sustainable development', first introduced in the 1980s in Brundtland Report. The report included the "classic" and widely accepted definition of sustainable development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Visser, W., & Brundtland, 2013).

The energy crisis of the 1970s affected the developed countries, particularly the United States, Canada, and Western Europe, from significant oil shortages and inflated prices. The rising oil prices motivated various research activities aimed at improving energy efficiency and finding alternative energy sources. This, together with the environmental revolution of the 1970s, led to the first new experiments in green building. The oil embargo of 1970 forced building designers to make homes more airtight and useless outdoor air conditioning to increase energy

efficiency (Office of the Federal Environmental Executive, 2003). Green building became even more popular in the 1990s as various industry players-experts, practitioners, scientists, professional groups, academic institutions, and other organizations searching for ways to reduce the environmental impact of buildings. Its arrival became a shift in the way buildings are designed, constructed, and operated, undermining centuries-old business practices (Kähkönen & Keinänen, 2016). Today, the definition of a "green home" is a high-performance home that uses less energy, water, and natural resources such as overhangs, use of natural light, wall thickness to maximize insulation quality, and solar and wind energy to ensure a reduction in the environmental impact that a house has during its lifetime and an overall healthier lifestyle for the occupants, unlike a conventional house where indoor air pollution, for example, can be much worse than outdoor pollution, in this way a green home can improve the lifestyle of the occupants. Furthermore, a green home also has a holistic approach, which means that the entire process is managed in a sustainable manner, from the beginning in the design phase, through the construction process, to the subsequent daily operation of the home. (BPCgreenbuilders, 2021; SDJSA.ORG, 2019).

In recent years, the scale of the green building industry is increasing as sustainability becomes an increasingly popular trend. The U.S. Green Building Council released a report on LEED in Motion: Residential, which states that there is an increase in sustainable changes in the housing market. The report notes that LEED-certified homes have grown 19% since 2017 and are at an all-time high with nearly 500,000 single-family, multifamily, and affordable housing LEED-certified units worldwide and more than 400,000 units in the United States (Stanley, 2019). Health and wellness have been cited as one of the few key benefits of choosing a green home, along with lower operating costs. With the growth of the green building movement, the savings associated with lowering operating costs continue to be one of the top benefits for owners. Nearly two-thirds of respondents expect a building's operating costs to drop by at least 6 percent within the next 12 months, and more than 80 percent expect the same return over the next five years. As utility cost reductions and occupant health become more widely known and accepted, so does the value of green buildings. The percentage of owners who say new green buildings are worth more than 10 percent more than traditional buildings has nearly doubled since 2012. In addition, most architects and contractors recognize that green building creates more value than traditional homes (Long, 2018).

Various mechanisms have evolved around the world to enable green building to occur. In some markets, building codes have been updated and expanded to include green building

requirements to ensure that new buildings are "greener," while in other markets, industry-led organizations such as Green Building Councils (GBCs) have been established with the aim of transforming the construction industry (Ade & Rehm, 2020). In Norway, the Norwegian government has taken the initiative to establish a Research Center on Zero Emission Buildings. The Research Center on Zero Emission Buildings was established in 2009 to find concrete solutions for future building requirements. The research efforts have now been continued at the Research Center on Zero Emission Neighborhoods in Smart Cities (ZEN Center) (Zero Village Bergen, (n.d). Along with ZEN Center, Norwegian Green Building Council was established in 2010 to drive sustainability in the Norwegian built environment, primarily through the introduction of environmental assessment tools. The organization will have a wide range of activities related to new construction, renovation, management and operation of buildings, as well as construction projects in urban and area development. Additionally, they will continue to offer, operate and manage environmental certifications, particularly BREEAM certification (World Green Building Council, 2021). The Norwegian government has also revised and tightened the regulations several times, most recently on January 1, 2016 (Energy Facts Norway, 2019). The new requirements include stricter requirements for floor insulation, requirements for more energy efficient windows, and requirements for tighter buildings to reduce heat loss. In addition, the installation of fossil fuel heating systems in new homes and buildings is now prohibited (Meyer, 2016).

Despite the fact that the Norwegian government and other stakeholders are constructing and implementing green homes to reduce greenhouse gasses, it is ultimately the potential homeowners who are the end-users and will invest in a green home. The Center's researchers ZEN, therefore, examined what it takes for zero-emissions neighborhoods to appear as attractive places for potential homebuyers to live, as the focus is often on constraints to live in a green home rather than good housing qualities that goes with it (Rambæk, 2020). ZEN center also has one of the largest ongoing pilot projects, Zero Village Bergen, where about 800 homes are being built as zero-emissions homes. Zero Village Bergen will be Norway's first and largest zero-emissions housing project, the center also has several other similar projects underway, where the goal is that adults and children will live in zero-emission housing (Bybo, n.d.)

RESEARCH OBJECTIVES

The followings are the objectives of this research:

- i. To explore the concept of green home in Norway.
- ii. To investigate consumers' purchase intention of green home and to identify the factors that affect consumers purchase intention and decisions.

The research question for this thesis is thus:

What factors influences consumers' intention to purchase a green home in Norway?

3. LITTERATURE REVIEW & THEORY:

3.1 LITTERATURE REVIEW

Socio - demographic

The aim of the literature review is to examine the key factors that influence consumers' specific willingness to pay for a green home. One of many factors that have been explored via previous literature, is socio-demographic – which includes age, income, occupation, and education level. Fisher et al. (2012) reveal that consumers' willingness to purchase environment-friendly products is highly related to their demographic characteristics. However, Mainieri, T. et al. (1997) disclosed that demographic characteristics do not influence purchasing behavior, it's the function of situational characteristics that influence one to purchase rather than socio-demographic measures.

Nevertheless, there are few studies to be found on the effects of socio-demographics regarding green homes. Though, generally social demographic characteristics are said to be important factors when predicting environmental behavior, contra some studies that conclude that these factors have limited explanatory power. These demographic variables can be accountable to some degree to profile consumers in terms of environmental knowledge and attitude but are limited when the behavioral aspects of environmental consciousness components are concerned (Carrete et al. (2012); Jansson et al. (2009).

For instance, younger individuals are more sensitive to environmental issues, reason being those who have grown up in time where environmental concerns have been discussed a lot, are significantly more open and involved to these issues and sustainable behaviors (Carrete et al. (2012). Contradicting this, Wang et al. (2021) suggest that the older generation are more likely to engage in a sustainable behavior, reason being that generativity posits that aging involves a

reexamination of life roles and increased wisdom as well as the feeling of self-importance and being needed. Thus, the elderly is more eager to participate in pro- environmental behavior and impart of a lasting legacy for themselves and future generation. Hence, we propose:

Hypothesis 1: *Younger consumers have a higher purchase intention of green homes*

Furthermore, individuals with higher income and education are also more likely to engage in pro-environmental behaviors and exhibit a higher level of pro-environmental attitudes (Jansson, Marell, & Nordlund, 2009). It is thus, reasonable to assume that higher income increases the likelihood of owning a eco-friendly home, based on the assumption that an increase in income capacity raised the demand for housing (Hong, 2013). However, German Environment Agency (UBS), reveals that a surplus of income often leads a substantial consumption on energy and recourses. Higher income leads to a bigger spurge on large cars, larger homes and more frequent air travel and so on, resulting a bigger human carbon footprint (The German Environment Agency, 2021). This demonstrates the importance of consumption choices and lifestyles, and the absolute level of wealth (WWF Cymru, 2002). In most cases, green products are more expensive than non-green products, making it difficult for people with limited incomes to afford them. In contrast, some excluded groups, such as low-income people, have greener lifestyles than some so-called "green" consumers because they use resources more sustainably in their daily activities. Nevertheless, they are not considered as "green" consumers as their consumption habits usually include plastics as they are usually cheaper (Forsyth, 2019). Carrete et al. (2012) also revealed that well educated consumers are more aware of the environmental issues, hence are more concerned about the environment and more motivated to participated in a responsible manner. Moreover, the likelihood of owning an environment friendly home is thus influenced by the education level of potential homeowners. This is because more well-educated homebuyers may be willing to pay more for greater quantities and qualities of housing (Hong, 2013). Hence, we propose:

Hypothesis 2: *The higher education level a consumer has, the higher is her/his purchase intention of green homes.*

Hypothesis 3: *Higher level of household income leads to an increase in purchase intention on green homes.*

Financial

A recent survey conducted by Chinburg Properties showed that green homes generate less energy compared to traditionally built homes (Chinburg, n.d.). Green homes typically have energy efficient building systems that have a dramatic impact on energy consumption – and, therefore, result in higher savings for green homeowners (UngEnergi, 2017). Although money is saved through reduced electricity and other utility costs, it is the increased property value for homeowners that discourage homebuyers from purchasing a green home. The increased property value results from the additional cost of building materials and energy efficient features, as well as the lack of knowledge and experience that drives up the property value for a green home, commonly referred to as green cost premiums, compared to traditional non-green buildings, (Hwang et al., 2017). Hence, we propose:

Hypothesis 4: The more a consumer is willing spare money on financial bills, the higher his/her purchase intention of a green home

Nevertheless, it is a common misconception that green buildings are expensive. As Kloss & Kunter, (2016) articulates consumers attitude and behaviors are generally shaped by their perceptual interpretations and perceptual judgment they are represented with, if consumers perceive green products to be expensive or require more than there is less probability that they would go through with their purchase intention. Price is considered to be a substantial barrier when opting for a sustainable purchase behavior (Wibowo, Ahmad, & Solekhah, 2020). For consumers price is an enormous sacrifice that they make in order to obtain a product and for that to happen it is important that they perceive is as for value for the money.

However, the additional cost of constructing a green building is only 1-2% higher than that of a non-green building. In fact, the cost of green homes as a perceived barrier is slowly being eroded as the technology, materials, knowledge, and skills needed to build green homes become more readily available and competitively priced; therefore, owning a green or sustainable home does not have to be expensive, similar to the findings of Tobias & Writer (2020). Ultimately, however, it is household income that determines whether one can afford a green home or not (Hong, 2013). The Norwegian regulation allows an individual to borrow money up to five times of your income from a bank as well as 15 percent down payment requirement to purchase a home (Huseierne, 2021). Furthermore, Santiago et al.(2010) report that higher household income means households have a greater chance of owning a home, which is true for both traditional - and green houses. Moreover, a greenhouse mortgage offers

lower interest rates or higher loan amounts from financial institutions for potential homebuyers who desire to purchase a green home or renovate their home to be energy efficient as it becomes easier for potential homebuyers who cannot afford it to opt for a green home instead of a traditional home and thus achieve the set climate goals (Richardson, 2017). Moreover, according to Reed and Mills (2007) financial factors account for nearly 30 percent of the income decisions when consumers purchase a house, furthermore, Yoke et al. (2018) in their study also confirmed the significant effect of financial factors when buying of environment-friendly housing. Hence, we propose:

Hypothesis 5: *Consumer's perception of the price on green homes has a negative effect on purchase intention.*

Hypothesis 6: *A greater interest in a lower interest rate leads to a higher purchase intention of a green home.*

Environmental concern

Environmental attitude is one of the key factors of environmental behavior and is frequently conceptualized as an indicator of environmental purchase intention Kaiser et al. (1999) & Newton et al. (2015). Environmental concerns are effective traits that show an individual's worries, considerations, likes and dislikes about what is affecting the environment (Sinnappan & Rahman, 2011; Yeung, 2004). According to Yue et al. (2020) consumers environmental concerns positively affects green consumption intention and thus, holds mediation role when talking about environmental responsibility and green consumption intention. Sinnappan & Rahman (2011) stated that there is a positive relationship between environmental attitude and environmental behavior. Nevertheless, this study also indicates that environmental concern has a significant influence on consumers' green purchase behavior (Cherian & Jacob, 2012; Suki, 2013). A study done by Li et al. (2013) confirmed a positive relation between the purchase intention of hybrid-electric cars and consumer's environmental concern, Lin & Huang (2012), also confirmed that consumers with high environmental concern support and purchase green products more. Hence, we propose:

Hypothesis 7: *The more environmental concern a consumer has, the higher is her/his purchase intention of green homes.*

Hypothesis 8: *Consumer's willingness to learn about and engage in green behavior is positively related to the purchase intention of a green home.*

Hypothesis 9: *Higher level of environmental behavior leads to higher purchase intention of green homes.*

Health benefits

According to Allen et al. (2015), green homes can impact the human health in two ways: directly at the individual level by optimizing indoor climate, and indirectly at the population level by reducing energy use and thus air pollutants that cause cardiovascular disease, asthma, or similar conditions (Allen et al., 2015). The U.S. Environmental Protection Agency (EPA) estimates that Americans spend about 90 percent of their time indoors, where pollutant concentrations can be two to five times higher than outdoors (Stanley, 2019). In addition to air quality, people who live near outdoor green spaces tend to have higher levels of health and well-being compared to people who do not have outdoor green spaces (Rocchio & Carlowicz, n.d.). WHO Regional Office for Europe, (2016) reveals similar findings where green space and health have strong benefits for mental health and stress reduction compared to other potential pathways to health. Furthermore, an Australian study found that perceived neighborhood green space was more strongly associated with mental health than physical health (Sugiyama et al., 2008; WHO Regional Office for Europe, 2016), while a study in Spain found that greater exposure to green space was associated with improved physical and mental health across socioeconomic characteristics (Triguero-Mas et al., 2015; WHO Regional Office for Europe, 2016). Overall, this could bring real benefits in terms of mental health and the gain in healthy life years for individuals, both through increased exercise and improved air quality (Pretty et al., 2005).

Hypothesis 10: *The more health concern a consumer has, the higher is her/his purchase intention of green homes.*

Consumer behavior when purchasing durable products

The concept of consumer behavior combines factors influencing buying behavior, psychological process underlying buying process, buying motives, behavior, and habits, and finally buying decision journey. Consumers behavior with respect to durable products are based on various considerations and aspects (Kazi & Khan, 2019). Salazar et al. (2013) in their study about social influence on sustainable consumption, found that consumers that receive information from their social groups has a positive effect on the probability to purchase a more socially and environmentally friendly product. Furthermore, White et al. (2019) also identified social influence to be crucial in order to nudge consumers towards sustainable purchasing and behavior.

Hypothesis 11: *Consumer's interest in living in sustainable infrastructure leads to purchase intention of green homes.*

Hypothesis 12: *The more recommendation a consumer receives from her/his reference group, the higher is her/his purchase intention.*

3.2 THEORY

Theory of plan behavior

The theory of planned behavior is an extension of the theory of reasoned action (TRA). Both models have based on the premise that individuals make logical reasoned decisions to engage in specific behaviors by evaluating the information available to them. It consists of a number of constructs, the first one being an attitude towards the act or behavior, that's an individual belief of a certain behavior or act makes a positive or negative contribution to that person's life. The second concept is called subjective norm, this construct focuses on everything around the individual, individuals' social network, cultural norm, group beliefs, and so on. The third construct is called perceived behavioral control, and it conveys a person's beliefs on how easy or hard it is to display certain behavior or act in a certain way (Ryan, S., & Carr, A. 2010).

Theory of planned behavior predicts that a positive attitude towards the act or behavior, favorable social norm, and a high level of perceived behavioral control are the best predictors for forming a behavior intention and in turn lead to a displayed behavior or act. It foresees that if one thinks good of a product, it is then naturally believed everyone else thinks it's a good product. It gives consumers the confidence that they can handle and work with the product. However, if one of those constructs is unfavorable, you start to think that it doesn't make much sense for you to get the particular item and will believe that it is out of your comfort zone.

Considering the environmental behavior of an individual, there are many contextual factors that affect the motivation of the individuals to engage in such behavior. An individual aspiring to engage in recycling, for instance, needs availability of recycling facility and similarly an individual intending to reduce pollution due to abundance of cars, needs a good quality public transport as a replacement so that one could easily adopt and display their behavior in line with the awareness towards the environmental changes. There are many ways in which contextual factors may affect the intention and behavior, these factors affect the behavior directly apart from affecting it in conjunction with attitude and subjective norm (Ajzen, 1991).

Attitude

Consumer's attitude reveals the psychological tendency of consumers liking or disliking the product across evaluating range. Attitude towards an object could influence the related information processing, judgements and could be more impactful or durable compared to positive or neutral attitudes. As purchase intention and actual purchase behavior are correlated, it is expected that consumers with more favorable attitude and purchase intention would be more likely to accept, purchase and consume the offered products. (Ajzen, 1991) emphasized that positive attitude towards a particular behavior strengthens the intention to perform that behavior. A favorable attitude towards a product which is environmentally sustainable adds sustainable consumption behaviors as pointed out in several studies, the attitude acts as an important antecedent to the behavioral intention which is described as the degree of favorable or unfavorable evaluation of the behavior.

Subjective norm

Subjective norm can be comprehended as the perceived social force to carry out a particular behavior. It is stated to be as a form on belief that individuals approve or disapprove certain behavior when undertaking and performing the same. Individuals not only perform behavior under social pressure, but the subjective norm also provides them information about the appropriateness of behavior under consideration. It is believed that subjective norm is perceived to affect purchase intention independently. Social norm is an important mean of viewing the life for people under collectivistic society and they keep more emphasis on the emotional aspect of the decision making rather than on the rational cost-benefits analysis in a relationship (Ajzen, 1991; Kumar, 2014).

Perceived behavioral control

Perceived behavioral control is a complex process and at time many situational factors such as perceives behavioral control in addition to attitude help in taking the purchase decision. Perceived behavioral control refers to our own perception of our ability to do the behavior, it determines individuals intentions, thus, it can account for a significant proportion of variance in behavior (Ajzen, 1991).

The buying process by Philip Kotler

Philip Kotler's model for customer buying decisions consists of 5 stages, which consumers typically pass through before purchasing a product. The stages are as follows: problem recognition, information search, evaluation of alternatives, purchase decision and post purchase behavior. Consumer's behavior may differ depending on if it's a first-time purchase or a regular or repetitive purchase.

Stage 1. Problem recognition

The buying process starts first when the consumer has recognized a problem, or a need is triggered by internal or external stimuli. Culture and subculture and social class are particularly important influences on consumer buying behavior. Culture is the fundamental determinant of a person's wants and behavior. In addition to that, social factors such as reference groups, family and social roles and status also affect consumer buying behavior, reference groups have a direct or indirect influence on consumer buying attitude. Within reference groups there are two categories: primary; persons interact continually and informally, such as family, friend, neighbor or other that are close to the buyer. These groups have often greater influence on consumer during the decision-making process. The secondary groups being religious, professional and trade union groups, these are more formal and require less continuous interactions. Both primary and secondary reference groups influence members as they expose an individual to new behaviors and lifestyles, they influence attitude and self-concept and they create pressure for conformity that may affect product and brand choices. Oftentimes people are also influenced by groups which they do not belong to, aspirational groups are those a person wishes to join.

Stage 2. Information search

When a consumer gets aware of a product that they are interested in, naturally they would try to find more information about it. Seeking information can be a comprehensive, formalized process if the service or product is important and it is an investment, while in other cases information retrieval will be fast and relatively automatic. According to Kotler (2004) consumers' information gathering process can be divided into four different groups. The first group being personal sources, which involves people that are daily in your surroundings such as family, friends, neighbor, or relatives. The next group is communication sources, such as advertisement, sales personal, packaging, and dealers. Furthermore, third groups consist of

public sources such as the mass media and consumer reports. The last group is experience, where the consumer gets to know the product, examines, and uses it.

How much information the consumer acquires about the product or brand depends on whether it is a high or low involvement product, and it will also differ from consumer to consumer. In most cases, consumers generally receive the most information from commercial sources, but at the same time it is the personal sources that influence the most and have the greatest influence on the consumer and the purchasing decision.

Stage 3. Evaluating of alternatives

After gather all the information needed for purchase, consumers essentially evaluate the alternatives and brands, and where at what platform the purchase is going to take place. This is a cognitive process that takes places in consumer's mind. One then compares and weight each product for advantages and disadvantages. At this stage consumers reference group and open discussions about the product has the biggest influence on consumers assessment.

Stage 4. Purchase decision.

Many factors affect whether a consumer buys a product or not such as other people's opinions, if negative, this will result in consumers reconsidering their choice. It has the same effect in the opposite scenario if the people are giving positive reviews on the product, this will strengthen the buyer's commitment to buying it. Along with this, unforeseen situational factor can also change the consumers purchase intention. Some examples could be the consumer's financial situation, poor service from personnel or previous experiences.

Stage 5. Post purchase decision

Generally, consumers buy the product with certain expectations. Though one chooses carefully, there is no guarantee that the buyer will be completely satisfied. Furthermore, if the consumer is satisfied with the product, he/she might repurchase and even be the product advocate to their reference group and if not, these experiences will guide them in future (Kotler, 2004).

Consumer choice theory

Utility and indifference curve:

Utility is a key concept from microeconomic that refers to the overall satisfaction one receives from consuming a good or service (Investopedia, 2021). Utility differs from person – to – person, place – to place and time- to time, so different goods may have different utility values, or they may have the same utility value. If a consumer prefers two goods equally, say house X_1 and house X_2 , then the consumer is indifferent between the two goods. Utility can be shown graphically in figure 1 by using the indifference curves as a measure to explain consumer behavior in terms of his preferences or rankings for different combinations of two goods. The higher the curve, the more it is preferred by a consumer; the lower the curve, the less it is preferred by a consumer (Thøgersen, 2019).

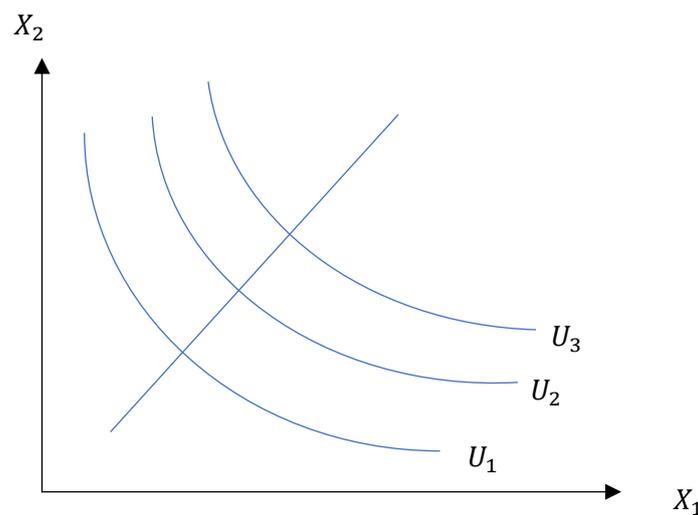


Figure 1 Indifference curves

The indifference curve is drawn as a downward slope from left to right; in other words, it is negatively sloped, as seen in figure 1. This is because when the consumer increases consumption of a particular good 1 (X_1), he/she has to sacrifice units of the other good 2 (X_2) to get the same level of utility. This is called the marginal rate of substitution. The marginal rate of substitution (MRS) between two goods for an individual, expresses the amount of one good that exactly compensates for the loss of one unit of the other good. We can also call marginal rate of substitution for marginal willingness to pay (MWTP) for good 1, measured in units of good 2. This is due to that the consumer is just on the margin of being willing to “pay”

some of good 1 to buy some more of good 2. Furthermore, based on the indifference curve, one can set up a utility function for the two-goods case in the following mathematical form:

$$\text{Eq.1} \quad U = U(X_1, X_2)$$

The left side of the equation 1 represents total utility. Total Utility is an aggregate measure of satisfaction gained from consumption. U, on the right side of the equal sign indicates the consumer's need of structure, while X_1 and X_2 represents the quantities of good 1 and good 2, respectively. Moreover, marginal utility is a measure of the change in utility associated with a change in consumption of the good. The mathematical expression for marginal utility is stated in equation. 2:

$$\text{Eq. 2} \quad U_i = \frac{\partial U(X_1, X_2)}{\partial X_i} = U_i(X_1, X_2) \quad i = 1, 2$$

Marginal utility follows the law of diminishing marginal utility, that is, the first unit of a good consumed gives more utility than the second unit, the third unit of a good, consumed gives less utility than the second unit, and so on. In other words, the rate at which the consumer substitutes good 1 for good 2 is greater at the beginning. But, as he/she continues the substitution process, the rate of substitution begins to fall.

Mathematically, this law can be written as:

$$\text{Eq.3} \quad MU_1 > MU_2 > MU_3 \dots > MU_n$$

As mentioned, marginal rate of substitution measures is the rate at which consumer is just willing to substitute a small amount of good 2 for good 1. This interpretation gives us a simple way to calculate the marginal rate of substitution. Consider a change in the consumption of each good, $(\Delta x_1, \Delta x_2)$, that keeps utility constant – that is, a change in consumption that moves us along the indifference curve. Since there is a constant utility along an indifference curve, we can set the expression equal to 0, as seen in equation 4 (Varian, 2014).

$$\text{Eq. 4} \quad MU_1 \Delta x_1 + MU_2 \Delta x_2 = \Delta U = 0$$

We can use equation 4 to solve for the slope of the indifference curve, and write it as equation 5:

Eq. 5

$$MRS = \frac{\Delta x_2}{\Delta x_1} = - \frac{MU_1}{MU_2}$$

The budget constraint

The budget constraint refers to all possible combinations of goods and services that the consumer can buy with his/her given income level. The consumer can only buy as much as his/her income allows; thus, he/she is constrained by his/her budget. We disregard savings and assume that all income is used for consumption (Riis & Moen, 2017). The mathematical expression of the budget constraint can be written in equation 6 as follows:

Eq. 6

$$P_1X_1 + P_2X_2 \leq m$$

Equation 6 shows the budget constraints, where m is amount of money the consumer can spend. We can name the goods, good 1 and good 2. X_1 and X_2 are the quantity the consumer wants to buy of good 1 and good 2. P_1 and P_2 are the corresponding prices of the goods. The prices are perceived as given for the consumer. The consumer affordable consumption bundles are those that cost no more than m . We call this set of affordable consumption bundles at prices (P_1, P_2) and m for consumers budget set (Riis & Moen, 2017; Varian, 2014)

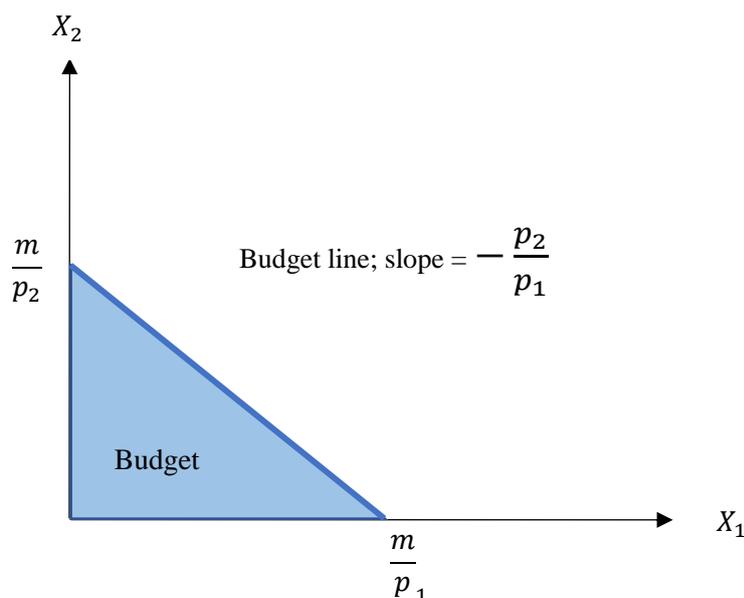


Figure 2 The budget set

Figure 2 shows that the budget curve is a combination of two goods. All combinations of good 1 and good 2 that lie on or within the budget line are possible for consumption. The intercept on the good 2 illustrates the amount of good 2 that the individual can purchase if he/she spends all his/her income on good 2. Thus, the intercept on the axis is equal to the income divided by the price of good 2, m/p_2 . The intercept of the good 1 illustrates the maximum quantity of good 1 that can be financed if all income is used. The (negative) slope of the budget line, $-\frac{p_2}{p_1}$, has a clear economic interpretation. It is called the price ratio because it indicates the rate at which one unit of good 1 can be exchanged for one unit of good 2 (opportunity cost) in order to stay on the budget line (Riis & Moen, 2017; Ferrari, 2019). Equation 7 and Equation 8 show how the mathematical expression is formulated to obtain the price ratio:

$$\text{Eq. 7} \quad p_1(x_1 + \Delta x_1) + p_2(x_2 + \Delta x_2) = m$$

Subtract equation 6 and equation 7 and rearrange to get equation 8.

$$\text{Eq. 8} \quad p_1\Delta x_1 + p_2 \Delta x_2 = 0 \text{ or } \frac{\Delta x_2}{\Delta x_1} = -\frac{p_1}{p_2}$$

Since both prices are non-negative, it must be that Δx_1 and Δx_2 have opposite sign. In other words, the quantity consumed of one good must decrease when the quantity of the other increases in order to stay on the budget line (Ferrari, 2019). Furthermore, suppose the consumer has increased his/her income from m to m^1 , the budget line shifts parallel outward as shown in the figure 3. When prices and incomes change, the set of goods that a consumer can afford changes as well. Thus, an increase in income leads to the consumer being able to buy a more expensive home, for instance, because he/she can now afford household expenses that go with it (Varian, 2014).

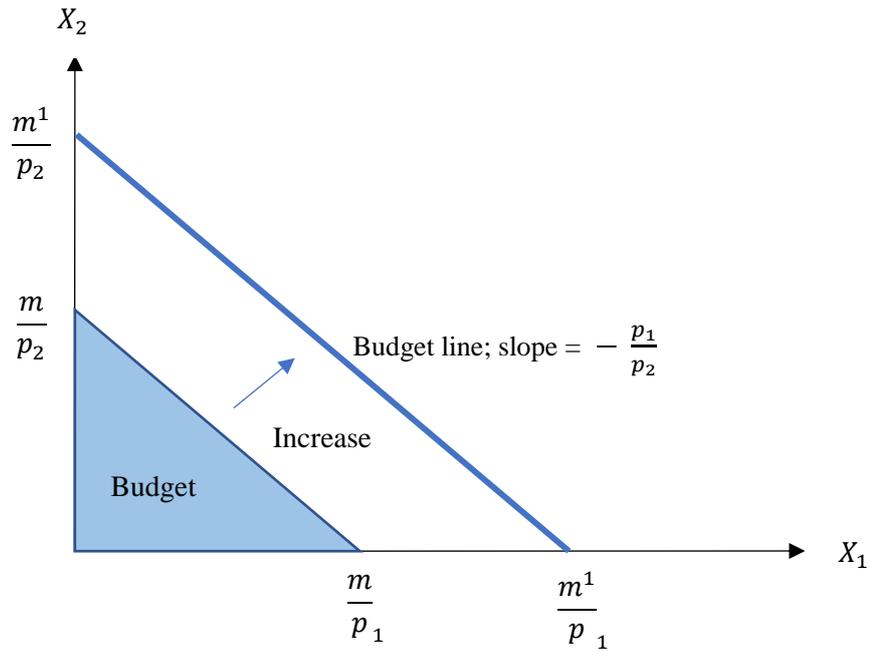


Figure 3 After an increase in income

Utility maximization problem

The consumer's problem is to maximize utility given the available budget. The optimal consumption position is where an indifference curve is tangent to the budget line. At this point, the budget line and the indifference curve have the same slope. Optimal consumption can thus be expressed by equation 9 and figure 4.

Eq.9

$$\frac{U_1}{U_2} = \frac{P_1}{P_2}$$

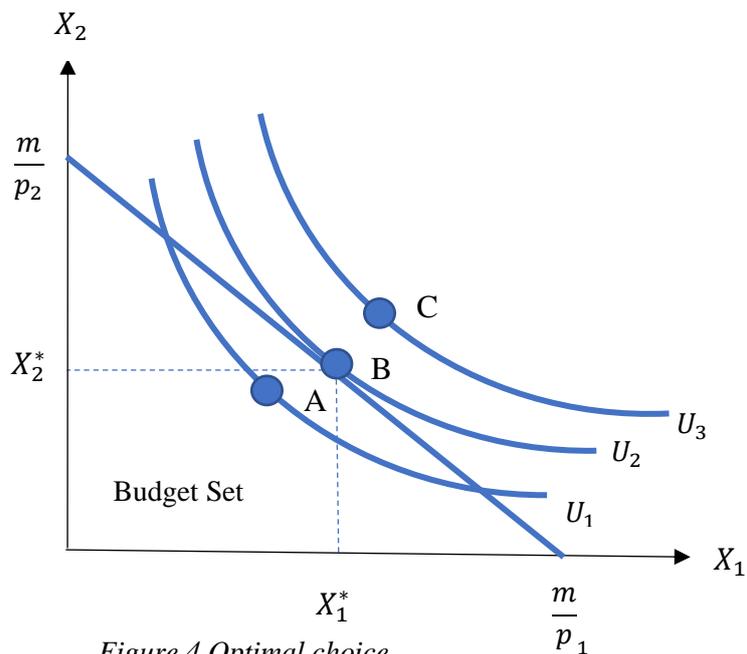


Figure 4 Optimal choice

Graphically, the utility maximization problem is represented by plotting the indifference curves and the budget line on the same graph as shown in Figure 4. In this case, the optimal choice is at the point where the utility curve U_2 touches the budget line. The consumer will consume X_1^* units of good 1 and X_2^* units of good 2 at this point. In this case, point B is the best position for maximum utility. Only at this point is the slope of the budget line $-p_1/p_2$ equal to the slope of the indifference curve, $-\frac{MU_1}{MU_2}$. At point A, we find an indifference curve slightly lower than the one that one crossing point B. At this point, the consumer receives less utility than at point B, which is not desirable. During point C, we find the indifference curve impossible because the utility curve is outside the budget set (Varian, 2014).

Loan and utility maximization

Consumer's budget constraint and consumption preferences can be divided into two periods in order to study the effect of a lower interest rate on the budget set. The first period is the present value, and the second period is the future value. We can study the optimal choice of consumption (c_1, c_2) for both periods. The amount of money the consumers will have in each period is denoted by (m_1, m_2) . A borrower consumes more than his / her income in the first period and repays the loan with interest in the second period, which results in consumption being less than your income in the second period. In figure 5, we have illustrated a case where the consumer is a borrower. Let us assume that the potential homebuyer has this budget curve with a regular loan/ credit term. In Figure 5, this year's consumption is shown on the horizontal axis, while next year's consumption is shown on the vertical axis (Varian, 2014).

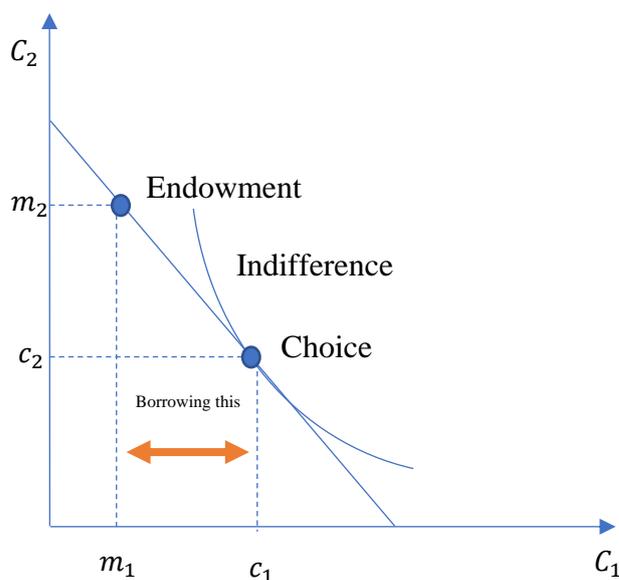


Figure 5 Borrower

Let us now consider how the potential homebuyer will react to a lower interest rate. A lower interest rate tilts the budget line to a flatter or inward position. For a borrower, a decrease in the interest rate means that he/she will have to pay less interest in the second period. This effect causes him to borrow more as the cost of borrowing becomes cheaper, leading to an increase in consumption in the first period. Figure 6 shows a decrease in the interest rate, with this year's consumption on the horizontal axis and next year's consumption on the vertical axis. As can be seen in Figure 6, the original budget line is colored blue, and the new budget line is colored red (Varian, 2014).

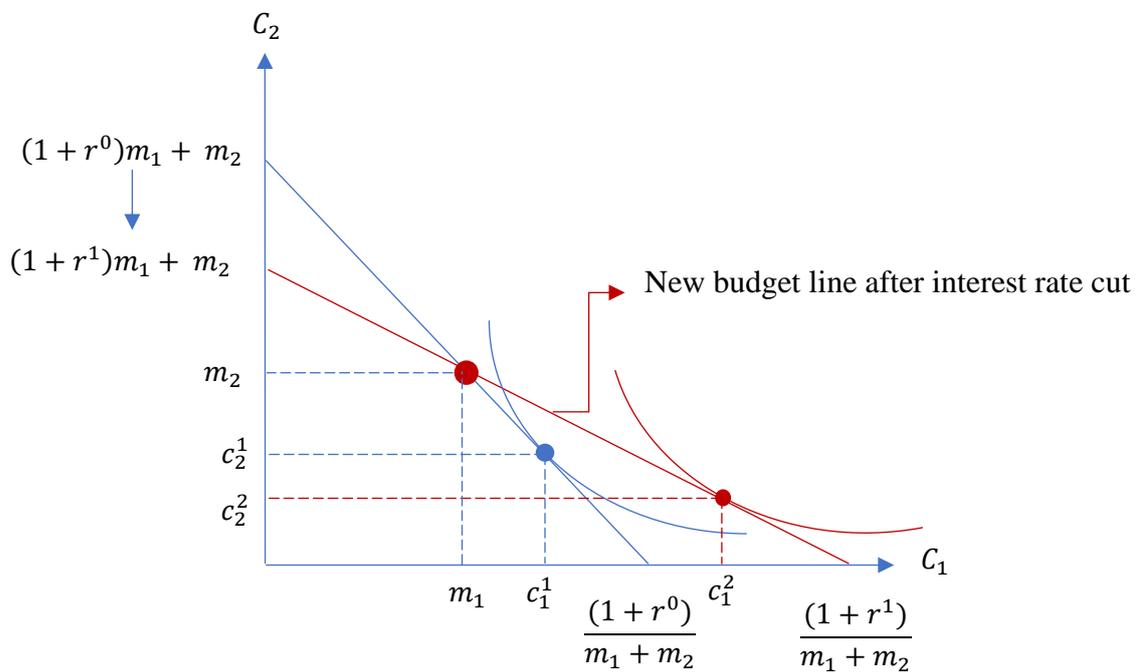


Figure 6 After a decrease in the interest rate for the borrower

4. METHODOLOGY

Research strategy

As for the data collection method for this thesis, primary data has been collected, along with secondary data such as previous literature and research studies. When conducting primary data, quantitative data method has been adopted, more specifically a descriptive survey. The purpose of using a survey as a research method was to be able to have the ability to analyze patterns and to be able to identify factors that play a role when purchasing a house. As the purpose of the study is to investigate what are the factors that motivate a potential homebuyer to purchase a green home in Norway, our research questions are established on the basis of hypotheses that were developed after reviewing previous literature.

Research design

When designing the survey, the focus was to develop a questionnaire that is well structured and well written. As for criteria, there were only two, one being a minimum 100 number of respondents, the reason being so that it represents a decent representation of potential homeowners, the second criteria was that respondents must be 18 or above. The survey consists of three segments, first segment measuring social demographics, the questions in this section will help us to build a consumer profile and to understand the specific background characteristics of the respondents. The following segment measures respondents' interest in the environment and their environmental behavior and finally the third segment focuses on consumers' interest in green homes and their purchase intention.

The survey includes 35 questions and has been conducted on Qualtrics, an online survey forum provided by the university. Questions that measure social demographics were placed at the beginning of the survey so that it appeared less demanding and time-consuming for respondents. The more “demanding” questions were listed towards the end so that respondent would not lose interest in the beginning. Each segment of the survey started with a brief explanation, of the following question and the purpose of the questions. The purpose behind the informational text was to give respondents as much information as possible to increase the chance that they would complete the survey. As an appreciation and a little form of external motivation we also offered a gift card to one random response, along with this we also decided to have an anonymous survey so that respondents would feel more comfortable when participating.

As previously mentioned, the first section of the survey was the social demographics, where we collected data on respondents' gender, age, education, income, etc. The social demographics can be used as an indicator for who, and which age group is more likely to behave in a specific manner. The second section is on their consumer behavior and environmental behavior, which will determine consumer purchase intention of green homes. In this section, the questions are both open and close-ended questions. The main goal of the survey was to provide specific facts, that can be used to (1) make accurate predictions about the relationship between factors and behaviors, (2) gain meaningful insight into these relationships, (3) validate the existing relationship, and finally (4) to test various types of hypotheses. Throughout the survey different levels of measurement, scales have been used such as ordinal, Likert-scale, and nominal scale. Which would make it possible and easier to process and allows us to grasp patterns and trends in the data set. In addition to predetermined answers, respondents also had the opportunity to add additional answers by choosing "others" that we might have missed when assembling the survey. The answer will then be categorized before transferring the data set to SPSS.

Some questions were also designed to allow the respondent to self-assess how concerned they are about environmental impacts, and thus an ordinal scale was chosen to help the respondent rank themselves and fit into the scale. To be able to test the hypotheses, the majority of the questions in the survey were constructed in a way that they would be suitable for the required analysis thus, determine their importance regarding the purchase intention of a green home. When reviewing the literature, we identified some factors that had a great influence on purchase intention in other countries, thus we felt it was necessary to test these factors for ourselves and if the situation is different in Norway. Nominal and rank scaling method is used to figure out what respondent considered to be important and motivational. In the final section of the survey, four open-ended questions were included to better understand consumer's willingness to pay for a green home so that an estimation of acceptable price for a green home can be determined.

Prestudy

Before publishing the survey, we conducted a quality check to see if the respondents understood the questions and to avoid blunt errors in the survey. We distributed the survey to our closest friends and family so that we could improve the survey. This allowed us to improve the survey and begin to collect the data.

Data collection

For the purpose of this thesis, the data collection method has mainly been an online form of data collection. Due to the current situation with COVID-19, quantitative primary data was conducted via Qualtrics. The survey method is used to study respondents, observe behaviors, and thus, conduct explanatory conclusions based on the collected data from the respondent. With an online form of a survey, we could reach as many respondents as possible, however, after receiving little response in a long time, the lack of respondents made us desperate, thus in order to attract more respondents, we took the help of the snowball sampling method, which is not a non-probability sampling method and exponential non-discriminative snowball sampling, where the first subject recruited to the sample group provides multiple referrals, and each new referral is explored until a sufficient number of samples were collected. Along with that the survey's QR code was distributed throughout the university.

Method for data analysis in SPSS

As for the method of data analysis we have used descriptive statistics, Oneway-ANOVA analysis, and linear regression analysis. These methods will help us to analyze and illustrate the relationship between variables. Here the relationships include a dependent factor and one or more independent factor that influences consumers' purchase intention of green homes. We will test the nature of relationships of each factor to consumer initial purchase decision. Prior to analyzing the data, we have removed the outliers in the dataset, we thus ended up with 112 response out of 125. Moreover, as mentioned earlier, the final section of included four open-ended question which we would use to determine consumer's price willingness to pay for a green home. However, there were insufficient amount of response, along with some unserious answers on as this was an optional question, therefore we decided to eliminate these questions.

Validity of our thesis

As the data collection method for this out thesis was an online form, the survey was published and distributed throughout the campus and Facebook groups. Out of the 125 respondents we got, it is unclear how many have taken this seriously and whether they have read the questions well enough. There is a possibility that some of the respondents were impatient and went quickly through the questionnaire to be completed as quickly as possible, as we also offered to announce a winner in return. This may have led to an incorrect assessment of the data. We had

tested the questionnaire with other fellow students and our supervisor who looked through the entire questionnaire.

Furthermore, the majority of the literature that has been used in this thesis is based on other parts of the world, as we are looking to identify what factors affect Norwegian consumer's purchase intention, as Norwegian consumer's preferences might differ when we talk about sustainability and houses.

5. ANALYSIS

In this chapter will we describe, analyze, and test our hypotheses from the results we got. To begin with, we will conduct a descriptive analysis. A descriptive analysis is used to summarize and provide an overview of the results, furthermore, we will present the results from the regression analysis carried out in SPSS. These regressions will be used to test the hypotheses.

5.1 Descriptive statistics

5.1.1 Respondent's profile

In attempt to get a clear and organized description of the respondent's answers a descriptive analysis will be used, to get a brief explanation of the findings.

The total numbers of respondents are 112 out of which 39 are male and 73 females. This corresponds to 16% male and 43,8% female respondents, which can be considered as a skewed distribution. As presented in Table 1, among the total respondents the dominant age group is 18-25, which accounts for 60 %, the next group is 26-33 and 34-40, accounting for 17,8 % and 3,4 %, the last age group, which is 41 and above accounts for 9 %. The domination of the age group 18 to 25 is because the survey was first distributed at the University of Stavanger. Among the respondents who participated in the survey, the total number of respondents with bachelor's degrees was 55 out of which 33,9 % are females and 15,2 % males. 25% of the respondents have a master's degree where the distribution between males and females is 13% and 12%, respectively. Leaving respondents with grad school and doctor's degrees at 0,9 % and 3,6%, referring to Table 2.

Table 1

Age	18-25	26-33	34-40	41-above	Total
Male	18(16%)	11(9,8%)	7(6,25%)	3(2,7%)	39 (34,8%)
Female	49(43,8%)	9(8%)	8(7,1%)	7 (6,3%)	73(65,2%)
Total	67(59,8%)	20(17,8%)	15(13,4%)	10(9%)	112(100%)

Table 2

Education:	Grad school	High school	Bachelor's degree	Master's degree	Doctor's degree	Total
Male	0(0%)	7(6,25%)	17 (15,2%)	15(13,4%)	0 (0%)	39(34,8%)
Female	1(0,9%)	17(15,2%)	38(33,9%)	13(11,6%)	4(3,6%)	73(65,2%)
Total	1(0,9%)	24(21,4%)	55 (49,1%)	28(25%)	4(3,6)	112(100%)

The majority of respondents are students, which can be explained by the dominant age group 18 – 25, representing approximately 62,5% of total respondents, the remaining respondents are either unemployed, employed, or other, with 1,8%, 33%, and 2,7% respectively, as seen in the Table 3. Roughly one-fourth of respondents have an annual income of 200 000NOK or under. The second-largest income group belongs to respondents with income from 200 000 – 300 000NOK, the following group is respondents with an income of 400 000-500 000NOK. Respondents with an income of 800 000NOK or above belong to the smallest group. As expected, there is a clear difference in household income between males and females, where more women than men have the higher wage. This is especially seen in those who earn 400,000 – 500 000, where it is mostly women who state this income. One explainable reason for this is that there is a clear dominance of female participants in the survey, referring to Table 4.

Table 3

Occupation:	Student	Unemployed	Employed	Other	Total
Male	21(18,7%)	0(0%)	17 (15,2%)	1 (0,9%)	39 (34,8%)
Female	49(43,8%)	2 (1,8%)	20 (17,8%)	2 (1,8%)	73 (65,2%)
Total	70(62,5%)	2 (1,8%)	37 (33%)	3 (2,7%)	112 (100%)

Table 4

Annual household income in thousand (NOK)	Under 200'	200'- 300'	400-500	600'-700'	800' - above	Total
Male	11 (9,8%)	8 (7,1%)	4 (3,6%)	9 (8%)	7 (6,3%)	39 (34,8%)
Female	20 (17,8%)	16 (14,3%)	16 (14,3%)	11 (9,8%)	10 (9%)	73 (65,2%)
Total	31 (27,7%)	24 (21,4%)	20 (17,9%)	20 (17,8%)	17 (15,2%)	112 (100%)

Table 5 provides an overview of respondent's residential situation. 33 % of respondents are homeowners where most of them are at the age groups 34 – 40 and 41 or above. While 33% are renters, where the majority is at the age group of 18 – 25, furthermore, 31,3 % respondents live with their parent(s). Nevertheless, the cumulative percentage of respondents who showed interest in buying homes in future is 80% meanwhile about 19% of the respondents already owns a house and/or are not interested in buying a house in future. The remaining 1,8 % of the data is missing, referring to Table 6.

Table 5

Residential situation	Rent	Own	Living with parent(s)	Other
18- 25	29(25,8%)	5 (4,4%)	31 (27,7%)	2(1,8%)
26 - 33	7 (6,3%)	8 (7,1%)	4 (3,6%)	1(0,9%)
34 - 40	1(0,9%)	14 (12,5%)	-	-
41 or above	0(0%)	10 (9%)	-	-
Total	37 (33%)	37 (33%)	35 (31,3%)	3(2,7%)

Table 6

When do you envision to buy a house?	Frequency	Precent	Cumulative percent
I am currently looking for a house.	8	7,1	7,3
Within 1-2 years	15	13,4	20,9
Within 3 - 4 years	23	20,5	41,8
Within 5 years	24	21,4	63,6
Within 10 years	18	16,1	80,0
I have no plans of buying a (new) house.	22	19,6	100
Total	110	98,2	
Missing	2	1,8	
Total	112	100	

5.1.2 Consumers view on the environmental issues and their behavior.

Measuring respondent's environmental concern and their view on environmental issues, the following tables gives an overview of respondent's opinions. To measure their environmental concerns, respondents were asked of how concern the were regarding the environmental issues. Table 7 presents the result were over 76,8 % showed concern towards the environment, while 14,3 % of the respondents were neutral and 17 % showed little to no concern.

Table 7

How concern are you?	Frequency	Precent	Cumulative Precent
Very concerned	39	34,8	34,8
Somewhat concerned	47	42	76,8
Neutral	16	14,3	91,1
Not so concerned	9	8	99,1
Not at all concerned	1	9	100
Total	112	100	

Table 8 presents a good overview of how concern respondents are regarding environmental issues and how willing they are to learn and engage in environmental practices. The table has the willingness to learn in top row while the degree of environmental concern is at the far left column. As presented in the Table 8, 22 respondents showed high level of concern and at the same time are very willing to learn and engage in environmental practices. A total of 47

respondents showed somewhat concern, half of which are very willing- somewhat willing to learn and engage in environmental practices. In total there are 104 people are willing to engage in environmental behaviors.

Table 8

How willing are you to learn about and engage in green behaviors?						
How concern are you for the environment issues?	Very	Somewhat	Neutral	Not so	Not willing	Total
	willing	willing		willing	at all	
Very concerned	22	15	2	-	-	39
Somewhat concerned	22	21	3	1	-	47
Neutral	1	13	2	-	-	16
Not so concerned	1	8	-	-	-	9
Not concerned at all	1	-	-	-	-	1
Total	47	57	7	1	-	112

Figure 6 illustrates respondents overall environmental behavior where they were asked to rate themselves from 1 to 7, 1 being poor and 7 being excellent. As seen in the figure, the largest number of respondents are between 4-5. Table 8 showed that a large portion of respondents indicated that they are very concerned or somewhat concern about the environmental issues, yet, there are few with high level of environmental behavior. Indicating that even though one shows great concerns for the environment there is little that is being done to address these concerns. When asked what is most likely to motivate the respondents to practice more in sustainable manner, the top 3 responses were personal health benefits which accounts for 32.7%, environmental benefits with 21,1%, financial savings with 16,3%, this can also be seen in Table 9.



Figure 7

Table 9

Motivation to practice green/sustainable behavior	Frequency	Percent
Personal health benefits	67	28,2
Environmental benefits	62	26,1
People I know are participating in these behaviors	13	5,5
Community health benefits	28	11,8
Leaving a better planet for the future generations	37	15,5
Financial savings on electricity, water, or waste disposal bill	31	13
Total	238	100

In order to further look into what are respondent's source of information on their knowledge about the environment, we include a question on this where we had some predetermined answers along with giving respondents the ability to include other sources of information that they are influenced by. The answer statistics are presented in the Table 10. As seen "Academic and scientific" is the most frequently selected at 83%, followed by media at 76% and family/friends at 55%. This indicates that majority of the respondents derive their knowledge from academic papers that have been conducted, along with this "Media" and "family and friends" also has a strong influence on their views and knowledge.

Table 10

What influences your views of environment issues?	Frequency	Percent
Media	85	75,9
Academics and science	93	83
State government	43	38,4
Family and friends	61	54,5
Local government	26	23,2
Work	21	18,8
Other	8	7,1
Total	337	100

5.1.3 Financial

As seen in the Table 11, about 79 of the respondents has disclosed that they were very willing to somewhat willing to save money on financial expenses resulting from environmentally friendly practices. Furthermore, when looking at which category of respondents is more willing to spare money on financial bills, respondents with an income under 400 000kr shows greater interest than respondents with income above 400 000kr. Indicating that respondents with lower annual income are more eager to spare.

Table 11

How willing are you to spare money on financial bills?						
What is your annual household income?	Very willing	Somewhat willing	Neutral	Not so willing	Not willing at all	Total
Under- 200 000	14	10	6	1	-	31
200 000 – 300 000	13	6	5	-	-	24
400 000 – 500 000	7	12	1	-	-	20
600 000 – 700 000	10	8	2	-	-	20
800 000 or above	9	8	-	-	-	17
Total	53	26	14	1	-	112

Table 12 shows that total of 87 of the respondents indicated that were extremely to somewhat willing to buy a green home, if they were offered a green loan with lower interest rate. While 23 of the respondents were neither likely nor unlikely. Leaving only 2 respondents that were somewhat unlikely that they would buy a green home if they had a lower interest rate.

Table 12

Buying green homes with green loans.	Extremely likely	Somewhat likely	Neither likely nor unlikely	Somewhat unlikely	Total
Male	13	17	9	0	39
Female	29	28	14	2	73
Total	42	45	23	2	112

Moreover, in Table 13, we are looking for if there any external influence on respondent's behavior when we talk about their sustainable behavior, and to what degree are respondents influence by others. Approximately 50% of respondents strongly-somewhat agreed to the statement that that their concern regarding the environmental is noticed by their social group, whereas about 40% neither agreed nor disagreed to the statement. When asked if it was expected of them to obtain a sustainable behavior 12,5% strongly agreed, 44,6% somewhat agreed, 32% neither agreed nor disagreed to this statement, the remaining respondent either somewhat disagreed or strongly disagreed with 15% and 3% to the statement. When observing at whether or not respondents are purchasing sustainable products independently, we found out that round 35% strongly agreed to the statement that shopping sustainable products or not is completely up to them. 45,5% of respondents somewhat agreed to the statement, meaning there is external source influence in their purchase behavior. The percentage of respondents who neither agreed nor disagreed to the statement is as big as 11,6%, around 5% somewhat disagreed and finally 2,7% strongly disagreed to the statement that shopping sustainable is completely up to them. Overall, approximately 65% of respondents has some sort of influence whether or not they purchase sustainable product.

Table 13

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Most people who are important to me think that I am genuinely concerned about the environment.	11 (9,8%)	46 (41,1%)	45 (40,2%)	6 (5,4%)	4 (3,6%)
It is expected of me that I have a sustainable behavior/buy sustainable product, reduce waste and be more energy efficient	14 (12,5%)	50 (44,6%)	36 (32,1%)	11 (9,8%)	1 (9%)
Whether or not I shop sustainable product is completely up to me	39 (34,8%)	51 (45,5%)	13 (11,6%)	6 (5,4%)	3 (2,7%)

5.1.4 GREEN HOMES:

Respondents were asked to rate their knowledge on green homes from a scale 1 – 5, being 1 little/no knowledge and 5 being a lot. As seen in the figure 7, majority of the respondent gave the numbers 2 and 3, which indicated that they had some knowledge about green homes. Out of the 112 respondents, 25 respondents had little knowledge of what a green home is and 4 respondents had a greater knowledge about a green home.

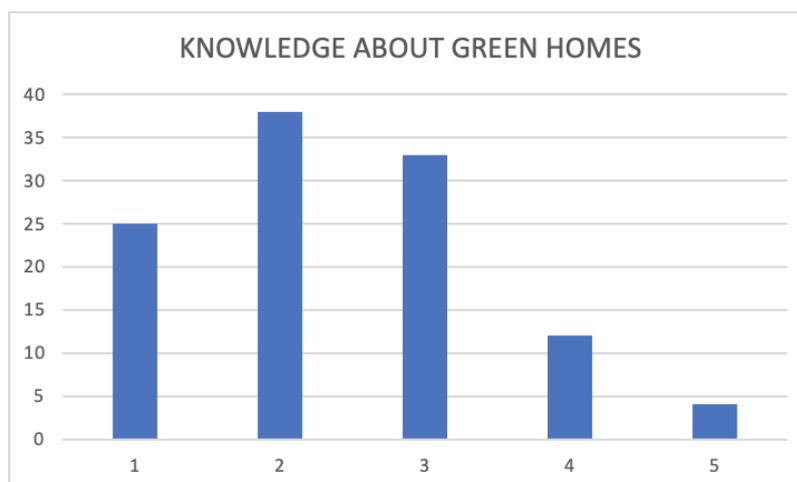


Figure 8

Moving forward in the following section we will be looking at respondent's assumption about green homes. Respondents were asked how much they agreed on the statement that buying green home are expensive where 21,4% strongly agree and 42% somewhat agreed on the statement, see Table 14. Leaving 29% of respondents neither agreeing nor disagreeing to the statement, 6,3% somewhat disagreeing and less than 1% strongly disagreed. Another assumption that was posed to the respondents was whether they agreed with the statement that a green home is of lower quality, considering the materials used in building homes. Here 3,6% of the respondents strongly agreed, 16% somewhat agreed and about 38% of the respondents neither agreed nor disagreed which was the majority, while 27,7% of the respondents somewhat disagreed and 14 % strongly disagree with the statement.

Table 14

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
Buying green homes is more expensive than traditional homes.	24 (21,4%)	47 (42,0%)	33 (29,5%)	7 (6,3%)	1 (0,9%)	112 (100%)
Green homes are of lower quality, considering the materials used in building green homes.	4 (3,6%)	18 (16,1%)	43 (38,4%)	31 (27,7%)	16 (14,3%)	112 (100%)

Furthermore, respondents were also asked about their preference between a sustainable and a conventional home given the fact that both would be the same priced and size. Here we wanted to see what respondents' preference are between the two. As seen in the Table 15 below 73% of the respondents revealed that they would prefer a sustainable house over a traditional house, only a small proportion chose a traditional house which accounted for roughly 9%. While, 17% had no preference between a sustainable and a traditional house.

Table 15

	Frequency	Percent
Sustainable house	82	73,2
Traditional house	10	8,9
No preference	20	17,4
Total	112	100

5.2 ANOVA analysis

(H1) Younger consumers have a higher purchase intention of green homes

With the emerging youngsters' interest in the environmental issues, here we are testing whether or not there is a difference in their purchase intention of green homes. The null hypothesis and the alternative hypothesis are thus formulated as such:

H0= Consumer's purchase intention is the same across different age groups.

H1= Consumer's purchase intention is not the same across different age groups.

Table 16

ANOVA

	Sum of square	df	Mean square	F	Sig
Between groups	0,783	3	0,261	0,485	0,693
Within groups	58,136	108	0,538		
Total	58,920	111			

Dependent variable: How likely are you to buy a green home in future?

Table 16 shows that there is not a significant difference between consumers age and their purchase intention. The P-value is 0.693 which is significantly greater the alpha level (0.05). Thus, we fail to reject the null hypothesis and conclude that there is in fact no significant effect of consumers age on their purchase intention.

(H2) The higher education level a consumer has, the higher is her/his purchase intention of green homes.

People with higher level of education is often more aware and open to the emerging environmental issues, hence we are here testing if there is any relation between consumers education level and their purchase intention. Thus, the null hypothesis is developed to be that consumer's purchase intention is the same across different education level, the alternative hypothesis is formulated as, consumer's purchase intention is not the same across different education level

H0= Consumer's purchase intention is the same across different education level.

H1= Consumer's purchase intention is not the same across different education level.

Table 17

ANOVA

	Sum of squares	df	Mean square	F	Sig.
Between groups	1.470	4	.367	.684	.604
Within groups	57.450	107	.537		
Total	58.920	111			

Dependent variable: How likely are you to buy a green home in future?

Table 17 shows whether there is statistically significant between the education levels and their purchase intention. The significance value is 0.604 (i.e, $p = .604$), which is far greater than the alpha level 0.05. Thus, we fail to reject the null hypothesis and can conclude that there is no significance difference between the consumer's purchase intention and education levels.

(H3) Higher level of household income leads to an increase in purchase intention on green homes.

Buying a house is a long-term investment, and the decision to go through with the purchase intention is heavily influenced by consumers income and budget. We are here testing whether its difference between the level of income on purchase intention. The null hypothesis and the alternative hypothesis are thus formulated as follows:

H0: There is no significant effect of the consumers household income on their purchase intention for a green home.

H1: There is a significant effect of the consumers household income on their purchase intention for a green home.

Table 18

ANOVA

	Sum of squares	df	Mean square	F	Sig.
Between groups	2.741	4	.685	1.305	.273
Within groups	56.179	107	.525		
Total	58.920	111			

Dependent variable: How likely are you to purchase a green home?

Table 18 shows whether there is statistically significant difference between the household income categories and the purchase intention. The significance value is 0.273 (i.e, $p = .273$), which is greater than our alpha level 0.05. Thus, we fail to reject the null hypothesis and can conclude that there is no significant difference between the income categories on their purchase intention.

5.3 Regression analysis

When conducting regression analysis for this thesis, the dependent variable chosen that is “how likely are you to buy a green home in future” and 15 different independent variables, seen appendix 1. For the first three hypotheses, we used the one-way ANOVA to test whether there were significant differences between the categories of age, education, and annual household income. For the next hypotheses, we have used the linear regression method to test whether there is significance enough to reject the null hypothesis and accept the alternative hypothesis. To reject or accept the null hypothesis, a significance level of 0.05 was chosen. The significance level of 0.05 provides a solid evidence for rejecting the null hypothesis which can reassure us the risk of inferring a difference when in fact there is no difference and vice versa. The result of the regression analysis on the coefficient table can be seen in Table 20.

Table 19

MODEL SUMMARY				
R	R- squared	Adjusted R-square	Std. Error of the Estimate	Durbin - Watson
.607	.368	.312	.604	1,769

Dependent: How likely are you to buy a green home in future?

The R square for the overall model is at 0.368 with an adjusted R square at 0.312, indicating that about 37% of the variability in the dependent variable is explained by the independent variable. Consumers purchase intention for green homes is a complex variable that cannot be only explained by the independent variables that we have chosen to study, thus the 37% of the variation in the dependent variable is therefore satisfactory.

Table 1 regression output- coefficient table

	Unstandardize d coefficients		Standardized coefficients	t	Sig.	95,0 % Confidence Interval for B	
	B	Std. error	B			Lower bound	Upper bound
Constant	2.433	.511		4.758	.000	1.419	3.447
Environmental concern	-.089	.070	-.116	-1.274	.206	-.228	.050
Willingness to learn and engage in green behavior	.356	.110	.312	3.243	.002	.138	.574
I am interested in living in a sustainable infrastructure	.429	.095	.403	4.531	.000	.241	.617
Rate your overall environmental behavior	-.110	.068	-.150	-1.627	.107	-.245	.024
Health concern	-.015	.071	-.019	-.205	.838	-.156	.127
Received recommendation on purchasing a green home from friends/relative.	-.142	.057	-.206	-2.469	.015	-.256	-.028
Willing to spare on financial bills	-.162	.083	-.162	-1.949	.054	-.327	.003
Likeliness to purchase a green home if you had lower interest rate	-.034	.082	-.037	-.416	.679	-.196	.128
Buying a green home is expensive than the conventional homes	-.079	.070	-.096	-1.126	.263	-.218	.060

This output as seen in Table 20, tells us about the relationship of the dependent and independent variables. To test whether the parameter is significantly different from 0, we use the standard error. The 95% confidence interval for the coefficients indicates that one can be 95% confident that the value of the coefficient will lie in between that interval. The Constant significance value of the intercept is much less than 0.05, which indicates that it has a significant effect on the purchase intention of green homes. The 95 % confidence interval for the intercept value is (1.419, 3.447) this means that value of intercept lies between this.

(H4) The more a consumer is willing spare money on financial bills, the higher his/her purchase intention of a green home

Consumers spend money a lot of money on electricity bills, water bills and etc. thus, based on this we have developed a question on how willing they were to spare money on financial bills. According to this, the null hypothesis of our testing procedure can be developed as; there is no significant effect of the customers willingness to spare money on financial bills on their purchase intention. Whereas, the alternative hypothesis can be written as there is a significant effect of the customers willingness to spare money on financial bills on their purchase intention

H0= There is no significant effect of the customers willingness to spare m.oney on financial bills on their purchase intention.

H1= There is a significant effect of the customers willingness to spare money on financial bills on their purchase intention.

The beta value which is the coefficient of H4 is -0.162 . This means holding the other variables constant, every unit change in the independent variable, there is a 0.162 unit decrease in their purchase intention. The P-value here is 0.054, that greater than the significance level of 0.05. The null hypothesis again cannot be rejected. Once again, we conclude that the willingness to spare money on financial bills does not have a significant effect on consumers purchase intention.

(H5): Consumer's perception of the price on green homes has a negative effect on purchase intention.

H0=Consumer's perceptions of the price on green homes have no effect on their purchase intention.

H1= Consumer's perceptions of the price on green homes have a significant effect on their purchase intention.

The beta value for H5 is -0.079 which indicates that with every unit change in the independent variable, there is a 0.079 unit decrease in the dependent variable which is their purchase intention of green homes. The P-value here is 0.263 which is again greater than the 0.05 significant level. Thus, the null hypothesis cannot be rejected, we conclude that consumer's price perception has no effect on their purchase intention.

(H6): A greater interest in a lower interest rate leads to a higher purchase intention of a green home.

A lower interest rate is always a better option. Consequently, we want to test whether customers getting a lower interest rate affects their purchase intention. The null hypothesis is there exists no effect of getting a lower interest rate on their purchase intention, whereas the alternative hypothesis is there exists a significant effect of getting a lower interest rate on their purchase intention.

H0= There exists no effect of getting a lower interest rate on their purchase intention of green home.

H1= There is exists a significant effect of getting a lower interest rate on their purchase intention of green home.

The beta value of H6 is -0.034 , indicating that with every unit change in the rate of getting lower interest there is 0.034 unit decrease in their purchase intention, holding other independent variables constant. The P-value is 0.679 which is larger than the alpha level which is 0.05 . So, we fail to reject the null hypothesis and conclude that there is no significant effect of customer getting a lower interest rate on their purchase intention. The 95% confidence interval is $(-0.169, 0.128)$.

(H7) The more environmental concern a consumer has, the higher is her/his purchase intention of green homes.

We are looking whether Consumers' attitude towards the environment is positively related to their actual purchase intention or not. The null hypothesis here can be formulated as consumers' environmental concern does not affect their purchase intention of green homes, and the alternative hypothesis is consumers environmental concern does affect their purchase intention of green homes.

H0= Consumer's environmental concern does not affect their purchase intention of green homes

H1= Consumer's environmental concern does affect their purchase intention of green homes

The P-value is 0.206 which is quite larger than 0.05, so we failed to reject the null hypothesis. Here we can conclude that concern of the consumers with environmental issues does not affect their purchase intention of a green home in the future. The 95.0% Confidence Interval for the slope of is coefficient is (-0.228, 0.05). The value of beta, which is the coefficient of H7 is (-0.089). This means that in every unit change of the independent variable, there is a -0.089 unit decrease in the dependent variable provided the other variables are held constant.

(H8): Consumer's willingness to learn about and engage in green behavior is positively related to the purchase intention of a green home.

When looking at people's willingness to engage themselves in green behavior such as recycling and composting etc. The testing procedure can be explained as to whether the pro-environmental behavior of the customers affects their purchase intention. The null hypothesis can be formulated as there is no effect of the engagement of the customers on their purchase intention, whereas the alternative hypothesis is that there exists a significant effect of the engagement of the customers on their purchase intention.

H0= There is no effect of the engagement in environmental practices on consumer purchase intention of a green home

H1= There exists a significant effect of the engagement in environmental practices on consumers purchase intention of green home

The value of the coefficient of H8 is 0.356 which means that with every unit change in the engagement of the consumers in green behavior there is 0.356 unit increase in their purchase intention. The P-value, in this case, is 0.002 which is smaller than the stipulated alpha level of

0.05. This marks the rejection of the null hypothesis thus, providing enough evidence to say that the engagement of the customers in green behavior significantly affects their purchase intention. The 95% coefficient interval of the coefficient is (0.138, 0.574).

(H9) Higher level of environmental behavior leads to higher purchase intention of green homes.

Due to increasing environmental pollution and violating of the 3R's-reduce, reuse, and recycle, we decided to put forth the question of how much attention do they pay to the environment. Here we are testing whether a customer's environmental behavior affects their purchase intention or not. Keeping this in mind, the null hypothesis is written as there exists no significant effect of their environmental behavior on their purchase intention. On the other hand, the alternative hypothesis is formulated as there exists a significant effect of their environmental behavior on their purchase intention.

H0=There exists no significant effect of their environmental behavior on their purchase intention.

H1= There exists a significant effect of their environmental behavior on their purchase intention.

The beta value for H9 is -0.110 which indicates that with every unit change in their environmental behavior, there is 0.110 unit decrease in their purchase intention. The P-value, in this case, is 0.107 which is again greater than 0.05 which leads to acceptance of the null hypothesis. The conclusion is, there is no significant effect of environmental behavior on purchase intention. The 95% confidence interval of the coefficient value is (-0,245, 0.024).

(H10): The more health concern a consumer has, the higher is her/his purchase intention of green homes.

Different customers are living in different areas and may have varied environmental conditions due to which several health issues may also arise. Keeping this issue in mind we have decided to raise the question of the customers' health and environmental issues corresponding to their stay. Hence, we will be testing whether their concern affects their purchase intention. The null hypothesis, in this case, is constructed as consumers health concern

does not affect their purchase intention of green homes. Whereas the alternative hypothesis can be constructed as consumer's health concern has a significant affect their purchase intention of green homes.

H0= Consumer's health concern does not affect their purchase intention of green homes

H1=Consumer's health concern has a significant affect their purchase intention of green homes

The beta value which is the coefficient for H10 is -0.015, this means a unit change in the independent variable, there is 0.015 unit decrease in their purchase intention. The P-value, in this case, is 0.838 which is greater than 0.05. thus, we again fail to reject the null hypothesis and there isn't any significant evidence that the consumer's health concern affects their purchase intention. The 95% confidence interval for the coefficient is (-0.1560, 0.127).

(H11) Consumer's interest in living in sustainable infrastructure leads to purchase intention of green homes.

Here we intend to test whether a customer's interest in living in a sustainable infrastructure affects their purchase intention. The null hypothesis can be formulated as consumer's interest of living in sustainable infrastructure does not affect their purchase intention of green homes. Whereas the alternative hypothesis can be written as Consumer's interest of living in sustainable infrastructure affects their purchase intention of green homes

H0= Consumer's interest of living in sustainable infrastructure does not affect their purchase intention of green homes

H1= Consumer's interest of living in sustainable infrastructure affects their purchase intention of green homes

The beta value of H11 is 0.429 which explains that for every unit change in the independent variable there is 0.429 unit increase in the customer's purchase intention. The P-value here is 0.000 which is significantly smaller than the alpha level 0,05. Therefore, the null hypothesis is rejected, and it can be concluded that customer's interest in living in a sustainable infrastructure has a significant effect on their purchase intention. The 95% Confidence interval of the coefficient (0.241, 0.617).

(H12): The more recommendation a consumer receives from her/his reference group, the higher is her/his purchase intention.

Receiving recommendations prove to be convincing at times when you are looking to fulfill a need. Thus, we have decided to raise the question to see whether consumers receiving recommendations on green homes affects their purchase intention. The null and alternative hypothesis is as following:

H0= Recommendations have no effect on purchase intention

H1= recommendations have a significant effect on purchase intention.

The P-value, in this case, is 0.015 which is less than the significant level of 0.05. Thus, the null hypothesis is rejected and there is enough evidence to say that consumers receiving recommendations from their reference group plays a significant role in their purchase intention. The beta value for H12 is -0.142 which means for every unit change in the recommendations, there is a 0.142 unit decrease in their purchase intention.

6. DISCUSSION AND CONCLUSION

This thesis aimed to shed light on what determines Norwegian consumer's purchase intention of green homes. After analyzing the primary data, the data analysis reveals that consumers with a higher willingness to learn and engage in sustainable behavior will be more likely to buy green homes in the future. Additionally, the interest in living in sustainable infrastructure, and receiving recommendations on buying green homes also lead consumers to purchase these environment-friendly houses. Meanwhile, other factors such as consumers' socio-demographics, financial situation, and their current environmental behavior had shown no effect on their purchase intention. We will further discuss the results in this chapter against the research question, keeping literature and theory in mind.

After reviewing the literature, we had some assumptions that we wanted to look more into, as there were different statements from different researchers, we felt it necessary to check it for ourselves. For instance, there were several studies that stated that socio-demographics have little to no influence on purchase intention. Wang et al., (2021) and Carrete, L.et al. (2012) implied that consumers' age determines sustainable behavior and their purchase intention for sustainable products. We thus, felt obligated to test whether age has a significant effect on purchase intention for a green home. After running a one-way ANOVA analysis, the findings indicated that consumers' age has no effect on their purchase intention, meaning both the younger – and the older generation may behave in a sustainable manner regardless of their age. This is something different from the findings in previous studies on green buildings and green environmental behavior.

In addition to socio-demographic factor, hypotheses on economic incentives were also developed to see whether it plays a significant role in consumer's purchase intention of green homes. Like most things, sustainable development efforts come at a cost. It is reasonable to believe that income has the potential to constrain homebuyers or even discourage them from buying a house, which is consistent with Forsyth (2009). However, our results show that income has no significant effect on the intention to buy a green home, implying that consumer's income level has little to do with their intention of buying a green home. This is consistent with Park & Ha (2012) & Akehurst (2012) who also found no differences between consumer's income and their green consumption. Given the consumers' preferences and budget constraints, consumers act rationally and choose goods that maximize their utility given their income level. Additionally, when the consumer purchases a home, the consumer usually takes out a loan, meaning that in the first period his consumption is higher than his income, in the second period

he repays the loan, so his consumption is lower than his income. Even if the consumer borrows, he/she cannot consume more than the loan and income combined. Although our results do not support the consumer choice theory, we would still argue that purchase intention strongly depends on income and consumer's financial status and affordability.

Moreover, Hwang et al., (2017) found that consumers often perceive a green home as more expensive than a conventional home, along with this Wisstein et al. (2014) also stated that consumer's with low environmental behavior is mainly concerned about the price of green products and are more hesitant to buy a green home because of the possible financial burden. Nevertheless, it is a common misconception that green buildings are expensive because new technologies, materials, and knowledge slowly erode by becoming more readily available, and the additional cost of constructing a green building is only 1-2% higher than that of a non-green building (Hong, 2013; Tobias & Writer, 2020) Contradicting to Wisstein et al. (2014) our analysis results suggest that consumers' price perception does not influence their intention to buy a green home.

In addition to the perceived price, the financial benefits of living in a house with green features help residents pay less for their utility bills. Respondents were not willing to save money on utility bills, leading us to fail to demonstrate that a financial benefit could be a motivating factor for purchasing a green home. However, respondents had a higher utility to save money on financial bills as seen in Table 11 but was no correlation with the intention to purchase a green home. We also test whether lower interest rates offered by Norwegian Banks can be a motivating factor as the reduced interest rates lead to a lower interest payment in the future, making it cheaper to buy a green home than a conventional home in the long run (Varian, 2014). Although Table 14 shows that the majority of the respondents are very willing to somewhat willing to buy a green home if they had a green interest rate; the hypothesis was not significant which means that there is no correlation between a lower interest rate and intention to buy a green home.

Furthermore, we also failed to prove the effect of environmental concern on purchase intention of green homes, the results contradict with previous studies that there is in fact a positive relationship between environmental concern and purchase intention of green products (Kaiser, Fuhrer, & Wölfing, 1999; Li, Clark, Jensen, Yen, & English, 2013; Lin & Huang, 2012; Sinnappan & Rahman, 2011; Yue, Sheng, She, & Xu, 2020). Though the majority of consumers often show concern about the environment, their positive environmental attitude does not

reflect their purchase intention (Weisstein et al., 2014). When exploring green purchase behavior, many studies reported that there is a clear intention-action gap, between consumers' expressed attitude towards environmental-friendly products and their actual purchase behavior (Joshi & Rahman, 2015; Rokka & Uusitalo, 2008; Weisstein, Asgari, & Siew, 2014; White, 2019). Some studies revealed even consumers that are highly conscious about the environmental issues do not always purchase sustainable products; their purchase behavior more or less depends on ecological perspectives along with their evaluation of product attributes, moreover, situational factors also hamper consumers green purchase behavior and minimize the influence of a positive environmental attitude (Mainieri, Barnett, Valdero, Unipan, & Oskamp, 1997; Rokka & Uusitalo, 2008). Thus, it is safe to say that even though there is a strong relationship between consumers' environmental concerns and green consumption, a high level of concern does not necessarily result in higher purchase intention.

An additional factor that is believed to have an effect on green consumption behavior is environmental knowledge. Environmental knowledge is often assumed to initiate green consumption behavior, based on the rational assumption that people will engage in a more pro-environmental manner if they are educated about environmental issues and behavior (Tan, Johnstone, & Yang, 2009; Bartkus et al. (1999)). As seen in Table 9, the majority of the respondents (about 92%) expressed their interest and were willing to learn about environmental issues and contribute by recycling, composting, energy and/or water conservation, mass transit/carpooling. This assumption is supported by the regression analysis that we conducted with a significance level of 0.002, which suggests that if consumers possess a superior understanding of environmental issues and engage in more sustainable behavior, it is likely that their purchase intention of green homes will be highly motivated. The results support the findings of other previous studies (Azila et al., 2012; Shaharudin & Nik Abdul Rashid, 2017). Moreover, when looking into what respondents think of living in sustainable infrastructure, we found that the interest of living in a sustainable infrastructure has a significant effect on the likelihood of buying a green home.

Therefore, it can be argued that consumers interest; in living in sustainable infrastructure and obtaining a pro-environmental behavior has a greater effect on the likelihood of buying a green home, in addition to this, the amount of recommendation one receives from their social groups is also positively related to their purchase intention. The significance of H12, confirms that even when we talk about purchase intention of durable goods such as houses, social influence plays an equally important role as for nondurable goods. A study done by Harvard Business

Review reveals that people were influenced to buy and install solar panels after seeing their neighbors doing so, furthermore, it also disclosed that in order to close the intention-action gap one should focus on how to encourage sustainable consumption, by for example using social influence and shaping good habits; meaning breaking the old habits, and learning consumers the new normal behavior, through making sustainable behavior the default option (White et al., 2019).

These findings indicate that the overall consumer's intention to buy a green home is mainly influenced by their views of the product and interest in sustainability and environmental behavior. We found that even though consumers express concern their purchase intention for the environment is not affected unless they are willing to act upon it. As explained in the theory of planned behavior, it is the attitude, social norm, and perceived behavior control that drives consumers' purchase intention. Consumers' favorable attitude towards more environmental behaviors strengthens their intentions to purchase a green product. Our results to some extent are consistent with this theory, where the positive attitude, of being open to the idea of learning and engaging in environmental actions is most likely resulting in a purchase decision.

Limitation:

Despite our attempt to identify factors influencing consumers' purchase intention of green homes effortlessly, as this concept is new in Norway, there are endless opportunities for further research, our thesis is a small contribution to this topic. The number of respondents that we gather also does not entirely represent the Norwegian consumers, for further research is also suggested to include other factors that might have an effect on consumers purchase intention. Also as we acquired primary data some sampling errors are bound to occur, which might have affected the result of the data analysis.

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8.APPENDIX

APPENDIX 1: Hypothesis table

Nr	Hypotheses
1	Younger consumers have a higher purchase intention of green homes
2	The higher education level a consumer has, the higher is her/his purchase intention of green homes
3	Higher level of household income leads to an increase in purchase intention on green homes.
4	The more a consumer is willing spare money on financial bills, the higher his/her purchase intention of a green home
5	Consumer's perception of the price on green homes has a negative effect on purchase intention.
6	A greater interest in a lower interest rate leads to a higher purchase intention of a green home.
7	The more environmental concern a consumer has, the higher is her/his purchase intention of green homes
8	Consumer's willingness to learn about and engage in green behavior is positively related to the purchase intention of a green home.
9	Higher level of environmental behavior leads to higher purchase intention of green homes.
10	The more health concern a consumer has, the higher is her/his purchase intention of green homes.
11	Consumer's interest in living in sustainable infrastructure leads to purchase intention of green homes.
12	The more recommendation a consumer receives from her/his reference group, the higher is her/his purchase intention

Appendix 2: Survey

We are two master students studying business and administration at UiS. We are conducting a research on the new arriving sustainable homes also known as “green homes”. We would love to hear your thoughts on this new housing market in Norway. The aim of the study is to establish the factors that impact an individual’s intent to purchase a green home. Your participation would shed some lights on the adaption of these green homes. This survey is completely anonymous and will only be used for the purpose of this study. The survey will take approximately 10 - 12 minutes.

Q1 What is your gender?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Q2 How old are you?

- 18 - 25
- 26 - 33
- 34 - 40
- 41 or above

Q3 Which of the following best describes your current relationship status?

- Single
- In relationship
- Married
- Divorced
- Widowed
- Prefer not to say

Q4 What is the highest level of education you completed?

- Grade School
- High school
- Bachelor’s degree
- Master’s degree
- Doctorate Degree

Q5 What is your occupation?

- Student
- Unemployed
- Employed
- Retired
- Others

Q6 What is your annual household income?

- Under 200 000kr
- 200 000kr - 300 000kr
- 400 000kr - 500 000kr
- 600 000kr - 700 000kr
- 800 000kr or above

Q7 Including yourself, how many people currently live in your household?

Q8 Do you own or rent your current residence?

- Rent
- Own
- Living with my parents
- Other, please specify _____

Q9 How much did your house cost approximately?

Q10 When do you envision to buy a house?

- I am currently looking for a house
- Within 1 - 2 years
- Within 3 - 4 years
- Within 5 years
- Within 10 years
- I have no plans of buying a house

In the following questions, we would like if you could share your experiences about sustainable consumption practices at your home and other places. Be as honest as possible as this is an important factor to our research.

*In this study, sustainable consumption is defined as responsible, conscious and environment friendly behavior related to product/item purchased.

Q11 How concerned are you with environmental issues?

- Very concerned
- Somewhat concerned
- Neutral
- Not so concerned
- Not at all concerned

Q12 Which three of the following do you feel has the strongest influence on your views about the environment?

- Media
- Academic and Science
- State government
- Family/friends
- Local government
- Work
- Others, please specify _____

Q13 How concerned are you regarding your health and the environment you live in now?

- Far too much
- Slightly too much
- Neither too much nor too little
- Slightly too little
- Far too little

Q14 How willing are you to spare money on financial bills? (e.g electricity bill, water bill and waste disposal bill)

- Very willing
- Somewhat willing
- Neutral
- Not so unwilling
- Not willing at all

Q15 Which of the following is most likely to motivate you to practice green/sustainable behaviors or add more green behaviors in the future (i.e. using less energy at home, biking instead of driving, volunteering)?

- Personal health benefits (e.g. biking/walking to work helps me stay fit,)
- Environmental benefits (e.g. reduced greenhouse gas emissions, water conservation)
- People I know are participating in these behaviors
- Community health benefits (e.g. driving less results in better air quality for everyone)
- Leaving a better planet for the future generations
- Financial savings on electricity, water, or waste disposal bill

Q16 How willing are you to learn about and engage in green behaviors, such as recycling, composting, energy and/or water conservation, mass transit/carpooling, etc.?

- Very willing
- Somewhat willing
- Neutral
- Not so willing
- Not willing at all

Q17 How much do you agree or disagree with the following statement?

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Most people who are important to me think that I am genuinely concerned about the environment.					
It is expected of me that I have a sustainable behavior/buy sustainable product, reduce waste and be more energy efficient					
Whether or not I shop sustainable product is completely up to me					

Q18 How often do you purchase a product based on a friends/family members recommendation?

- Always
- Most of the time
- About half the time
- Sometimes
- Never

Q19 On the scale from 1 to 7, how would you rate your overall environmental behavior? 1 = poor, 7= excellent

- 1
- 2
- 3
- 4
- 5
- 6
- 7

Q20 How much do you agree or disagree to the following statements?

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I am confident that people like me can make an improvement for the environment.					
Buying green homes is more expensive than traditional homes.					
Green homes are of lower quality, considering the materials used in building green homes.					

Q21 When looking for a new home, what are the top 4 things you consider?

- Price
- Available land
- Size
- Building materials
- Build year
- Upgraded/energy saving appliances
- House type
- Neighborhood amenities
- Architecture
- Location
- Move-in-ready
- Others, please specify _____

Q22 How much do you agree or disagree with this statement: I am interested in living in a sustainable infrastructure.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q23 How much do you agree or disagree on this statement: Sustainability should be a priority when building new infrastructure

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q24 On the scale from 1 to 5, how much do you know about green homes / sustainable homes?

- 1
- 2
- 3
- 4
- 5

The Norwegian government have started several public support programs that promotes zero and low emission solutions. Examples of such programs is Zero Emission Neighborhoods in Smart Cities (ZEN Center). ZEN Center finds concrete solutions for future building requirements. One of ZEN center's project is Zero Village Bergen, which will be Norway's first and largest zero-emissions housing project and will set new standards for housing construction in Norway and beyond the country's borders, where approximately 800 homes will be built as zero emission. Zero emission homes are also known as green homes. They are designed to be sustainable in terms of efficient use of energy, water, and building materials resulting in reduced financial bills and waste. Other benefits of living in a green home includes better air quality, availability of green spaces, and proximity to shops and public transportation, along with these several banks also offer lower interest rate when purchasing a green home.

Q25 Rank the importance's of these factors (below) for you to purchase a green home? 1 being the most important factor, 5 being the least important.

- _____ Renewable energy (Energy efficient appliances, reusable water etc.)
- _____ Health benefits (better air quality, less harmful material used in your home)
- _____ Financial gains (saving on bills)
- _____ Neighborhood amenities
- _____ Lower interest rate (Green loan)

Q26 If two houses with the same size and cost were built next to each other but one used sustainable building materials and one used material we have been using, which house would you choose?

- Sustainable house
- Traditional house
- No preference

Q27 How likely are you to purchase a green home, if you had a lower interest rate?

- Extremely likely
- Somewhat likely
- Neither likely nor unlikely
- Somewhat unlikely
- Extremely unlikely

Q28 Suppose the green home had a higher price. How much more would you have been willing to pay, based on a base price of kr 3,000,000

- Would not pay more
- 1 % - 2 %
- 3 % - 4 %
- 5 % or more

Q29 At what price (NOK) would you consider green homes to be so expensive that you would not consider buying it? Consider a house with 2 bedrooms, 1 kitchen, 1 bath+ wc, 1 living room and 1 laundry room.

Q30 At what price would you consider green homes to be priced so low that you would feel the quality couldn't be very good? Consider a house with 2 bedrooms, 1 kitchen, 1 bath+ wc, 1 living room and 1 laundry room.

Q31 At what price (NOK) would you consider green homes starting to get expensive, so that it is not out of the question, but you would have to give some thought to buying it? Consider a house with 2 bedrooms, 1 kitchen, 1 bath+ wc, 1 living room and 1 laundry room.

Q32 At what price (NOK) would you consider green homes to be a bargain—a great buy for the money? Consider a house with 2 bedrooms, 1 kitchen, 1 bath+ , 1 living room and 1 laundry room.

Q33 How often have you received recommendations on purchasing a green home from your friends/relatives in recent years?

- 0
- 1
- 2
- 3
- 4
- More than 4 times

Q34 How likely are you to buy a green home in the future?

- Extremely likely
- Somewhat likely
- Neither likely nor unlikely
- Somewhat unlikely
- Extremely unlikely

APPENDIX 3a: One-way ANOVA

ANOVA

How likely are you to buy a green home in the future?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.741	4	.685	1.305	.273
Within Groups	56.179	107	.525		
Total	58.920	111			

ONEWAY How likely are you to buy a green home in the future?

By education

ANOVA

How likely are you to buy a green home in the future?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.470	4	.367	.684	.604
Within Groups	57.450	107	.537		
Total	58.920	111			

ONEWAY How likely are you to buy a green home in the future?

BY Age

ANOVA

How likely are you to buy a green home in the future?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.783	3	.261	.485	.693
Within Groups	58.136	108	.538		
Total	58.920	111			

ONEWAY How likely are you to buy a green home in the future?

BY Annual household income

APPENDIX 3b: Regression output

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.607 ^a	.368	.312	.604	1.769

a. Predictors: (Constant), How much do you agree or disagree to the following statements? - Buying green homes is more expensive than traditional homes., How willing are you to spare money on financial bills? (e.g electricity bill, water bill and waste disposal bill), How often have you received recommendations on purchasing a green home from your friends/relatives in recent years?, How likely are you to purchase a green home, if you had a lower interest rate?, How concerned are you regarding your health and the environment you live in now?, How much do you agree or disagree with this statement: I am interested in living in a sustainable infrastructure., How concerned are you with environmental issues?, On the scale from 1 to 7, how would you rate your overall environmental behavior? 1 = poor, 7= excellent, How willing are you to learn about and engage in green behaviors, such as recycling, composting, energy and/or water conservation, mass transit/carpooling, etc.?

b. Dependent Variable: How likely are you to buy a green home in the future?

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.688	9	2.410	6.602	.000 ^b
	Residual	37.231	102	.365		
	Total	58.920	111			

a. Dependent Variable: How likely are you to buy a green home in the future?

b. Predictors: (Constant), How much do you agree or disagree to the following statements? - Buying green homes is more expensive than traditional homes., How willing are you to spare money on financial bills? (e.g electricity bill, water bill and waste disposal bill), How often have you received recommendations on purchasing a green home from your friends/relatives in recent years?, How likely are you to purchase a green home, if you had a lower interest rate?, How concerned are you regarding your health and the environment you live in now?, How much do you agree or disagree with this statement: I am interested in living in a sustainable infrastructure., How concerned are you with environmental issues?, On the scale from 1 to 7, how would you rate your overall environmental behavior? 1 = poor, 7= excellent, How willing are you to learn about and engage in green behaviors, such as recycling, composting, energy and/or water conservation, mass transit/carpooling, etc.?

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	
1	(Constant)	2.433	.511		4.758	.000	1.419	
	How concerned are you with environmental issues?	-.089	.070	-.116	-1.274	.206	-.228	
	How willing are you to learn about and engage in green behaviors, such as recycling, composting, energy and/or water conservation, mass transit/carpooling, etc.?	.356	.110	.312	3.243	.002	.138	
	How much do you agree or disagree with this statement: I am interested in living in a sustainable infrastructure.	.429	.095	.403	4.531	.000	.241	

On the scale from 1 to 7, how would you rate your overall environmental behavior? 1 = poor, 7= excellent	-.110	.068	-.150	- 1.62 7	.107	-.245	
How concerned are you regarding your health and the environment you live in now?	-.015	.071	-.019	- .205	.838	-.156	
How often have you received recommendations on purchasing a green home from your friends/relatives in recent years?	-.142	.057	-.206	- 2.46 9	.015	-.256	
How willing are you to spare money on financial bills? (e.g electricity bill, water bill and waste disposal bill)	-.162	.083	-.162	- 1.94 9	.054	-.327	
How likely are you to purchase a green home, if you had a	-.034	.082	-.037	- .416	.679	-.196	

lower interest rate?							
How much do you agree or disagree to the following statements? - Buying green homes is more expensive than traditional homes.	-0.079	.070	-.096	-1.126	.263	-.218	

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.12	3.37	2.40	.442	112
Residual	-1.363	1.642	.000	.579	112
Std. Predicted Value	-2.901	2.179	.000	1.000	112
Std. Residual	-2.256	2.717	.000	.959	112

a. Dependent Variable: How likely are you to buy a green home in the future?

Charts

