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The impact of energy rating in the home buying process

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Bachelor's thesis
May 2017
School of Service and Business Management
Degree Programme in Facility Management

jamk.fi

Description

Author(s)	Type of publication	Date
Wideman, Vilma	Bachelor's thesis	May 2017
		Language of publication: English
	Number of pages 45	Permission for web publication: x

Title of publication

The impact of energy rating in the home buying process

Concerning first-time buyers

Degree programme

Degree programme in Facility Management

Supervisor(s)

Mieskolainen, Matti

Assigned by

BAse Foundation

Abstract

Housing consumes a great deal of energy, and the EU is constantly working towards increasing the level of environmental friendly buildings and consuming habits. Energy certificate has been compulsory in Finland since 2008.

The objective of this study was to research whether energy rating was considered in the house buying process. Another objective was to examine the level of knowledge concerning energy ratings. However, the study focused on potential first-time buyers and their future aims concerning their living conditions.

The study was implemented by using the quantitative research approach, since the aim was to collect a representative sample. The data collection was executed by conducting a survey which was sent to 42 potential respondents. The aim was to reach respondents from the area of Central Finland.

According to the results, energy rating had an impact on the buying process, but it was a minor one. Generally, the level of knowledge regarding the energy rating was not on a high level, since the majority of the respondents did not know what determined the energy rate. However, the lack of knowledge did not seem to have an impact on the respondents' opinions on the importance of the rating.

Keywords/tags (subjectshttp://vesa.lib.helsinki.fi/) http://vesa.lib.helsinki.fi/

Energy certificate, energy rating, real-estate business, first time house buyers

Miscellaneous

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Kuvailulehti

Tekijä	Julkaisun laji	Päivämäärä
Wideman, Vilma	Opinnäytetyö, AMK	Toukokuu 2017
	Sivumäärä 45	Julkaisun kieli Englanti
		Verkkojulkaisulupa myönnetty: x

Työn nimi

Energialuokan rooli asunnon ostoprosessissa

Tutkinto-ohjelma

Degree programme in Facility Management

Työn ohjaaja(t)

Matti Mieskolainen

Toimeksiantaja(t)

Base Foundation

Tiivistelmä

Asuminen kuluttaa merkittävän määrän energiaa. EU työskentelee taukoamatta parantaakseen rakennusten ympäristöystävällisyyttä ja energiatehokkuutta. Energiatodistus on ollut Suomessa pakollinen vuodesta 2008 lähtien.

Tutkimuksen tarkoituksena oli selvittää ensiasunnon ostajien suhtautumista energiatodistukseen ja energialuokkiin. Ennen kaikkea tutkimuksen pääpaino oli selvittää energiatodistuksen vaikutus asunnon ostoprosessissa sekä kartoittaa yleistä tietämystä energialuokista ja tulevaisuuden asumissuunnitelmista.

Tutkimus toteutettiin käyttämällä määrällistä, eli kvantitatiivista tutkimusmenetelmää. Tiedonkeruu toteutettiin kyselyn muodossa, ja kysely lähetettiin neljällekymmenellekahdelle potentiaaliselle vastaajalle. Tavoitteena oli saada vastaukset Keski-Suomen alueelta.

Kyselyn tulokset osoittivat, että energialuokka vaikuttaa ostoprosessiin, mutta se ei määrää kauppojen syntymistä. Vaikutus ei siis ole ratkaiseva. Yleinen tietämys energialuokista puolestaan ei ollut hyvä, sillä kolme neljäsosaa vastaajista ei tiennyt, mikä energialuokan tarkalleen määrittää. Se tosin ei näyttänyt vaikuttavan vastaajien arvostukseen energialuokkaa kohtaan.

Avainsanat (asiasanat)

Energialuokka, energiatodistus, ensiasunnon ostajat, kiinteistöala, määrällinen tutkimus

Muut tiedot

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1 Introduction

There are approximately 2.9 million residences in Finland. The majority of them are owner-occupied, precisely 71.5 percent. (Statistics Finland, 2014.) From the high percentage, it is easy to draw the conclusion that owning one's own flat is a common practice among Finns.

Since the 1st of June 2013 it has been compulsory to have an energy certificate for facilities that are about to be sold or rented. The energy certificate is a part of the European Union's energy legislation passed in order to decrease the energy consumption of a building (Rakennusten energiatodistus 2015).

Energy solutions are also significant for the building industry, since EU has set a target for all new buildings to be nearly zero-energy consuming by 2020. Of all the energy consumption in the EU, buildings are responsible for 40 percentages in total (European commission. Energy, Buildings).

BAse Foundation is a non-profit organization, hosted by Simon Kay-Jones. The main target for the organization is to discover approaches to sustainability, together with finding ways to prevent the climate chance. Since housing is consuming plenty of energy, the BAse foundation asked the author to examine whether energy efficiency was considered valuable and in order to know if it was economically profitable to invest in the energy solutions in older houses (Kay-Jones, 2017.)

1.1 The aim and the research questions

The aim of the study was to look more closely into the attitudes towards energy consumption and examine energy awareness in the field of housing in Central Finland. Since environmental awareness is rising (Stranius 2010.) and ethical consumption habits are becoming more important (Arnold 2009, 3.), the author found the topic of great both personal and current interest.

Environmental awareness means that environmental aspects are taken into consideration in the decision making process. It makes no difference whether the decision is about a minor purchase or a bigger investment, such as an apartment. The concept also applies to services because the ethical background and the possible effects on

nature are both considered in the decision making. (Environmental awareness and education, 2017.)

The primary focus on the study was to provide information on whether the energy rating was considered meaningful in the home buying process. With this as a guide-line, the following research question and the sub question were formed:

- Does the energy rating affect the home buying decision?
    - How aware of energy ratings are the consumers?

2 Research design

Every study aims on something, and the word research itself can be defined in the following way:

"The systematic collection and interpretation of information with a clear purpose, to find things out" (Saunders, Lewis &Thornhill, 2009, 601).

The purpose of this study was to examine the relation between environmental awareness and consumer choices related to housing. Another aim was to determine how aware of energy ratings the consumers were, and if it affected the house buying decision.

The research idea was formulated based on the rising level of environmental aware-ness. See figure 1.

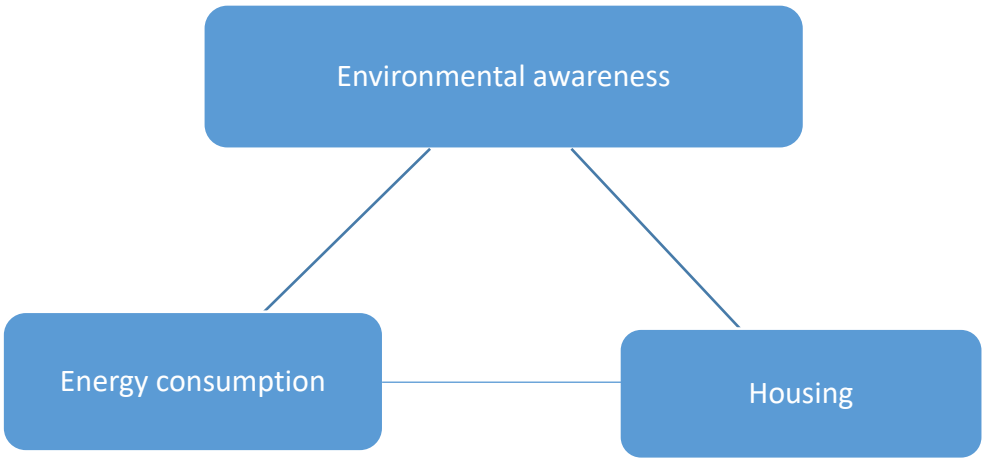


Figure 1. Research idea

(Wideman, 2017)

After forming the research idea, the author defined the target group for the study. As a target group the author selected students who were about to graduate or had already graduated, since they were likely to buy their first apartment in the near future.

The average age of a first-time buyer in 2015 was 28.3 years and the total number of buyers were 20 459. Approximately 13 000 deals were made in the ten biggest cities of Finland and the rest took place in the capital area. (Ensiasunnon ostajat 2006-2015. Tilastokeskus).

2.1 Methods

There are roughly divided, two diverse ways to conduct research, the qualitative and the quantitative approach. The qualitative method is the mother of all research and aims to research the causes of a phenomenon and explain it. Quantitative research, on the other, hand focuses on numbers and aims to measure the phenomenon, or parts of it. (Kananen 2011,37.) Both methods produce data, but they have distinctions. The list below presents the most crucial ones.

- ***"Quantitative data***
- *Based on meaning derived from numbers*
- *Collection results in numerical and standardized data*
- *Analyses conducted through the use of diagrams and statistics*

- ***Qualitative data***
- *Based on meanings expressed through words*
- *Collection results in non-standardized data requiring classification into categories*
- *Analysis conducted through the use of conceptualization."*

  (Saunders, Lewis &Thornhill, 2009, 482.)

The research method used in this thesis was the quantitative research method. The choice of using the quantitative method was a natural choice, since the author planned to execute the study by conducting a survey.

Quantitative research focuses on numbers and the relationships between them. The quantitative method is usually adapted when there is already existing knowledge of the phenomenon. If the phenomenon is unknown, it is necessary to adapt the qualitative approach. (Saunders, Lewis &Thornhill, 2009a, 144.) Qualitative research usually generates a large amount of data, which requires formatting and reduction, since interview answers are likely to be comprehensive (Kananen, 2011a, 136).

The survey strategy is popular among business and management studies. It is most frequently used to answer questions starting with: who, what, where, how many and how much. A survey is also considered an economical and practical way to collect copious amounts of data from a sizeable population. (Saunders, Lewis &Thornhill, 2009a, 144.)

2.3 Data sampling

The data was collected by using an online questionnaire. As an electronic platform, the author decided to use Google Forms, since the platform has an easy access and is

available to anyone who has a Gmail account. However, the respondents are not required to have a Google account in order to answer the survey. Google Forms is a versatile tool which allows to create surveys with multiple different answer types. The platform collects answers in real time and presents the data automatically, by using pie charts and diagrams. (Create a quiz with google forms, 2017.)

The questionnaire consisted of 6 sections and 24 questions (*appendix 1*). The first 2 sections dealt with the background of the respondents and asked about the current living conditions. The following four sections concentrated on future hopes and energy awareness in housing. The question types varied between multiple choice and Likert scale questions, with answering scale from 1 to 6. Of all the questions, 16 were multiple choice questions and eight Likert scale questions. In the end of the questionnaire the respondent had a chance to leave contact information, in order to participate in a lottery for a movie ticket. However, leaving the contact information was voluntary, and no personal information was asked in other sections.

Before delivering the questionnaire to the respondents, the form was previewed and tested. In order to see how the results section is working with Google Forms. The theory section operated as a guideline in forming the survey questions. For instance the size of the future apartment can be straightly compared with the Statistics Finland tables. However the survey did not ask whether the respondents think that the energy rate affects the price of the property, which was researched in the Master thesis by Pennanen in 2015.

The questionnaire was sent to 42 participants by using email and Facebook Messenger. The number of respondents were defined due to the tight schedule, the target was to collect enough answers in order to reach repetitiveness in the results. However, the respondents to whom the questionnaire was sent, were chosen based on the following criteria;

- Student or recently graduated
- Lives in the area of Central Finland
- Has an email address or uses Facebook, and is actively online

The respondents were also informed that sharing the questionnaire forward was allowed. The survey was open for respondents from the 4th of April 2017 until 8th of

April 2017, in total the answering time was four days. Despite the tight schedule, the questionnaire gained 41 answers and the total response rate was 97.6 percent.

2.3 Reliability and validity

When approaching a quantitative research approach, the reliability and validity must be taken into consideration at an early stage of the research process. Reliability refers to repeatability of the results, while validity focuses on the questions which have been asked. The most crucial factor for a study is probably the external validity, which refers to the generalizability of the results.

Even though a study would be reliable, it does not guarantee the validity. The results might be distorted by the usage of a wrong measure, whereupon the results are repeatable, but not valid. (Kananen 2011b, 125-126.)

In order to gain validity the sample should represent the targeted part of the population. In this study, the focus was on first-time buyers, the number of first-time buyers in Finland was 20 549 in 2015. (Ensiasunnon ostajat 2006–2015.)

In this study the survey was sent to 42 respondents. The number of the respondents was determined on the basis of the tight schedule. In order to cover all the firs-time buyers in the area of Central-Finland, the sample should have been substantially larger.

3 Energy regulations

Buildings are responsible for approximately 40 percent of the total energy consumption in the EU. Whilst the acreage of buildings is increasing, so is the energy consumption. Due to this, it is essential to decrease energy consumption and ensure that the energy which is used comes from renewable sources in all the possible occasions. With these actions, it is possible to help to decrease the energy dependency and the emissions of greenhouse gasses in the EU. (Pennanen 2015, 5.)

In Finland, the heating of the houses is responsible for approximately a third of combined energy consumption (Isomäki 2008, 187). Industrial energy consumption is the only field which consumes more.

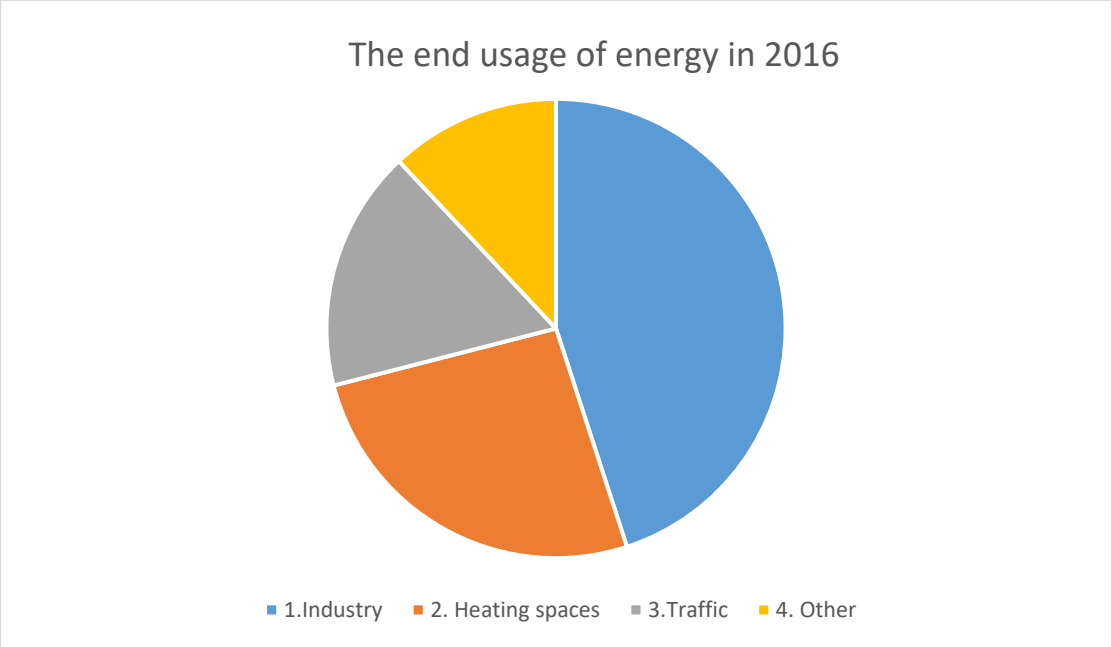


Figure 2. The end usage of energy 2016.

(Energian loppukäyttö sektoreittain 2016.)

Environmental awareness is rising, people are more aware of the impacts of their choices. Especially young people have the knowledge since they growing up and been educated during the environmental era (Cohen 2014).

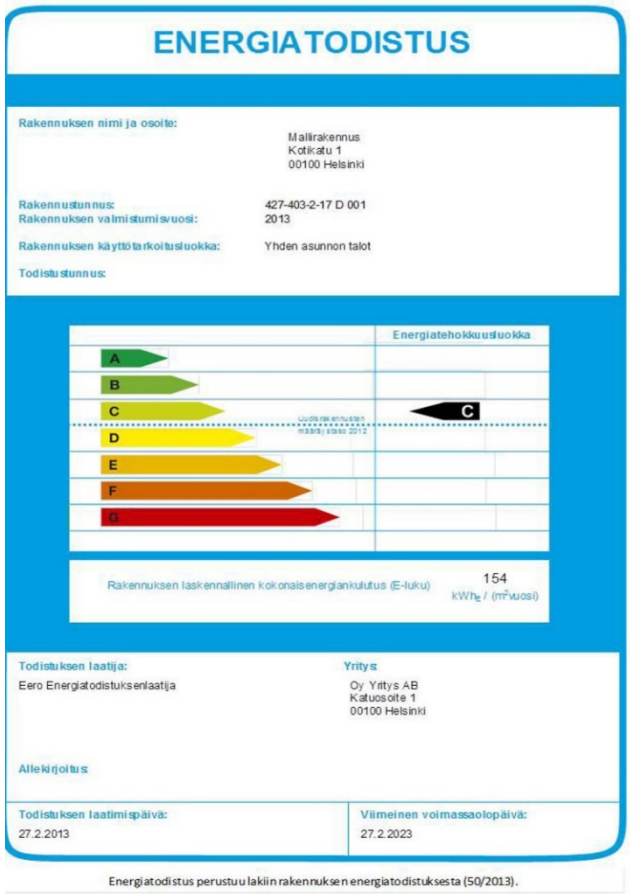
The ethical consuming is a rising trend in the field of goods, and according to the Master Thesis of Pennanen (2015), the energy rating would increase the value of a house in the capital area. Thus, it is unknown whether energy solutions are considered in a house buying process and whether the principles of ethical consumption apply to as massive purchase as an apartment.

4.1 Energy certificate

According to the Ministry of Environment (2013), an energy certificate is a tool for comparing the energy efficiency of buildings. The certificate provides reliable and important information for situations when a building is about to be sold or rented. The information provided by the certificate will also support the purchasing decision,

which after all, is one of the biggest single purchases of our lives. The certificate also offers useful recommendations and information about how to decrease energy consumption.

The front page of an energy certificate offers the most vital information, meaning that the energy rate and the energy efficiency number are clearly marked. The front page also shows when the certificate has been issued and how long it is valid. In Figure 3, there is an example of an energy certificate's front page. Since 2013 all the energy certificates have been done using the same model in order to standardize the certificate.


ENERGIATODISTUS

Rakennuksen nimi ja osoite:
Mallirakennus
Kotikatu 1
00100 Helsinki

Rakennustunnus: 427-403-2-17 D 001
Rakennuksen valmistumisvuosi: 2013

Rakennuksen käyttötarkoituksluokka: Yhden asunnon talot

Todistustunnus:

Energiatehokkuusluokka
A
B
C
C
D
E
F
G

Rakennuksen laskennallinen kokonaisenergiankulutus (E-luku) 154 kWh$_E$ / (m^{2}vuosi)

Todistuksen laatija:
Eero Energiatodistuksenlaatija

Yritys:
Oy Yritys AB
Katuosoite 1
00100 Helsinki

Allekirjoitus:

Todistuksen laatimispäivä: 27.2.2013
Viimeinen voimassaolopäivä: 27.2.2023

Energiatodistus perustuu lakiin rakennuksen energiatodistuksesta (50/2013).

Figure 3. Energy certificate.

An energy certificate is valid until it is replaced with a new one. Yet, the maximum time for the certificate to be valid is ten years (Laki rakennuksen energiatodistuksesta 50/2013, 8 §).

4.2 Energy ratings

The energy classes are rated from A to G. A is the most energy efficient option, while G is the most consuming one. The system is rather familiar to consumers, since the same ratings have been used for evaluating the energy efficiency of household machines.

It is possible to increase the energy efficiency number by paying attention to the thermal insulation of windows, roof, floor and outside walls. The air-condition system can also be utilized by reclaiming the produced heat (Tarkista asunnon energialuokka ennen asunnon ostoa 2008).

For the energy certificate, the heating and cooling energy which the building requires has been calculated as well as the device and facility energy based on the actual consumption. With the help of these factors and the acreage, the energy efficiency number is defined. The energy efficiency number is also known as the E-Value.

The table below states the E-Values that are required for reaching each of the energy classes. However, in this table (*Table 1)* the values apply to apartment buildings.

Table 1.E-Values for apartment buildings

Energy efficiency number	Energy consumption, E-Value (kWh /m² year)
A	≤ 75
B	76 ≤ E-Value ≤ 100
C	101 ≤ E-Value ≤ 130
D	131 ≤ E-Value ≤ 160
E	161 ≤ E-Value≤ 190
F	191 ≤ E-Value ≤ 240
G	241 ≤ E-Value

Each building type has their own threshold values. The other building types are:

- Detached houses

- Semi-Detached houses & row houses
- Office buildings
- Accommodation buildings
- Hospitals
- Swimming halls and other sport facilities/halls
- Storages
- Educational buildings and daycares

For a new construction, no matter what the building type is, the main pressure is to have the energy class between C-D. (Airaksinen & Vuolle 2013, 9-11)

In a public announcement where a dwelling is being sold or rented, it is compulsory to mention the letter, which describes the energy efficiency (Laki rakennuksen energiatodistuksesta 50/2013, 6 §).

4.3 Exceptions

As previously mentioned all the buildings should have a valid energy certificate to present. Nevertheless, there are some exceptions as well. Section number 3 § in the energy certification act, states that the following buildings have the right for remission.

1) If the acreage of the building is the maximum of 50 square meters.
2) Vacation home which is not used for accommodation services.
3) Temporary building, which is used for a maximum of two years
4) Industrial and garage buildings
5) A farm building whose purpose is not living
6) Protected building (132/1999, 498/2010 & SopS 19/1987)
7) Church or other building owned by a religious community and having spaces only for gathering or religious services.
8) Greenhouse, bomb shelter or other building whose usage for its purpose would become significantly more difficult.
9) A building which is used by the Defense Administration. The usage of the building, or the building itself includes/contains confidential information (Laki rakennuksen energiatodistuksesta 2013/50, 3 §).

In a situation when the dwelling, or its tenure, is about to be sold or rented the energy certificate should be presented. A duplicate of the certificate, or the original one, should be given to the buyer. However, there are also exceptions. Section number 6§, mentions the following situations where the certification is not required.

If the selling or renting process takes place between companies within the same corporation or if the purpose of selling the building is demolition. In rental situations, the certificate is not required if the contract is temporary and the maximum length is one year or if the type of renting is subletting (Laki rakennuksen energiatodistuksesta 2013/50, 6§).

4 Real estate market

According to Hypo's housing market review (2017) the real-estate markets are showing signs of rebound. The construction of new apartment buildings is showing the way. The main theme of the market is to build and sell compact flats. The demand is increasing, since first time buyers, housing investors and urbanization are all focusing on the same thing, which is compact and smart living, close to the growth centers. (Hypon asuntomarkkinakatsaus 2017.)

The forecast for the spring seasons housing market is also on the same path with Hypo. In the capital area and in the growth centers the markets are rising steadily. In other parts of Finland the markets are showing signs of recovery as well. Thus, the development of prices is rather moderate.

There are also clear signs of division in the housing market. The apartments can be divided into two categories. The apartments which have high demand, based on their location. And the other category is apartments, which are chosen, based on the price, and the location is considered secondary important. The division might increase the classification into good –and bad areas. (Asuntomarkkinat elpyvät – selvää jakautumista hyviin ja huonoihin alueisiin 2017.)

Statistically, the apartment prices may even turn down, since the deals about old and unsound buildings and apartments are increasing. The sales of detached houses are

expected to rise in the whole country, since families with children have shown signs of activation on the market. (SKVL: Asuntojen hinnoissa luvassa lievää nousua - välittäjät uskovat kaupan vilkastumiseen.)

Rather recent phenomenon on the field of construction is the usage of wood, as a raw material in apartment buildings. In the following two years, there will be completed as many wooden apartment buildings, as in the previous 20 years. Using wood as a raw material is a rising trend and it is considered to be environmentally friendly, since the raw material is often domestic. Wooden apartment buildings are also considered as elements, which bring some variation to the townscape. (Malmberg & Hartikainen 2017.)

Numerous factors affect the final sales price of an apartment. In 2015 spring, the real estate professionals answered a survey. The survey was examining which factors were seen as the most important ones, considering the price of an apartment. Based on their own professional experiences on the field. As an outcome, in total 1300 answers were analyzed, and based on these answers the following things were listed as the top 3.

- Location
- Condition
- Housing cooperative (Asuntojen hinnat – nämä kolme seikkaa vaikuttavat eniten, 2015).

The home buying process has multiple stages. First of all the buyer should consider and decide, whether it is the right time and life situation to buy a home. Secondly, the financial assets should be considered and arranged. Often this stage includes loan negotiations with a bank.

The following step is to decide the budget, considering how much money one is actually ready to spend, is essential. The budget determines a great extent. It is also good to remember that some hidden costs may include, for example the transfer tax and the paper work might create some extra costs. Furthermore it is good to bear in mind that in the case of buying a house, which requires renovation, the budget should have clearance.

The next step is to choose the area. The location of the apartment should be carefully considered. After the area is chosen, there are left the choosing of the property, and making an offer on it –and to have it accepted. (HOA Step-by-Step Guide to Buying a Home N.d.)

5.1 Development

Even though there are positive vibes in the real estate publications, the situation has been better. Naturally, the increase in the sales is a positive thing for the market and the business itself. Thus, the market has seen some brighter times.

In 2005, there were nearly 86 000 deals/sold facilities, whether in 2015 the number was less than 62 000. See Figure 4 below.

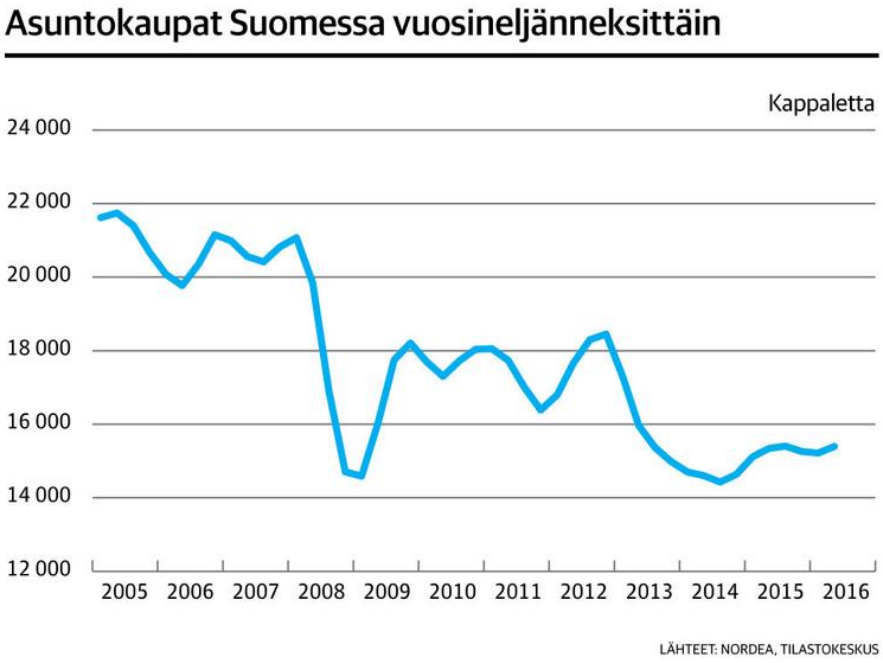


Figure 4. Apartment deals in Finland on a quarter basis

Even though the market is showing signs of recovery, there is still a long way to go in order to reach the level of 2005. One of the reasons for the struggle in business is the raise in the transfer tax, which was launched in 2013.

Changing home is process which requires time and assets, moreover additional fees are not encouraging people. The CEO of Huoneistokeskus suggests that the taxation should be taken off. In best case, the government would get more money and people would become more active on the market.

In 2015, the turnover in real estate business raised by 10, 8 percentages, compared to the turnover in 2014. There are supporting signs for the recovery expectations, since the amount of monthly lifted home loans are steadily rising (Herrala, 2016.)

5.2 First-time buyers

The youth barometer -2016, shows that the popularity of owning one's own apartment is slightly decreasing compared to previous studies. The barometer measures values and attitudes of people between 16 and 29 years. In the study of 2016, there were in total 1900 participants. The study shows that the attitudes are changing, and health and good social life is valued over material and gaining more appreciation.

However, 66 percentages of all the respondents replied that owning one's own apartment by the age of 35 is considered extremely important, or fairly important. Of all the possible factors owning one's own apartment was ranked on the place 10. In the figure below (Figure 5*)* there are visualized the three most common things people wish to achieve, together with the wish of having an owner occupied flat (Youth barometer 2016). The vertical axis in the diagram represents the things people wish to achieve, while the horizontal axis illustrates the amount of respondents, considering each factor.

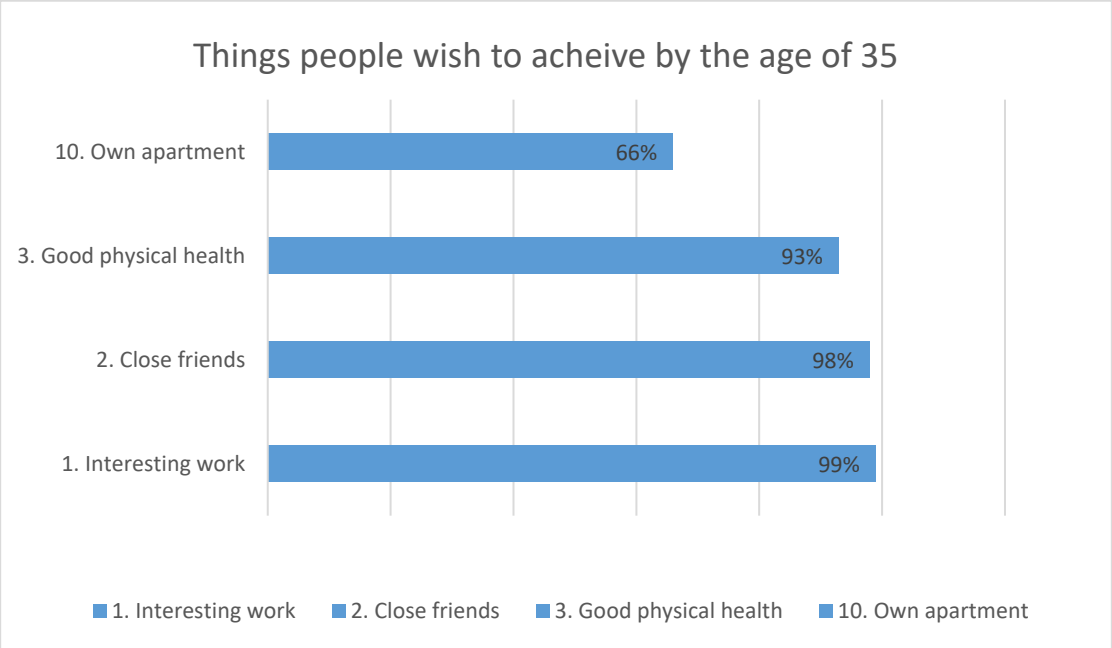


Figure 5. Things people wish to achieve by the age of 35.

(Wideman 2017)

The average age of a first-time buyer was 28.3 in 2015. The statistics show that the age has been rising since the year 2006, when the average age was 27.7 years. At first, from 2006 to 2008 the average age was decreasing. Since then the only exception in the steady rising happened between years 2010 and 2011. (Ensiasunnon ostajat 2006–2015.) In the table below there are showed the variation between years 2006 and 2015. The table also shows the number of first time buyers.

Table 2. The average age of first-time buyers 2006-2015.

Year	First-time buyers, total amount of persons	Average age
2006	34 159	27.7
2007	34 031	27.5
2008	28 118	27.4
2009	27 684	27.8
2010	26 940	27.9
2011	29 523	27.6
2012	26 488	27.8
2013	20 718	28.0

2014	20 035	28.2
2015	20 459	28.3

The depression after financial crisis has had an affection on the housing market. When comparing the deals between years 2006 and 2014 the difference is slightly over 40 percent. This can be interpreted that several youngsters live in a rented accommodation. The consumer economist Mikkonen from Danske Bank sees that one of the reasons for decreasing numbers is that the youngsters are not willing to follow their parents lead. Naturally the unstable financial situation also affects their decisions.

During the past 7 years, the rents have been raising clearly more, compared to the apartment prices. According to Statistics Finland the raise has been a fifth, and in the field of apartment prices less than a tithe (Kokko 2016.)

If a youngster finally decides to close a deal there is a good thing to remember about the taxation. When the deal is about one's first owner occupied apartment, the taxation offers relieves, if certain conditions are fulfilled. Following conditions apply are in effect.

- One owns at least 50 percent of the apartment
- When the deal is closed, one is at least 18 years old, but not older than 39 years.
- The apartment is bought for living purposes, and one will move in within 6 months
- One hasn't previously owned 50 percent of an apartment or a residential building.

If the above-mentioned conditions are fulfilled, the buyer is relieved from paying the transfer tax. The first apartment can be a condominium or a property (Buying your first home, 2014).

5.3 Dwelling stock

Housing in Finland has developed during the past years. The urbanization has affected the vitality of rural areas, and instead of detached houses the construction field has been busier with building new apartment buildings. The busiest years for constructing new apartments were the 1970s and 1980s.

In the end of 2015 there were 2 934 000 dwellings, of which 300 000 was without a permanent resident. Comparing to the year 2014 the dwelling stock raised by 16 000 apartments. From the year 1990 the growth of the dwelling stock has been 725 000, on annual level that means that each year has 29 000 new dwellings been built. In total 78 percent of dwellings which were built between 1995 and 2015 were located in urban cities.

In the end of 2015 the most common dwelling type was a flat in an apartment building. Which covers 45 percentages of all dwellings. The amount or row-houses has grown over tenfold compared to the year 1970. In 2015, the number of row-houses was 401 00, whilst in 1970s it was only 30 000.

The average floor area of dwellings was 80 square meters in 2015. Since 1970 the average floor area of the dwelling stock has increased by approximately 20 square meters. The average size of a studio was 34 square meters, for one-bedroom apartment 54 square meters and for a two-bedroom apartment 79 square meters. Despite the increase in the average floor area, there were approximately 12 000 dwellings, with the acreage of less than 30 square meters. But then, only 27 percent of dwellings had the acreage of 100 square meters or more.

The most common apartment type was a one-bedroom flat. From the total dwelling stock 30 percent are covered by one-bedroom apartments. In 2015 the number of them was 879 000. In the table below there are listed the average floor areas of different types of buildings from 1970 until 2015.

Table 3. Floor area per dwelling (m2) by type of building in 1970-2015

Year	Type of building				
	Total	Detached houses	Attached houses	Blocks of flats	Other buildings
1970	60,0	66,0	73,0	51,0	54,0
1980	69,3	83,6	71,7	54,8	55,5

Year	Type of building				
	Total	Detached houses	Attached houses	Blocks of flats	Other buildings
1990	74,4	95,3	70,2	55,8	59,7
2000	76,5	101,9	70,0	56,1	59,8
2010	79,5	108,4	71,2	56,5	60,7
2015	80,0	111,0	71,3	56,4	60,9

(Dwelling stock, 2015. Statistics Finland.)

5 Research results

The aim of this thesis was to find out if energy rating was taken into consideration in the house buying process. The objective was to obtain answers from potential first-time buyers in the area of Central Finland. The response rate of the survey was 97.62 percent, which can be interpreted that there was interest in the topic.

Background of respondents

The age range of respondents varied between 22 years and 31. Many the respondents were 26-30 years old. According to Statistics Finland, the average age of a first-time buyer in 2015 was 28.3. Considering the age of respondents, the survey succeeded to reach the target group. Figure 6 shows the age division on respondents.

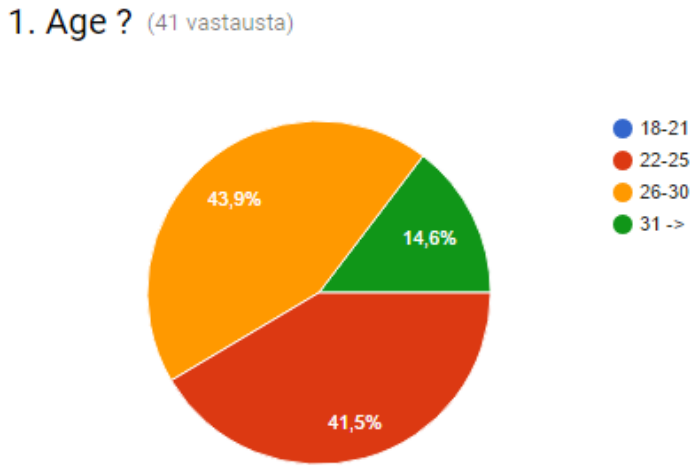


Figure 6. Age division of respondents

Of all the 41 respondents 61 percent were males, and 39 percent were females. Roughly half of the respondents were students, and the other half were employed. Only three were either unemployed or pensioners. The last question of section 1 asked if the respondents considered themselves ethical consumers. On a Likert scale from 1 to 6, the majority ended up choosing 4, whilst 6 meant “very ethical “. The answers refer to aware consuming and that paying attention to daily choices was common. However, it was not possible to know if the respondents also acted according to their answers.

Figure 7. Ethical consumer

The second section addressed the current living circumstances of the respondents. A clear majority lived currently in an apartment building as Figure 8 shows. In total, 39 percent of the respondents lived in a one-bedroom apartment, which is the most common apartment type in Finland. The most common size of a household was 2 persons.

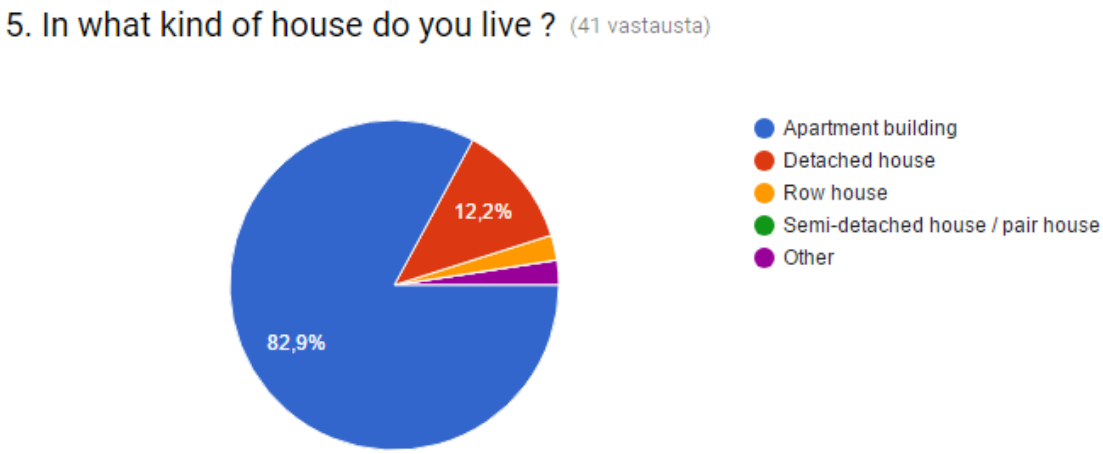


Figure 8. House type

However, question 7 asked if the respondents lived in an owner-occupied or in a rental flat. Of all the respondents 78 percent lived in a rental flat. The high percentage was expected, since almost half of the respondents were students.

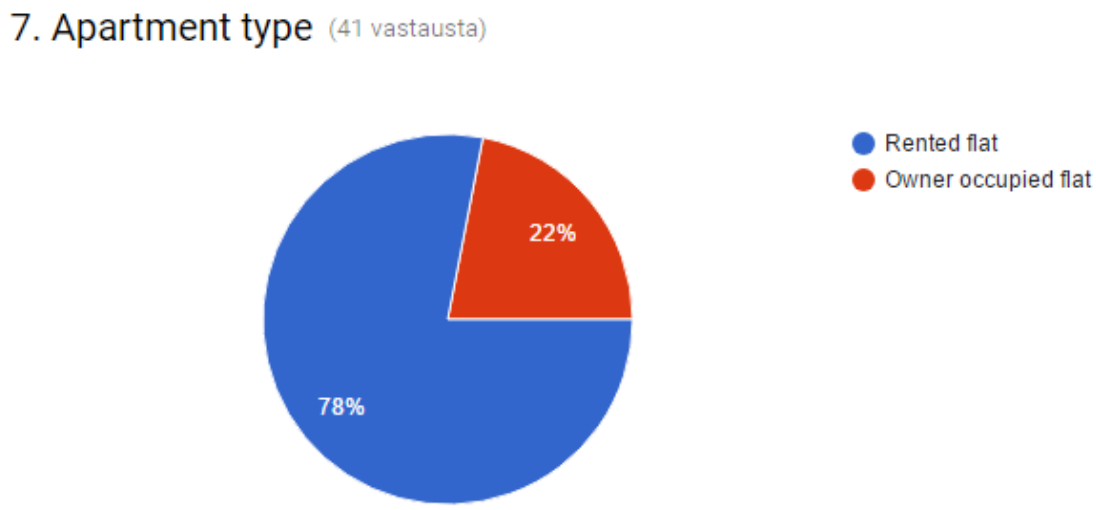


Figure 9. Apartment type

Future intensions

The following four sections of the survey dealt with the future visions of the respondents. Since the focus of the study was on first-time buyers, it was essential to ask if the respondents found it likely that they would buy their own apartment. The question was formulated on a Likert scale. The majority of the respondents found it very likely that they would buy their own apartment. However, it is good to take into account that 22 percent of the respondents already had an owner-occupied apartment. Figure 10 presents the division of answers.

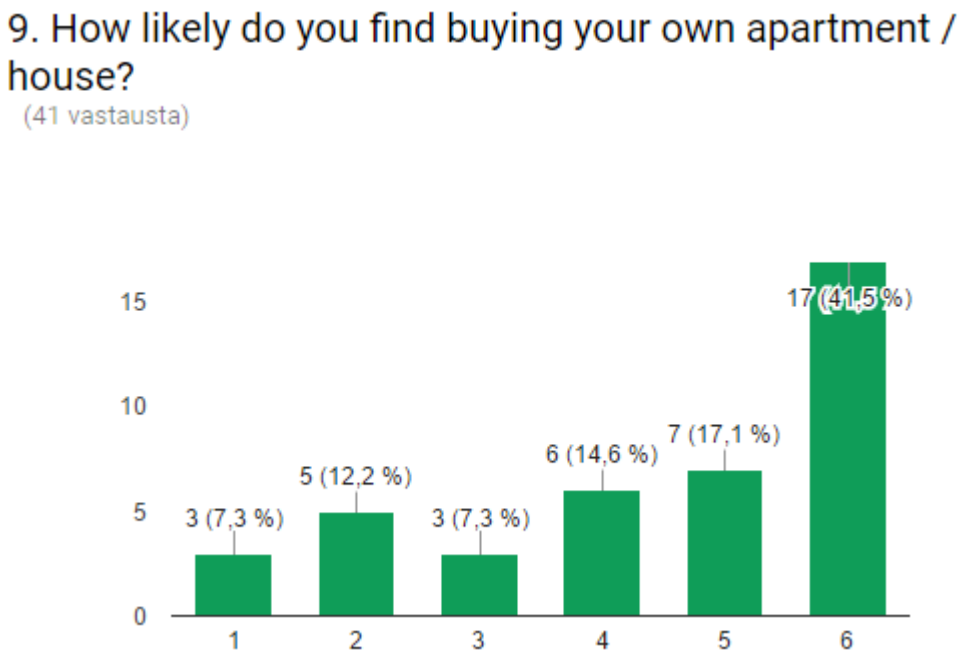


Figure 10. Likelihood of buying an own apartment

The following question in the survey asked if the respondents would rather build the house by themselves, instead of buying one. The answers had the biggest variety in the whole survey, and there were no clear regularities. However, the diversion on the Likert scale was almost fifty-fifty in total. The numbers from 1 to 3 would avoid the building project, whilst 4 to 6 would aim at building by themselves.

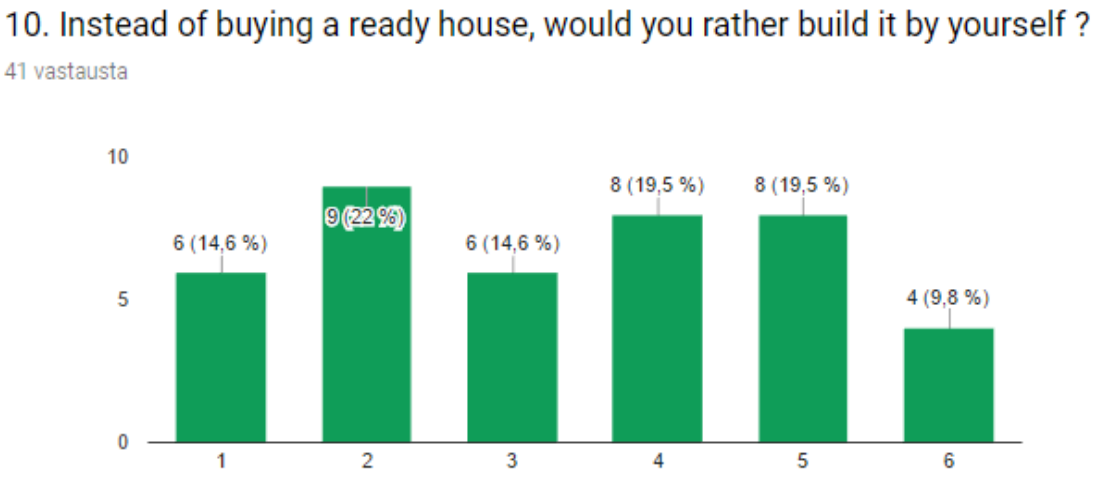


Figure 11. How likely would respondents build the house by themselves?

The survey also asked the respondents about the house / apartment type which they would want to buy. The majority preferred a detached house, and the next popular choice was a flat in an apartment building. The popularity of detached houses was expected, since it is a generally appreciated building type in Finland (Juntto 2010, 116).

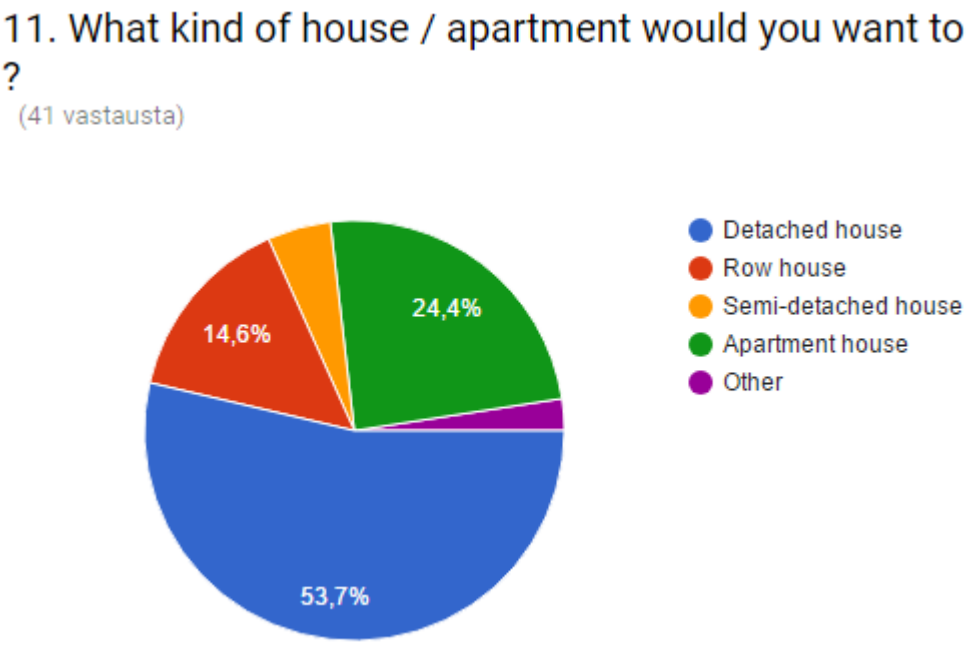


Figure 12. House type, the respondents would like to buy

An important attribute of an apartment / house is the number of square meters. The respondents were asked about the size of the apartment, and the results show that in this study the number of square meters seemed to matter. The most preferred size for the apartment was 110 square meters and up. The next preferred number of square meters was 71 -91m², which actually is the closest to the most common size of a first-time buyer's apartment. Figure 13 presents the answers.

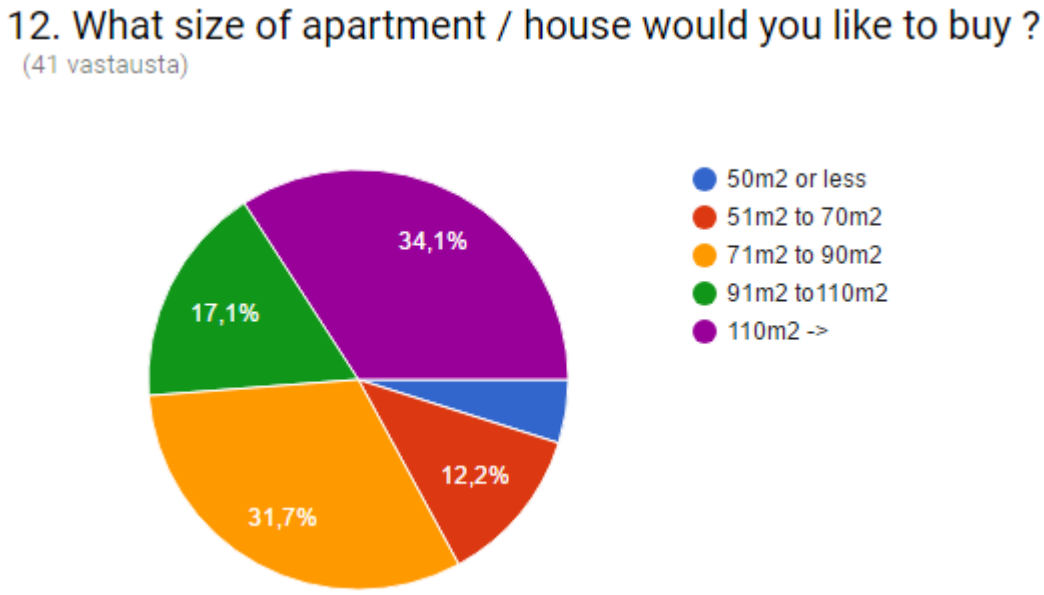


Figure 13. Apartment size

Details and technical attributes

The fourth and fifth sections of the survey concentrated on details and technical attributes of the future homes.

The respondents were asked which building material and heating system they would prefer the most. The most preferred building materials were wood and stone, which both gained about a third of all the answers. From the possible heating systems Geothermal heating was preferred by almost 60 percentages of the respondents. Whilst electric heating and district heating both gained a fifth.

The following question was dealing with assessing the life cycle of the building. In order to see if the respondents think their decision on a long term scale. The Likert scale showed that the majority found assessing the life cycle fairly important or very important. Figure 14 shows the division of the answers.

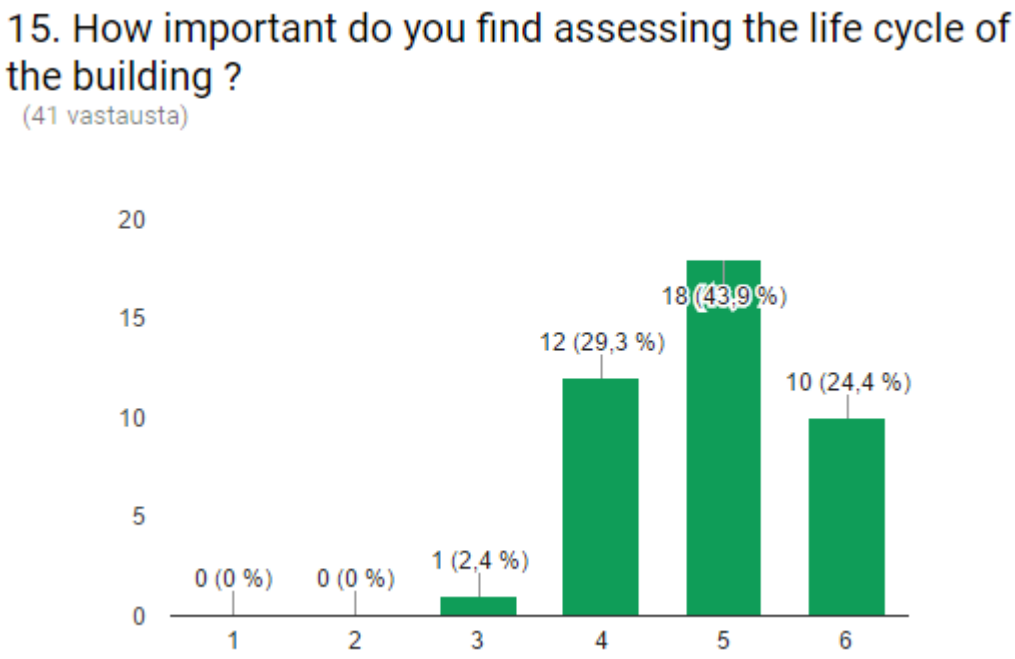


Figure 14. Importance of assessing the lifeline of a building

Renovating the future home was mostly seen as a possible action, and a clear majority of the respondents would be willing to do it, as Figure 15 shows. However the question did not specify what kind –and how extensive renovation it would be. Still, the results show that buying everything brand new and ready-made is not a necessity.

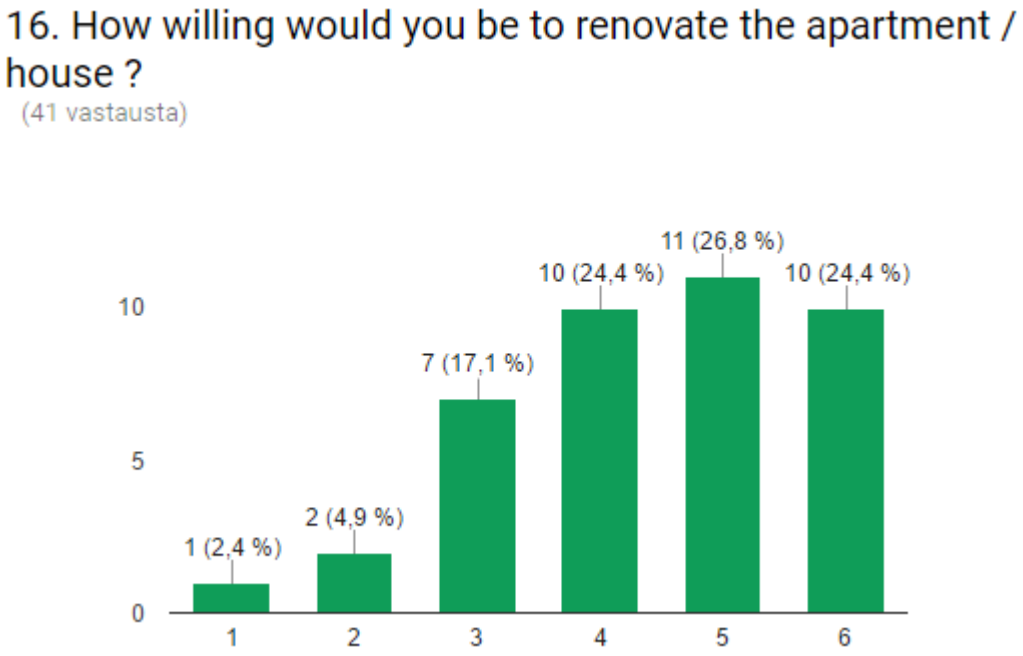


Figure 15. Willingness to renovate

An alternative heating systems was considered as a fairly important, or a very important attribute for the apartment. Majority of the respondents placed their answers between 4 and 6 on the Likert scale. Whilst hardly a fifth had an different opinion. See figure 16.

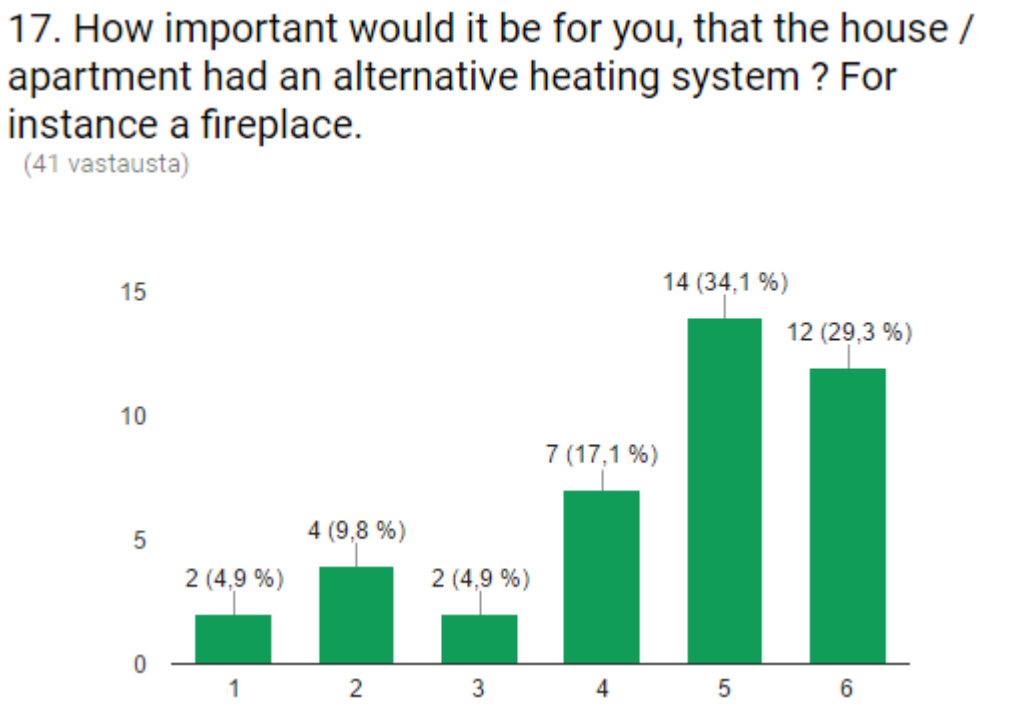


Figure 16. Importance of alternative heating system

The question 18 was dealing with energy usage in the apartment / house. The results showed that majority of the respondents would prefer to use energy, which is produced by using renewable sources. Barely a fifth preferred other options, like nuclear power and biomass. Figure 17 shows that, as a reasonable heating expense on a monthly basis over half of the respondents stated 100 euro, whilst a third found 200 euro a reasonable sum. The example sums were for a 2-person household. However, the question was a bit unclear, since the size of the apartment was not stated.

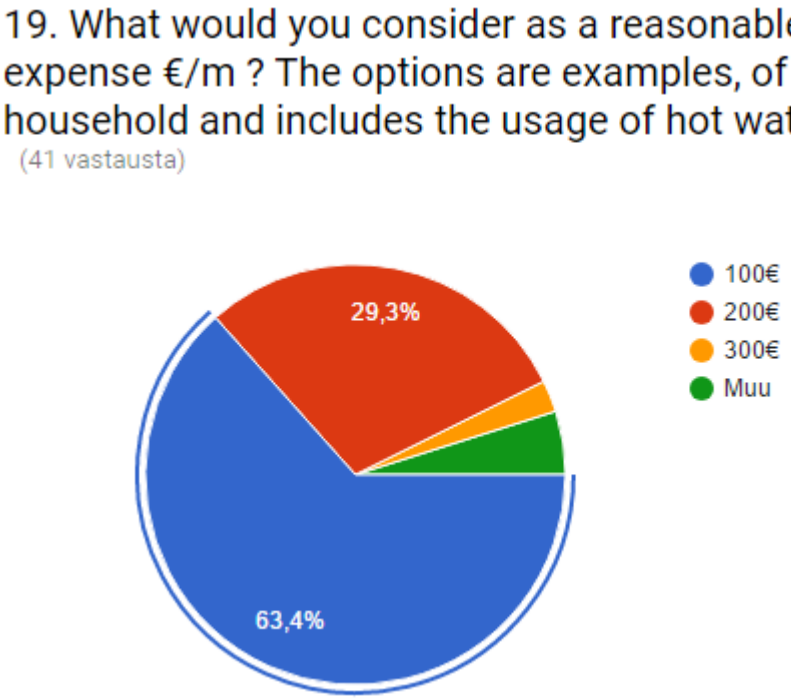


Figure 17. Reasonable heating expense

Since energy rating itself was one of the common themes of the study, the respondents were asked if they knew which factors defined the energy rating for the apartment. Somewhat half of the respondents stated, that they had a clue about the factors, whilst about a fifth admitted that they did not know the answer. However, of all the respondents 22.5 percent were acquainted with the factors.

Energy rating and buying decision

The last section of the questionnaire aimed to find out whether the energy rating would affect the buying decision.

The respondents were asked about the stage in the buying process, when they would pay attention to the energy rate. On a Likert scale 1 meant “in the very start of the process”, whilst 6 was: “just before signing the deal”. The answers divided on the whole scale, thus 3 gained most of the answers, and Figure 18 presents the division. The answers can be interpreted that the energy rate is taken into account in a quite early stage of the process.

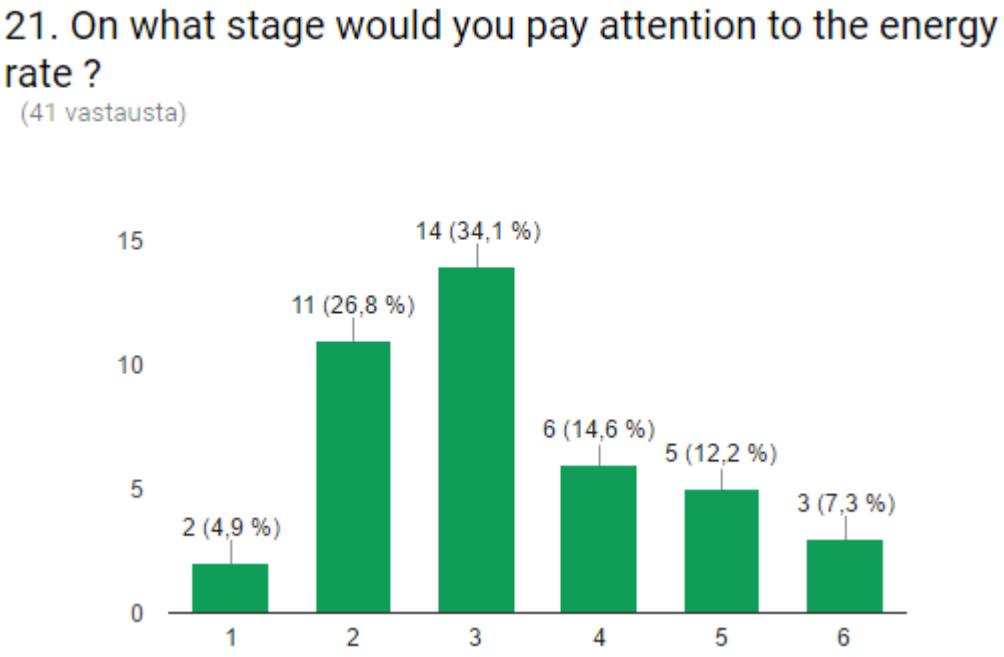


Figure 18. Stage of paying attention to the energy rate

The respondents were asked about searching the energy rate for apartment. Almost a half of the respondents would go and search the information from the real estate businesses homepages. A fifth considered that the best way to find it out would be to ask straight from the real estate agent, whilst 17.1 percent equally found the first option to be the seller or the municipality.

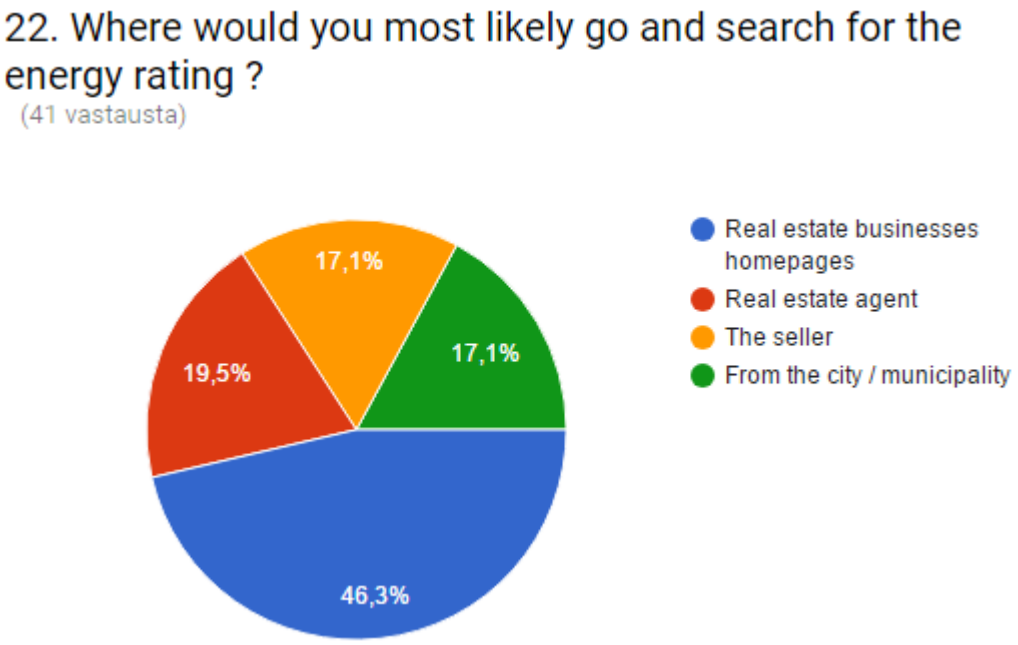


Figure 19. Where to find the energy rating

The last questions in the survey asked if the energy rating would affect the buying decision of the respondents. Combined with a question about which was seen more crucial for the final energy consumption, the habitant or the technical features and the energy rating of the dwelling.

Considering the effect of energy rating in the buying decision, the question was formulated using Likert style. On a Likert scale 6 meant “Yes it would be fairly important” and 1 was “No, it would not affect the decision”. Majority ended up choosing number four, which can be interpreted that energy rating influences the final decision. Thus, the effect is more likely to be a minor one, than a major one. However, the majority of the respondents still found it important. Figure 20 presents the answers.

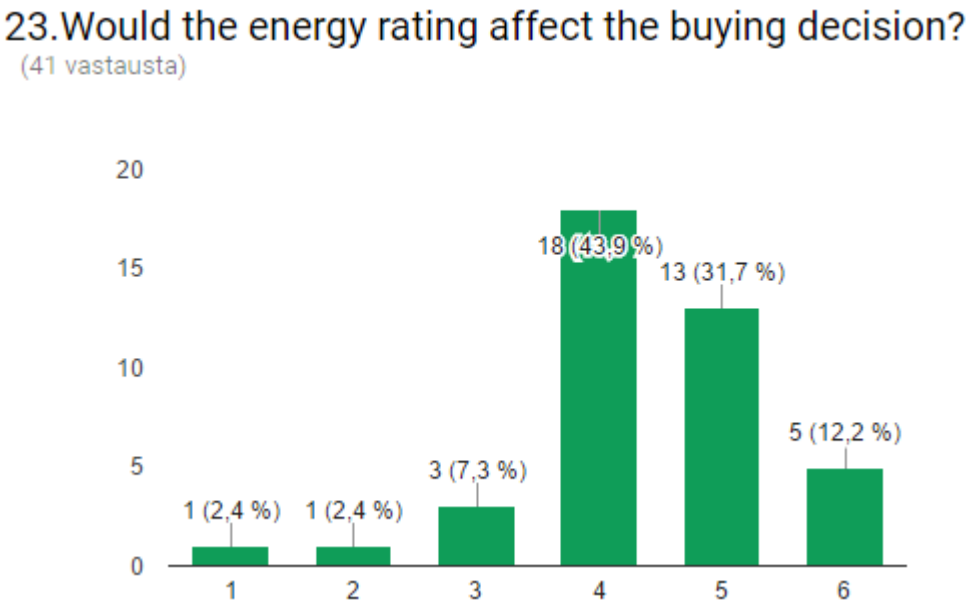


Figure 20. Effect of energy rating in the buying decision

Over half of the respondents found that the resident and the consuming habits would have a bigger effect on the final energy efficiency, compared to the technical features, Figure 21. It is rather inconsistent with the results of the previous question, where the majority of the respondents stated that the energy rating would affect the final buying decision.

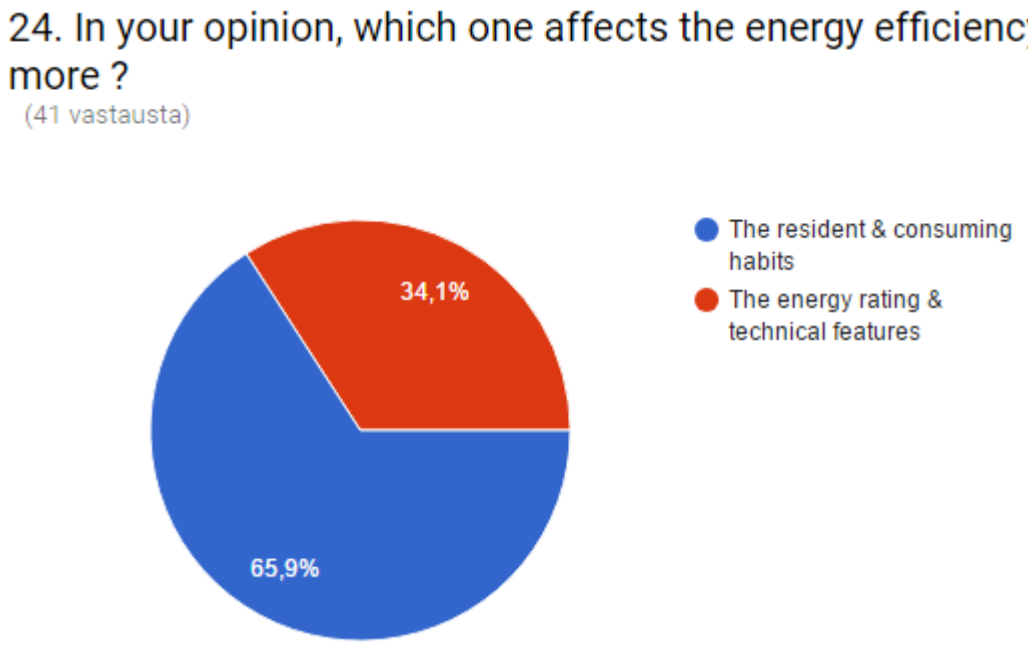


Figure 21. Effect on the final consumption

Despite the inconsistent between the results of the two last questions, the results can be interpreted that the respondents value the energy efficiency, but also find the consuming habits essential regarding the final energy consumption and environmentally friendliness.

6 Conclusion

In conclusion, the study managed to find out that energy rating has a role in the buying process. However, the role is more a minor one, and doesn't determine if the deal finally happens or not.

Generally, the level of knowledge, regarding the energy rating was not on a good level, since only a fifth of the respondents knew what determined the energy rate. However, the lack of knowledge did not seem to have an impact on the respondent's opinion concerning the importance of the rating.

Moreover, the results showed that using electricity produced with renewable sources was highly preferred. An alternative heating system was also valued among the respondents. Despite the esteem towards the energy rating, over half of the respondents found that considering the final consumption, the habitant had a bigger effect.

6.1 Discussion

The aim of the study was to find out if the energy rating had an impact in the buying process. The study focused on first-time buyers and was mainly addressed for people in the area of Central Finland. The results showed that energy rating had an impact on the process. The results also gave a guideline about current level of knowledge, concerning the energy ratings.

The research process suffered from some pitfalls. The challenging part of delivering a survey, is that there is seldom a chance to do it over. The questionnaire which was delivered to respondents had some mistakes: the geographical location of the respondents was not asked. Even though the questionnaire was sent to people in the area of Central Finland, it cannot be determined where the answers actually came

from, since it was allowed to share the survey. Another mistake was in the explanation of Likert scale formulated questions. Only the values 1 and 6 were given an explanation, instead of explaining the meaning of each value.

Although, the response rate of the survey was creditable. The survey was open for four days, but it managed to collect 41 answers, originally the survey was sent to 42 respondents.

The mistakes in the survey naturally affected the validity of the research. For making generalizations the sample was too small. However, the results were interesting and gave indicative about respect towards energy efficiency and ethical consuming.

The results of the study could be exploited in the field of real-estate. Considering the future actions in the field, it could be profitable to present more knowledge about the energy rating. In order to provide more accurate information about the final energy consumption of the dwelling, together with offering a better possibility to compare potential dwellings. Naturally the occupant and the consuming habits does influence the final consumption. However, having a lucid scale or system, showing how the energy rate affects the energy expenses of the dwelling could bring more value to the rate. And above all, make the energy rating more than just a letter on the paper.

Further research in the field of housing and energy consumption could examine the taxation. In car taxation the amount of taxation correlates with the amount of carbon dioxide emissions. Same system could be utilized in housing, in which case the energy rate / environmental friendliness would affect the real estate tax. It would be interesting to see if the financial encouragement from the state would affect the attitudes and the actions of people, considering the house buying process.

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Appendices

Appendix 1. Questionnaire for potential first-time buyers.

Housing intentions and energy awareness

Background

1. Age ?

- 18-21
- 22-25
- 26-30
- 31 ->

2. Gender ?

- Female
- Male
- Other

3. Situation in life

- Student
- Employed
- Unemployd
- Pensioner

4. Do you consider yourself as an ethical consumer ?

	1	2	3	4	5	6	
Not at all	○	○	○	○	○	○	Very much

SEURAAVA

Housing

Current living conditions

5. In what kind of house do you live ?

◯ Apartment building

◯ Detached house

◯ Row house

◯ Semi-detached house / pair house

◯ Other

6. In what kind of apartment do you live ?

◯ Studio

◯ One-bedroom apartment

◯ Two-bedroomed flat

◯ Other

7. Apartment type

- ◯ Rented flat
- ◯ Owner occupied flat

8. How many people lives in the apartment ?

- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5 or more

Housing in future

How do you wish / aim to live in the future ?

9. How likely do you find buying your own apartment / house?

	1	2	3	4	5	6	
Not likely at all	◯	◯	◯	◯	◯	◯	Very likely

10. Instead of buying a ready house, would you rather build it by your self?

	1	2	3	4	5	6	
No, I would avoid it	◯	◯	◯	◯	◯	◯	Yes, that is my plan in the future

11. What kind of house / apartment would you want to buy ?

◯ Detached house

◯ Row house

◯ Semi-detached house

◯ Apartment house

◯ Other

12. What size of apartment / house would you like to buy ?

◯ 50m2 or less

◯ 51m2 to 70m2

◯ 71m2 to 90m2

◯ 91m2 to110m2

◯ 110m2 ->

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Details

13.Which building material would you prefer the most ?

- ○ Wood
- ○ Stone
- ○ Brick
- ○ Concrete
- ○ Timber
- ○ Other

14. Which heating system would you prefer the most ?

- ○ Oil heating
- ○ Electric heating
- ○ District heating
- ○ Geothermal heat
- ○ Other

15. How important do you find assessing the life cycle of the building ?

	1	2	3	4	5	6	
Not important	○	○	○	○	○	○	Very Important

16. How willing would you be to renovate the apartment / house ?

	1	2	3	4	5	6	
Not willing at all	○	○	○	○	○	○	Renovating is OK for me

17. How important would it be for you, that the house / apartment had an alternative heating system ? For instance a fireplace.

	1	2	3	4	5	6	
Not important	○	○	○	○	○	○	Very important

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Energy sources and consumption in the house

18. How would you prefer the energy to be produced ?

- ◯ Renewable sources
- ◯ Oil
- ◯ Fossil fuels
- ◯ Nuclear power
- ◯ Biomass
- ◯ Natural gas

19. What would you consider as a reasonable heating expense €/m ? The options are examples, of a 2 person household and includes the usage of hot water.

- ◯ 100€
- ◯ 200€
- ◯ 300€
- ◯ Muu:

20. Do you know, which factors defines the energy rate for the house / apartment ?

- ◯ Yes
- ◯ No
- ◯ I have a clue

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Energy rating

21. On what stage would you pay attention to the energy rate ?

	1	2	3	4	5	6	
In the very start of the process	◯	◯	◯	◯	◯	◯	Just before signing the deal

22. Where would you most likely go and search for the energy rating ?

Real estate businesses homepages

Real estate agent

The seller

From the city / municipality

23.Would the energy rating affect the buying decision?

	1	2	3	4	5	6	
No, it would not affect the decision	○	○	○	○	○	○	Yes, it would be fairly important

24. In your opinion, which one affects the energy efficiency more ?

The resident & consuming habits

The energy rating & technical features

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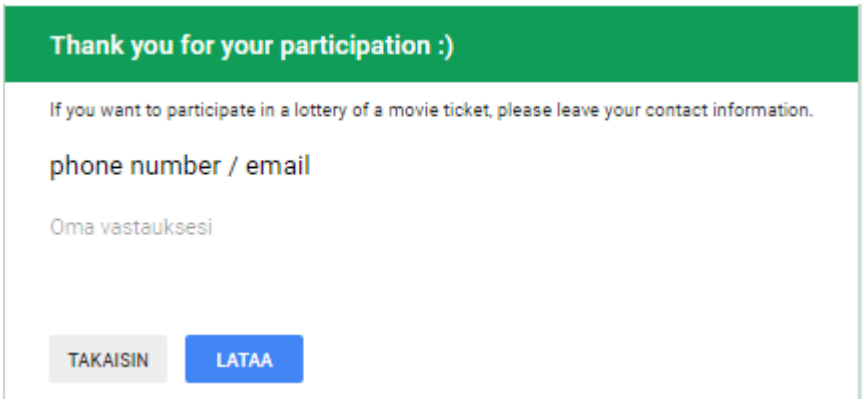
Thank you for your participation :)
If you want to participate in a lottery of a movie ticket, please leave your contact information.
phone number / email
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LATAA