VAASAN AMMATTIKORKEAKOULU
UNIVERSITY OF APPLIED SCIENCES

Jonna Hautamäki

Current Market Situation of Cross Laminated Timber in the United Kingdom

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CLT rakennusmateriaalina on erittäin ajankohtainen aihe, koska uusia tehtaita rakennetaan ympäri maailmaa ja CLT:n kysyntä on kasvussa. CLT:n markkinatilanteen tutkiminen on tärkeää, jotta saadaan selville, missä tuotteella on hyvät markkina mahdollisuudet.

Tutkimuksen tavoitteena oli suorittaa markkina-analyysi ja saada selville, mikä on CLT:n nykyinen markkinatilanne Isossa-Britanniassa. Lisäksi tarkoituksena oli saada selville onko tuotteella ylipäätään markkina mahdollisuuksia kyseisessä maassa. Tutkimuksen teoriaosuudessa selvitetään markkina-analyysiä ja sen suorittamistapoja. Suorittamistavat, jotka käydään läpi, ovat Porterin viiden kilpailuvoiman malli, SWOT- analyysi sekä kilpailija-analyysi. Pääosassa ovat kumminkin Porterin viiden kilpailuvoiman malli sekä SWOT- analyysi.

Tutkimus suoritettiin laadullisena tutkimuksena. Porterin viiden voiman mallin pohjalta luotiin haastattelu, joka lähetettiin Isossa-Britanniassa työskenteleville puualan ammattilaisille, joilla oli tietoa CLT:stä ja sen markkinatilanteensa kyseisessä maassa. Viisi alan ammattilaista vastasi kyselyyn. Opinnäytetyö sisältää sekä primääristä että sekundääristä aineistoa. Teoria-osuus koostuu vain eri lähteistä kerätystä sekundääri aineistosta ja empiirinen osuus koostuu molemmista aineistoista.

Empiirisen aineiston perusteella voidaan todeta, että CLT on kasvattamassa kysyntäänsä sen loistavien ominaisuuksien ansiosta. Lisäksi Britanniassa kasvava kiinnostuminen ekologista rakentamista kohtaan nostaa CLT:n kysyntää. Kuitenkaan CLT:n asema ei ole yhtä vahva kuin esimerkiksi betonin ja tiilen. Siitä huolimatta, CLT:n hyvät ominaisuudet ja Britanniassa oleva asuntopula luovat mahdollisia markkinoita CLT:lle myös tulevaisuudessa.

Avainsanat CLT, Markkina-analyysi, Porterin viiden kilpailuvoiman malli, SWOT-analyysi

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ABSTRACT

Author	Jonna Hautamäki
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Cross laminated timber as a construction material is a very current topic, since more factories are being built around the world and the demand for it is increasing. Examining its market situation is important in order to find out where it would have market opportunities.

The main aim of the study was to perform a market analysis aiming to find out the current market situation of cross laminated timber in the United Kingdom. An additional aim was to find out whether there is a market at all for the product in the country. The theory part of the study consist of explaining the meaning of market analysis and explaining some techniques for how market analysis can be performed. The techniques that are explained are Porter's Five Forces industry analysis, SWOT- analysis and competitor analysis. However, the main focus is in Porter's Five Forces industry analysis and in SWOT- analysis.

The research was conducted as a qualitative research. An interview was created that was based on Porter's Five Forces model and it was sent to professionals working in the timber industry in the United Kingdom who had knowledge of cross laminated timber and its position in the country. Five professionals answered the questionnaire. Both primary and secondary data were used in the thesis. The theory consists of secondary data from different sources and the empirical part of the study consists of both primary and secondary data.

Based on the empirical findings CLT is increasing its demand, thanks to its great characteristics and the growing interest in ecological building in the UK. However, its position in the construction industry is not yet as strong as the position of concrete or bricks. Nevertheless, thanks to its great qualities and the home shortage in the UK, there are definitely possible markets for it also in the future.

Keywords Cross laminated timber, market analysis, Porter's Five Forces industry analysis, SWOT- analysis

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1 INTRODUCTION

This chapter consists of four parts. The first part introduces the background of the study, explaining why the topic was chosen. The second part tells the reader the objectives and the research questions of the study. The third part is the research methodology, which shortly describes the theory and empirical part of the study. It presents the methods used for gathering information. Lastly, the structure of the study is presented.

1.1 Background

Gordon Miller stated in 2012 that “Although the wood technology is popular in Europe for building, it has only recently begun to gain acceptance in Britain.”

In recent years there has been many timber apartment buildings have been built in London and its surroundings. There is a big timber construction boom going on in London at the moment and the reason behind it is cross laminated timber (CLT). (Puuinfo 2017)

Cross laminated timber and its qualities will be explained later in the study but some of its benefits is the fact that it is good at resisting fire and it is very solid. These qualities have changed the limitations when it comes to the height of timber buildings. Previously the maximum height of timber buildings was seven storeys because of the high risk of fire. (Trend-Monitor 2016)

Now timber buildings made of cross laminated timber can reach twenty-five storeys and by means of concrete core the buildings could go even higher, maybe even up to fifty storeys. “The sky, it appears, is the limit for CLT structures.” (Miller 2012)

Recently one has been able to come across many articles and piece of news about cross laminated timber. There have been articles about its pros and cons, its possibilities and about new factories that are being built. Cross laminated timber is a current theme in the construction industry and I was interested to find out what its current market situation looks like. In order to achieve an international aspect I chose to research cross laminated timber’s current market situation in the United Kingdom.

1.2 Objectives and research questions of the study

The main objective of the study is to find out what the current market situation of CLT (Cross Laminated Timber) in the United Kingdom is. The study tries to figure out the overall market situation and whether cross laminated timber actually has markets in the country. Additionally, the research interview included some questions that would help to find out whether it is difficult for foreign manufacturers to enter the market or not.

The aim is to analyze the CLT's situation in the United Kingdom based on Porter's model of Five Forces. In the end the whole CLT industry in the UK is analyzed by a SWOT analysis, based on the read articles and the answers received from the questionnaire that was created. Additionally, some of my, the researcher's, own thoughts are included.

The study tries to obtain answers to the questions below:

- What does the current market situation of cross laminated timber in the United Kingdom look like?
- Does cross laminated timber have a market in the country?

1.3 Research Methodology

This study consists of both primary and secondary data. The theoretical framework of the study is fully based on secondary data from different kinds of sources, such as books, articles and web pages. The gathered secondary data consists of both English and Finnish references, however most of the references used were in English.

The empirical part was carried out by using both primary and secondary data. The primary data was gathered through qualitative research. An interview was created that followed the guidelines of a qualitative research. In order to gather primary data, qualitative research seemed the most suitable for the topic, in order to receive deeper thoughts from the individuals who participated to the study. The respondents' answers were supported by secondary data searched by the researcher.

1.4 Structure of the study

This study consist of six different chapters. The first chapter is the introduction to the topic. It includes the background and the aim of the topic, as well as a short description of the used research methodology and explanation of the structure of the study.

The second chapter consist of the theoretical framework of the study. It describes the market analysis as a whole, what it is and what it aims for. Additionally, the main focus is on Porter's Five Forces industry analysis and SWOT- analysis. However, also competitor analysis is shortly explained, even though it is not part of the empirical study.

The theoretical framework is followed by the third chapter, which contains an overview of cross laminated timber. This chapter explains the product, its qualities, and the possible use of the product as well as some history of CLT.

The fourth chapter of the thesis explains the research methods that are used, as well as what kind of data is used. There is an explanation how the gathered data was analyzed and it examines the validity and reliability of the study. Lastly, the limitations of the study are presented.

In the fifth chapter the actual results of the study are explained and analyzed. The thesis ends with the sixth chapter, which is the conclusion and discussion of the results as well as some recommendations for future studies.

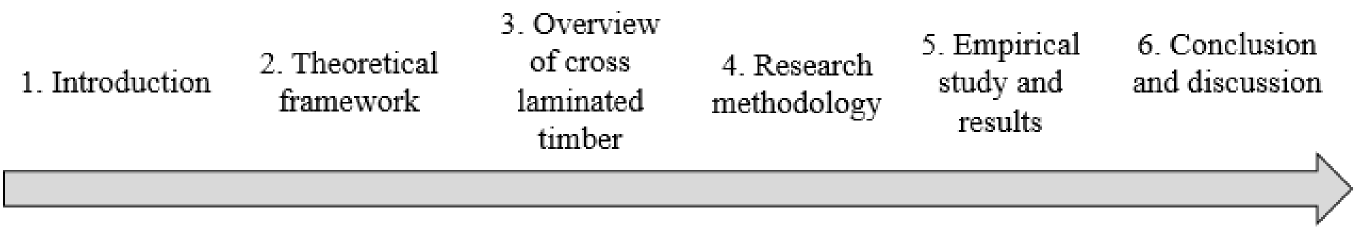

Figure 1. Structure of the study.

2 THEORETICAL FRAMEWORK

The theoretical framework chapter begins with an overview of the company's whole marketing environment. After that there is general information about market analysis and it is followed by introducing three different kinds of market analysis methods: Porter's Five Forces, SWOT- analysis and competitor analysis. In the end there is a short summary of the theories.

Everything that surrounds a company's marketing function and can have an impact on it can be defined as a company's marketing environment. Companies must be aware of its marketing environment and what is going on in it, since those changes can affect the demand for the company's products. A company's marketing environment has been divided into three different levels: the macro-environment, the micro-environment and the internal environment. The micro-environment composes all other individuals and organizations who can affect the company's activities either directly or indirectly. The key groups of micro-environment are suppliers, intermediaries, competitors, customers and other stakeholders.

The macro-environment, on the other hand, consists of and describes elements that do not have an immediate effect but can still affect the company. These elements are more like nebulous phenomenon that describe general pressures and forces rather than being institutions with which the company would run errands directly (Palmer 2000, 31-33).

These kinds of elements can be analyzed by using PESTEL- analysis which takes a better look at political, economic, social, technological, environmental and legal factors (Dacko 2008, 309).

According to Vuorinen (2013), when conducting a PESTEL -analysis one tries to find out the main driving forces that affect the company in each field that the letter stands for. The political factors include political matters, such as government support towards export trade, in both home country and in country of destination. The economic environment the companies face can be separated into two economies, the global economy that affects the whole world and the independent economy of a specific country (Vahvaselkä 2009, 68). These economic factors include matters such as changes in currencies, inflation, economic growth and financial policy. Additionally, social factors that need to be taken into consideration when conducting a PESTEL- analysis are matters like values and attitudes, changing consumer habits and social structures. Technological factors refer to technology related to raw materials, manufacturing, products itself and information (Kamensky 2010, 132). New technologies create fresh opportunities and markets. If the companies do not follow the technological changes they end up having technology that is outdated and will miss their market niche (Kotler et al. 2017, 86-87). Vuorinen (2013) points out that environmental factors include matters like carbon dioxide emissions, waste disposal, recycling, eco disasters, environmental protection and energy consumption. Finally, there are the legal factors that include matters such as health and safety legislation, financial regulations, company laws and competition legislation. (Paul et al. 2014, 44)

P	E	S	T	E	L
Political	Economic	Social	Technological	Environmental	Legal

Figure 2. PESTEL- analysis. Source: own reflection based on Lee & Edwards (2013).

The third level is called internal marketing environment and it consist of factors that are inside the company itself, such as employees, finance matters, equipment and functional responsibilities. (Palmer 2000, 31-33)

The marketing environment can be seen as an uncontrollable element to which the companies just have to adapt to by passively accepting it and trying not to make changes to it. If this is the case the companies try to analyze the marketing environment and come up with strategies that will make it possible to avoid the threats but at the same time take an advantage of the possibilities the environment creates. Companies can also decide not just to adapt to the environment but instead try to change it by themselves by affecting the publics and forces in the environment. They can try to influence the legislation, change public opinions or try to change forces to their favor by pressing lawsuits. However, marketing environment cannot always be controlled or changed (Karunakaran 2008, 35).

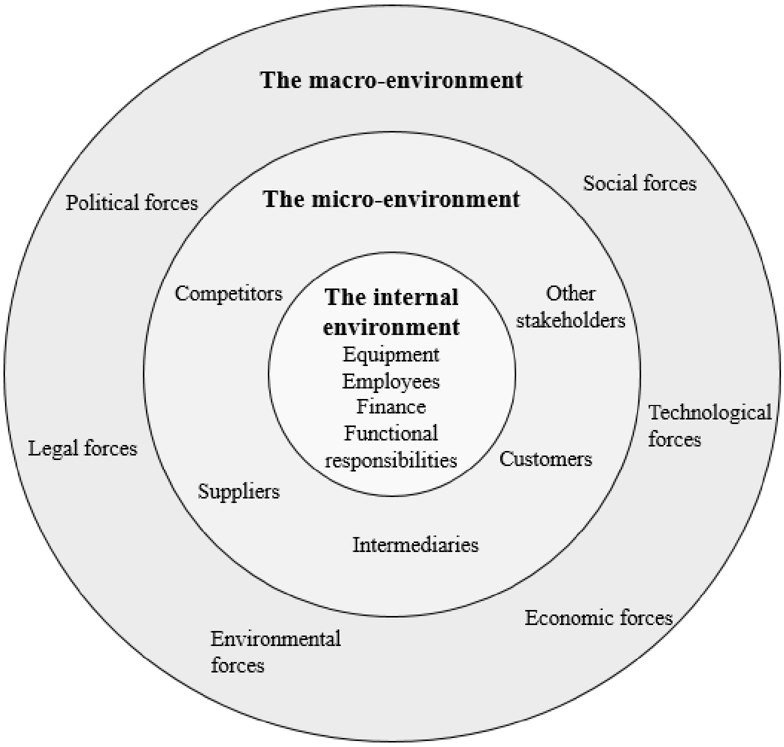

Figure 3. A company's marketing environment. Source: own reflection based on Adrian Palmer (2000).

2.1 Market analysis and market analysis methods

"A market analysis involves studying a company's customers and competitors along with the overall industry and environment." (Clow & Baack 2010, 26)

The key ingredient in successful marketing is the understanding of the market where the product of service is offered. A market analysis can provide such an understanding. A market analysis consists of analyzing the competition, environmental factors, the customers and the position of the company's products in the market (Clow et al. 2010, 26). When the analysis is done well it offers the key to thriving business insights. These insights about competitors, customers, suppliers and potential partners are valuable for companies when it comes to attacking them or defending against them. (Bensoussan & Fleisher 2009)

The objectives of a market analysis are to evaluate the prospects of a company and to achieve a bigger picture of the dynamics of the market in question. It is necessary to recognize emerging key trends, opportunities, success factors and threats and to come up with strategic questions that can show the way for information analysis and gathering. Understanding the main factors that affect the company's success is important. (Proctor 2000, 82)

There are different kinds of analysis methods that help the companies to decide the target group and what kinds of products to market. Additionally it helps to determine the best ways to influence the purchase behavior and attitudes of potential customers. Examples of such analysis are environmental analysis, competitive and industry analysis, market segment analysis, analysis of product positioning and customer analysis. (Clow et al. 2010, 26-27)

As mentioned earlier, this thesis has its main focus on Porter's Five Forces method and SWOT-analysis. However, competitor analysis is also explained as an example of a different kind of market analysis.

2.2 Porter's Five Forces industry analysis

The aim of an industry analysis is to point out the nature of competition in a certain industry and establish the competitive position of a company in terms of its microenvironment. Industry analysis should not be taken as a one-off activity but instead it should be an ongoing process. This thesis focuses on the most widely used industry analysis which was developed by Porter. (Campbell, Edgar & Stonehouse 2011, 148).

Harvard professor Michael E. Porter created a five competitive forces industry analysis in 1979. The main idea of the five forces method is to analyze an industry in five different areas (Crain 2010, 36). The forces that are taken into consideration in the Five Forces model are:

1. Threat of substitute services and products
2. Buyers' bargaining power
3. Threat of new entrants
4. Suppliers' bargaining power
5. Rivalry among existing competitors. (Fleisher & Bensoussan 2003, 60-61)

The aim of this analysis is to gather information that makes it possible to create an outline and a structural analysis of a certain industry and its characteristics and parties involved. The objectives of the analysis are to find out where the profit potential of an industry lies, what could harm the profitability, protect competitive advantage and take part to changes in the industry structure by acting proactively. The Five Forces model also aims to assess economic and technological matters that have an effect on industry's profit potential (Fleisher & Bensoussan 2003, 60-61).

Crain (2010) argues that every company is affected to some agree by these forces inside the industry where they are operating. When the nature and strength of each factor is understood inside the industry as well as the power of each factor is determined, the company is able to identify how they should be positioned so that they can take advantage of the opportunities and on the other hand avoid the threats inside the industry (Campbell et al. 2011, 149).

2.2.1 Threat of substitution products

One of the five forces is the threat of substitute products or services. When thinking about competition the alternative products and services need to be taken into consideration. Substitutive products are products that are able to provide the same functions as the product it is replacing. Good example would be tee as an alternative beverage for coffee. If customers perceive the substitute product to offer equivalent or equally good functions as the original product the threat is greater. The threat is even greater if the alternative product can also offer better value for money. This can happen in two ways, either the alternative product is equal on price but is able to offer better product or the value added is higher, or the other way is that the alternative products is as good as the original one but the price is cheaper (Capon 2009, 80).

The threat of substitution is higher also if the company providing the alternative product is highly profitable and the substitute product is credible. Additionally the switching costs have an impact to the threat of substitution, when the switching cost are low the threat is high and vice versa. (Fleisher et al 2003, 63)

There are two kinds of substitute products that gain the most attention. Firstly, if the products "are subject to trends improving their price-performance tradeoff with the industry's product" and, secondly, if the products are manufactured by industries that gain high profits. If the products are produced in industries where the profits are high, the substitute products often occur when the competition is increased by developments and that has led to price reductions and improvements in performance. Analyzing those trends is important when trying to figure out how to stop a substitute. (Porter 1980, 24). Campbell et al (2011, 151) states that the threat of substitute products inside an industry can be decreased by reducing costs and prices, improving the product's performance and by differentiating the product more.

2.2.2 Buyers' bargaining power

The second force of the Five Forces it the bargaining power of buyers. It is important to keep in mind that buyers are more than just the customers at the end of the supply chain. The supply chain has many stages and each stage has its influence on the industry structure and on the prices charged based on how strong is the bargaining power of buyers in the stage in question. If we take a better look at a supply chain of a beverage, the buyers count in not only the end users but wholesalers, supermarkets, bars and pubs as well as restaurants. Each of these stages have bargaining power, however the amount of power can vary significantly. Individual consumers for example do not have as much power against brewers as supermarket chains can have. (Campbell et al. 2011, 152)

The buyers have the bargaining power when they have good knowledge about what the industry has to offer and how is the technological basis of the production. This way they know what the products are worth and will not be overcharged. The customers also have the bargaining power in a situation when their purchases create a big amount of the total sold volume. In these cases it is more likely the company might offer a lower price. The buyer is in a better situation also when the product is not considered to be critical, unlike for example medicines. Additionally, the product characteristics can too create better bargaining power to the buyers. When they purchase a product that is standardized and undifferentiated it is easy to shift between different companies' products since it does not affect the quality and nature of the product. In this situation the buyer has a stronger position (Kuada 2008, 90-91).

Finally, the size and amount of businesses supplying the product has an influence on the bargaining power of buyers. If the companies supplying the product are larger than the buyers and the whole industry is pretty concentrated, the buyers' bargaining power tends to be lower. If the industry only has few businesses supplying the product, the ability to 'shop around' and the product range are weaken. This leads to the decreasing bargaining power of customers. (Campbell et al. 2011, 152)

2.2.3 Threat of new entrants

The third force to discuss is the threat of new entrants and what determines the scope of the threat. Identifying the companies that are probably able to enter the market as well as recognizing the markets where they are currently operating is crucial. If the industry is attractive it is likely able to entice new entrants to the industry. Industry is attractive if there are low set-up costs, strong customer base to support both new entrants and already existing companies and potentiality to profits is high (Capon 2009, 79). Additionally, the barriers of entry have an influence on the threat of new entrants. If the barriers of entry are difficult to overcome there will be less competition since the new entrants are not able to enter the markets. There are different kinds and forms of entry barriers and the following paragraphs will take a closer look at them. (Campbell et al. 2011, 149)

In some industries it is crucial to have very high capital investments in order to be able to enter the area of business. If the required investments to enter the market are high the threat of new entrants will stay relatively low. On the opposite, if the required necessary investments are low the threat of new entrants will be high. Hence, the required investment size has a big influence whether there is a great threat of new entrants or not. . (Drummond & Ensor 2005, 37; Campbell et al 2011; 150)

In other industries however it might be a necessity to achieve economies of scale in marketing, production or distribution in order to enter the markets. However, if already existing companies have attained considerable economies of scale it is very difficult for the new entrants to compete with the existing companies and against their strong economies of scales. In other industries it might turn out to be difficult to get appropriate distribution channels or the already existing competitors are in charge of the best locations, customer franchises or sources of supply. (Drummond & Ensor 2005, 37; Campbell et al 2011; 150)

Another restriction for new entrants might be state-owned monopolies or protection of patents that are both regulated by government policies and legislation. These regulations vary depending on the industry, others are more regulated than others and the regulations can concern vast range of factors from health and safety matters to setting up new services. It is also possible that as a deterrent for a new entrant works only the hostile reaction of an existing company in the industry. As an example, an existing company can decide to grow their marketing expenditure or make price cuts only because they want to prevent new entrants to entering the industry. Brand loyalty can also work as an entry barrier. This happens if the products produced in the industry are differentiated and the customers are brand loyal, the new entrants will experience resistance when trying to enter the industry in question. If the customers are brand loyal in the industry it is very likely that the costs of changing to use new entrant's products are very high for the customer. (Drummond & Ensor 2005, 37; Campbell et al 2011; 150). Fleisher et al. (2003) agrees that the entry barriers determine how difficult it is for new companies to enter the industry. Hence, if the barriers in the industry are low, there will be more competition.

2.2.4 Suppliers' bargaining power

The fourth force is the bargaining power of suppliers. Kuada (2008) states that within certain limits the suppliers have the leverage what comes to the bargaining power with the producers. However, it should be pointed out that the bargaining power of suppliers is not only based on their relationship with one industry. It is determined by the relationships they have with every single industry they serve. After pointing that out let's take a closer look of the factors that affect the strength of suppliers. Suppliers have power over the industry if the resources they offer are unique, cannot be replaced easily and are necessary for the industry and for the companies operating in it. On the contrary, if the resource can be easily replaced with similar resource, the suppliers will not have that much power. (Campbell et al 2011, 152)

Another factor determining the power of suppliers are the switching costs. Switching costs are the costs that occur when the company changes a supplier's product to another product from another supplier. However, if the costs are high the companies are more likely not to change the supplier and this again leaves the bargaining power to the suppliers. What also defines the suppliers' bargaining power is how easy it is for them to enter the buying industry. If it is easy they might be able to pressure the buying companies to pay higher prices for their products if that means the suppliers won't try to enter the industry themselves (Kuada 2008, 91-92).

What also has an influence on the bargaining power of suppliers is the number of industries they sell their resources to. The suppliers will not be dependent on a single industry if they are able to serve several industries. This leads to a situation where the suppliers bargaining power is greater. Furthermore, the size and number of suppliers offering a certain resource has an influence on the bargaining power of suppliers. The suppliers have greater bargaining power when there are not that many companies who offer the same resource but the amount of buyers is high. In a situation where the buyer is strong and big company and there are many small suppliers offering the same resource the bargaining power of the suppliers is weak (Campbell et al 2011, 152).

To sum up, the bargaining power of the suppliers is strong when the resource they offer is unique and necessary for the industry. The resource should also be difficult to substitute with another resource, the switching cost are high, the suppliers do not only serve one industry, but many and the supplier companies are large. Additionally, when the buying companies are small compared to the supplier, the bargaining power of suppliers is strong.

2.2.5 Rivalry among existing competitors

The fifth and the last force is the competition between the existing competitors. There are several ways how companies can compete with each other inside an industry. Generally speaking, the competition can be divided into two types: price competition and non-price competition. Price competition is based on the attempt to undercut other companies' prices, which is reliant to companies' ability to lower their costs of production. Non-price competition on the other hand has nothing to with prices, like the name already indicates. As a part of non-price competition are matters such as advertising, additional services to customers, branding, promotion and product innovation. The intensity of the rivalry depends on the industry, in some industries it is fierce while in others it is less forceful. (Campbell et al. 2011, 153)

If the competitors are similar in size in the industry, it is likely that each company tries to achieve the dominant position, hence the competition is intense. On the contrary, the companies are less competitive if there already exists a clear dominant player. However, at some point the industry will reach the situation when the only possible way for companies to grow is to take rivals' market share. Therefore the stage of life cycle in the industry has an effect (Drummond et al. 2005, 37-38).

Additionally, when the fixed costs are high in an industry, the companies will try to get as much sales volume as possible and they might try to gain it with price discounting. Other companies must respond to this and that creates competition. The competition is also increased in the industries from where it is difficult to companies to withdraw. If the plant, machineries and specialist skills cannot be used for other purposes and there is no easy way to leave the industry, it leads to competition. (Drummond et al. 2005, 37-38)

The rivalry between competitors is also affected by the customer's brand loyalty and the availability of substitutes. When the customers have strong brand loyalty it will create less competition between the companies and the existing competition will be non-price related. However, if the customers are not that brand loyal it creates higher competition over the customers. The same goes with the substitute products. If there are alternative products available and the buyers are strong, the amount of competition is high between the companies. (Campbell et al. 2011, 153)

When the Porter's model is used it should be remembered that often there are one or few key forces that have a bigger influence than the rest of the forces. The key forces can change over time in the industry and that is why the five forces analysis should be repeated and checked regularly. If the Five Forces analysis is updated regularly it allows the company to detect the changes that are happening and they can adjust to them maybe before their competitors will do so. (Campbell et al. 2011, 149)

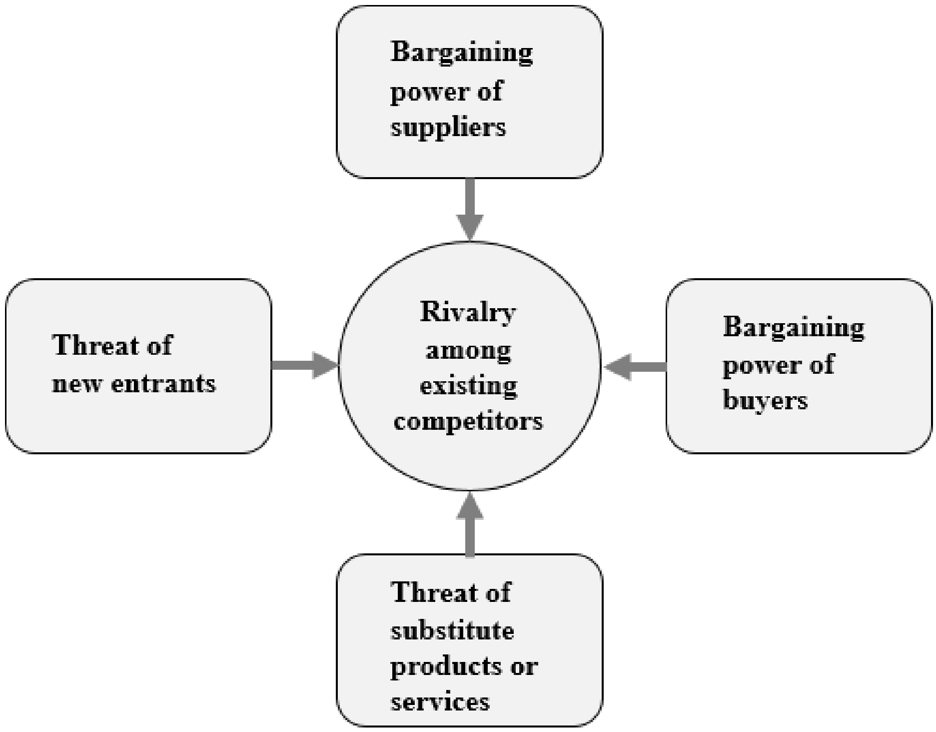

Figure 4. Porter's Five Forces Model. Source: own reflection based on Fleisher & Bensoussan (2003).

2.3 SWOT- analysis

SWOT- analysis comes from the words Strengths, Weaknesses, Opportunities and Threats. The purpose of the SWOT- analysis is to evaluate company's strengths, weaknesses, opportunities and threats at the current market environment (Pelton, Strutton, Lumpkin 2002). It is used as a marketing and management tool to give an evaluation of the company's competitive position. Strengths and weaknesses part focus on the internal factors of the company, such as the product or service itself, the employers and the business. Opportunities and threats part on the other hand give an evaluation of the company's external factors that impact how the business is doing. The external factors take a better look at things like government legislations that affect the company, market and consumer trends, financial issues and changes in technology. Evaluating these internal and external factors give a good understanding of the present business situation (Awe 2012, 230-231). According to Tate (2010, 28), it is beneficial to get an outsider's, for example a customer's, opinion and comments about the company's SWOT analysis. This will give the company an unembellished opinion.

Defining the terms Strengths, Weaknesses, Opportunities and Threats further, gives a better understanding what kind of matters they actually include. The core competencies of the company are defined in the Strengths. When listing the strengths, one has to take a look at what the company does well: what is the company's competitive advantage that makes it better than competitors, how are the resources, including products, staff, customer loyalty, hours, packaging and so on. Furthermore, experience, reputation and education in the company's expertise are included in strengths. When defining strengths for one's company, one has to remember that when doing something the same way or as good as a competitor, it cannot be counted in as a strength. A good example would be if one's company and their competitor both have friendly customer service, it cannot be counted in as a strength. Only if the customer service is friendlier than competitors, then it is a strength. When listing the strengths as honestly and realistically as possible it gives a good foundation for ideas for the company's future expansions. (Awe 2012, 231)

When considering the company's weaknesses, one should consider the possible improvements, and matters that should be avoided. It would the best to think about this from an internal and external basis. Trying to find out what people in the market consider to be a weakness and whether they perceive weaknesses that the company cannot see, gives wider understanding of this part of the SWOT- analysis. One should also take into account what are the competitors doing better and what are the factors that cause the decreasing of member sales or current members. (Woodard-Chavez 2008)

Opportunities for the company are usually coming from external sources. They can include matters such as laws and regulations, industry trends, technology or competitors. Additionally, one possibility is also to turn some of the company's weaknesses into opportunities, if possible. Opportunities typically should create a situation where the company can grow or increase their profitability or effectiveness. It is not only important to recognize the current opportunities but it is also important to identify and consider the potential future possibilities. The prioritizing of the opportunities according to their importance is crucial since it is not possible to focus on all the opportunities at the same time. (Simoneaux & Stroud 2011, 76; Woodard-Chavez 2008)

Threats are the conditions or obstacles that keep the company from actualizing theirs objectives. Opportunities like regulations and laws, technology or competitors can also turn out to be threats for the company and damage the success of the business. At best the threats are just intuitive guesses that never take place in reality, but being on the alert helps to react fast if the threat turns out to be real. When defining threats the company should consider how to react if there is a new competitor or a new product is more cost-effective due to new technology and hence outperforms all competitors. (Awe 2012, 232)

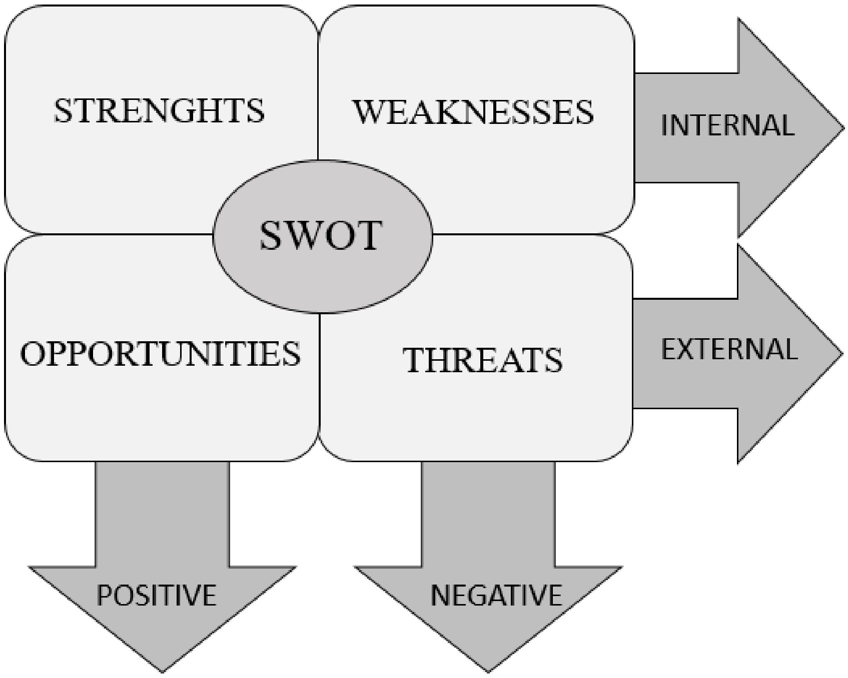

Figure 5. SWOT- analysis. Source: own reflection based on Kotler et al. (2009).

2.4 Competitor analysis

In order to efficiently compete in the markets, companies have to understand the business of competitors. When analyzing the competitor’s business, one will better understand why customers buy from you or the opposite, from your competitors. It also allows to understand how the target market of the competitors look like, or how is their products and services as well as their competitive advantage and their aims for the future. By understanding these factors in competitors’ business it will assists one to specify their company’s competitive advantage and how to communicate it to customers. Moreover, it will help with the product development of new products and service offerings and might disclose unmet needs that can be met by developing a new market niche with a product that meets the needs. (Yuhas 1999)

The first step in competitor analysis is the identification of competitors. Companies can determine competitors on narrow or wide level. Identifying competitors on narrow level means that competitors are companies who offer similar kind of products and services at similar prices to same customers. On the contrary, identifying competitors on wider level means competitors are basically all companies who have the same product or class of product or even all the companies whose products offer the same service. Even more broadly, competitors can be all the companies who compete for the same consumer’s money. Hence, companies should forget nearsightedness what comes to identifying competitors. It is more likely to be overridden by latent competitors than the current ones. (Kotler et al 2017, 537-538)

The next step is to assess the competitors. One should try to find out what are the objectives of the competitor. The objectives can concern the market share growth, overall market leadership, technological leadership or financial matters. Finding out the competitors’ objectives might help to figure out how the competitor might respond if there is a competitive thrust. In addition to figuring out the objectives, it is important to find out competitors strengths and weaknesses. In some industries this has turned out to be more difficult than in others. Knowing the competitor’s strategies is also useful since it helps to understand how the companies compete. This leads us to one other point to consider when assessing the competitors. Companies should consider how their competitors are going to react when the external environment experiences general changes or some other competitor makes a specific competitive move. (Wilson 1994)

When the competitors have been identified and assessed it is time to select the competitors who to attack and who to avoid. Competitors can be divided into strong or weak competitors, close or distant competitors and good or bad competitors. Competing against weak competitors is more common since it takes less time and requires less resources. However, the company might gain a very little compared to competing against the strong competitors, since they also have their weaknesses. Sometimes it is even impossible to avoid the strongest competitors. Nevertheless, the aim is to meet the needs of the customers in a way the competitors cannot. Most companies also prefer competing with the closest competitors, who resemble them the most. However, destroying the close competitors sometimes might cause the merging of other companies which then might cause bigger competitors. In addition there are good and bad competitors. When there are good competitors, companies might be able to share the costs of product development and market or legalize new technologies, this is possible when the competitors play by the rules of the certain industry. Bad competitors do not play by the rules, but in contrast, break them. Instead of earning share they buy it, have their own rules and take big risks. Adding all this information together about the competitors, their objectives, strengths and weaknesses, strategies, their reaction patterns and which competitors to avoid or attack creates the competitor analysis. (Kotler et al. 2017, 540-541)

2.5 Summary of theories

It is important for companies to be aware of their marketing environment, which is divided into three levels: the macro-environment, the micro-environment and the internal environment. Changes in it can affect the demand for a company’s products and hence, the companies should try to analyze the changing marketing environment.

Analyzing the markets includes studying the company’s customers and competitors along with overall industry and environment. There are different kinds of analysis methods but only three of them were introduced in the theoretical framework: Porter’s Five Forces industry analysis, SWOT- analysis and competitor analysis. The main focus in this study is in Porter’s Five Forces. This industry analysis consist of five different forces that are taken into consideration when an industry is being analyzed. The five forces are threat of substitution products, bargaining power of buyers, threat of new entrants, bargaining power of suppliers and rivalry among existing competitors. The aim is to gather information that makes it possible to create an outline of an industry, its characteristics and parties involved.

Another analysis that was introduced and is part of the empirical study as well is the SWOT- analysis. Briefly, the main idea is to evaluate the company’s strengths, weaknesses, opportunities and threats at the current market environment. This evaluation gives an idea of the company’s competitive position.

Lastly there is competitor analysis, which is introduced but is not part of the empirical study. Analyzing the competitors helps to understand why consumers buy from your company or from the competitors. Additionally, it allows to understand the competitors and their aims. Competitor analysis has three steps. Firstly, the competitors need to be identified. Secondly, they need to be assessed and lastly, it is time to choose which competitors to attack and who to avoid.

3 OVERVIEW OF CROSS LAMINATED TIMBER

3.1 What is Cross Laminated Timber (CLT)?

CLT comes from the words Cross Laminated Timber. It is a solid wood construction product that consists of a minimum of three single-layer panels that are bonded and organized at the right angles to each other. All together it can consist of 3-8 layers. It is possible to include middle transverse layers without narrow side bonding when there is at least five layers in the panel. CTL panels consists of many layers and there are different panel thicknesses available. At the moment the possible dimensions for produced CLT panels are up to 2.95 x 16.00 m. The layers are stuck to each other by using environmentally-friendly formaldehyde-free adhesives. (Stora Enso CLT 2016)

Figure 6. Piece of cross laminated timber. Source: CLT Plant (2018).

3.2 Features of CLT briefly

CLT is considered to be a sustainable future material when it comes to construction materials. Compared to conventional construction materials CLT offers multiple advantages. First of all it has a positive CO_2 balance and it is sustainable and an environmentally-friendly construction method. When a tree is growing it absorbs carbon dioxide from the atmosphere which the tree then stores in buildings that are made from solid wood. Wood has a huge role when it comes to reducing the greenhouse effect since one cubic meter of forest stocks around one ton of CO_2. Hence, it makes sense to use CLT in buildings for ceilings, walls and roofs since it is an environmental-friendly way to build. What is more, buildings made from CLT can last for centuries if the building has been planned, constructed and protected correctly against changing weather conditions and damp. (Stora Enso 2013; Stora Enso CLT 2016)

As a construction material CLT is a lighter material than brick or concrete. Additionally, it has space-saving dimensions, for example compared to brick walls internal and external walls made from CLT are much thinner. Consequently, a house that is made from CLT has around 6-10% more living space (the calculations for 6-10% are based on a building where the living space is $100m^2$). CLT’s fire safety characteristics are also excellent. The moisture content of CLT is around 12% which means that the amount of water it consist must first evaporate before the material can catch a fire. If the buildings that is made from CLT catches a fire the wood constructions will not collapse since the internal CLT layers are protected by the carbonized surface. In addition to the facts that CLT is lighter construction material, saves more space, and is quite well fire-resistant it is also safe in earthquakes. Thanks to the lighter solid wood material the buildings do not weight that much as concrete and are able to tolerate the tremors better. Hence, CLT buildings perform greatly in seismically active areas due to their flexibility and static strength. (Stora Enso 2013; Stora Enso CLT 2016)

The advantages of CLT do not end there. It also provides healthy and comfortable indoor climate. That is based on the wood’s ability to absorb moisture from the air and ability to release it when the ambient air becomes dry. Hence, solid wood is an excellent choice for material when people have an interest on pleasant and healthy atmosphere. CTL also has an efficiency to storage heat in the winter and on the other hand during summers it can protect buildings from overheating. This makes it possible to use less additional insulation materials and makes it easier to implement passive house standards. CLT also provides excellent structural properties. It makes it possible to timber construction to have new kinds of architectural and design dimensions, thanks to the massive structural load-bearing capacity. It also has a positive influence on bracing the building, since CLT is highly and inherently stiff material. One major advantage is also the short set-up time. The CLT panels are pre-cut and are delivered directly to the construction site. The panels have the openings for doors and windows ready. By using these prefabricated elements it is possible to save time and money. What is more CLT elements can be used together with other building materials due to its extreme versatility. (Stora Enso 2013; Stora Enso CLT 2016)

3.3 Use of CLT

Cross laminated timber can be used in many different construction functions. It is suitable for use as a load-bearing wall that has also thermal insulation qualities for example to small residential buildings, row houses and free-time residents. It is very well suitable for construction of apartment buildings. Furthermore, it can be used for building of business spaces and industrial buildings as well as public buildings such as schools, sports halls or kindergarten. Furthermore, it can also be used in landscape construction, as an example for sound barriers. In addition to building the external and internal walls of CLT it can also be used for the dividing walls, base floor, floor itself and for the roof. When building with CLT the extra insulation and exterior cladding are always free of choice as well as the roof structure (Kiintopuu 2018). Moreover, that CLT is suitable for all construction, its life cycle is three times longer compared to a building that is built from concrete. In a long run the costs of building from CLT are more affordable than compared to the costs when building from concrete. (Calcus Oy 2018)

3.4 History and status quo of CLT

The country of origin for cross laminated timber is Switzerland where it was first developed in the 1990s. It was quickly accepted in some European countries such as Austria and Germany (MacLeod 2013).

According to Kiintopuu (2018) CLT is a quickly growing wood construction method in Middle-Europe and North-America. In 2015 around 80% of the global CLT production was produced in Europe where the production is concentrated in Austria, Germany and Switzerland. However, the country who produced the most CLT was Austria, since its production was alone around 60% of the total 80% (that was produced in Europe) that year. For 2016 the estimated production of CLT in Europe was around 680,000 m^3. This forecast is predicted to increase to around 1.25 million m^3 by 2020. The popularity of CLT has also reached North America. Their use of CLT has been more focused on platforms used in the oil and mining industry rather than towards building sector. However, their production is also expected to increase considerably in coming years with greater focus on the construction of buildings. There are five CLT plants operating in North America at the moment, three in the USA and two in Canada. There are CLT plants also in Asia and Oceania for example in Japan and New Zealand. (UNECE 2017)

Already many buildings around the world that are built from CLT. In Finland Haltia Nature Center was the first public building in Finland that was constructed from CLT. In United Kingdom there is for example an apartment building in London called Bridport House that has eight storeys and 41 apartments. In Germany a primary school is made of CLT (Stora Enso CLT). According to Evans the first ten-story building anywhere made from CLT was Forté, an apartment building in Melbourne Australia. It can be said that cross laminated timbers is gathering global attention by having production plants and buildings made of CLT in different continents. Hence, it has great potential since in the USA alone the potential market estimation for the CTL products is around 2 million- 6 million m^3, which is way more than the whole current global supply (UNECE 2017). To compare, in Finland the demand for CTL is at the moment around 78,000m^3 in a year plus growth potential. (Calcus 2018)

3.5 The United Kingdom and CLT

This part takes a closer look to the United Kingdom and factors related to the cross laminated timber markets. It should give the reader some basic background information about CLT in the UK, such as when it was introduced to the country and how many projects have been completed by using CLT. Additionally, there is information how the population is divided in the UK and hence, where is the biggest need for construction.

The country's population is around 62.8 million at the moment and the area is around 243,000 km2 (BBC News 2018). Comparing these numbers to other countries in the world, by population the UK is 22nd biggest country in the world. However, when looking at the area, in country comparison to the world the UK is in spot 81 (Central Intelligence Agency 2018). From this can be concluded that the population density must be high in the UK and there must be a lot people living in the same areas. This conclusion can be stated correct since according to Globalis (2017) the population density in the UK (274 people per km2) was the sixth highest in the Europe. In and around London lies the core of the population, however the other main clusters around the UK are located around Liverpool and Manchester, between Glasgow and Edinburgh in Scotland, in Wales the cluster is in and around Cardiff and in Northern Ireland the population is centered in Belfast (Central Intelligence Agency 2018). Based on this knowledge, it can be assumed that the focus of the construction business in the UK is centered on those areas.

When taking a closer look at the landscape in the UK, one can see that the amount of forests is limited. In fact, the area in the UK that is covered in forests is only around 13% of the total area. That is 21% less than the average in Europe (34%). Furthermore, only half of the forests in the UK (32%) are managed to produce wood. British people value forests as places for leisure time activities, not for activities of commercial use. (Smith 2013)

Consequently, one of the largest importers of wood and wood products in the world is the United Kingdom. From the sawn softwood that is used in UK construction nearly 80% is imported to the country. What is more, at least in 2013 all the used cross laminated timber in the UK was imported. Even though the UK is one of the largest wood importers, the country has not reached the saturation point when comes to the use of timber in the construction. (Smith 2013)

The UK market was introduced to cross laminated timber for the first time in 2003 when a small extension was built to a flatted development in Hackney, London, with the value of £60,000. Since that the value of CLT in the UK industry markets has grown to around £28M. The market value consists of more than 500 projects that have been completed around the UK since 2003. (CCG, 2017)

At the moment London is having the biggest timber construction boom since the London fire in 1666. Compared to Finland, London and its surroundings have had a lot of new timber apartment buildings in recent years. What is behind this timber construction boom is the popularity of cross laminated timber. In a large city, like London, the strength of timber construction lies in the fast building and in the lightness of the material. Furthermore, the construction sites that are caused by timber construction do not bother the environment and the traffic as much as construction sites caused by traditional building. Consumers and investors are becoming more interested about timber construction since its ecological and low carbon status. (Puuinfo Oy, 2017)

From the total markets of cross laminated timber in the UK, almost 50% of the CLT is consumed in London. After London, East England and South East England are consuming the most CLT of the total amount, representing around 17% and 9% of the total use of cross laminated timber in the country. The reason for the high use of CLT in London and its surroundings is most likely caused by the need for new modern methods of constructing. What is more, London is also logistically in a great position, since mainly all of the CLT used in the UK is imported from central European countries. (CCG, 2017)

4 RESEARCH METHODOLOGY

This chapter will go through the main factors of the empirical framework. It gives a short introduction to qualitative and quantitative research as well as primary and secondary data. This chapter also clearly points out which research method and what kind of data was used for this study. Additionally, it describes the analyzation of the data and speculates the reliability and validity of the study as well as the limitations of the study.

4.1 Research methods

There are two types of market research, qualitative and quantitative research. Qualitative research examines the behavior and perceptions of individuals and there the sample size examined is small. Quantitative research on the other hand will give statistical information about the consumer's behavior and attitudes. In this type of market research the sample size of the data examined depends of the size of the total population of the target group. The methods to conduct quantitative and qualitative research overlap, even though these two are often seen as opposite matters for each other. (Palmer 2000, 150)

According to Webb (2002, 111) information gathered by qualitative research should answer to questions 'how', 'why' and 'what'. The aim of qualitative research is to understand what the consumers think and what is in their mind. This kind of data is collected in order to understand and know better about matters that cannot be easily observed or measured. Examples of matters that cannot be directly measured are for example attitudes, feelings, intentions, thoughts and past behavior (Kumar 2000, 141-142).

When conducting qualitative research the amount of information obtained from each respondent is substantial. However the sample size of the respondents is small. So basically, there is a lot of information but only from small group of people (McDaniel & Gates 2010, 92-94). Roe (2004, 83-84) points out that there are two main basic means of collecting information through qualitative research: group discussions, also called focus groups and individual interviews.

Webb (2002) states that quantitative research aims to answer the question 'how many'. Hence, information elicited from quantitative research refers to all numerical data and data that could be useful when it has been quantified. The variety of what can be found out by using quantitative research varies a lot from simple counts to more complex data.

However, this kind of research data does not give a lot of meaning to people until it has been processed and analyzed and turned into information. This can be done by using different kinds of quantitative analysis techniques, such as statistics, graphs and tables. (Saunders et al. 2007, 406)

According to Palmer (2000, 150), when conducting quantitative research the data is normally gathered from several hundreds or even from thousands of respondents. Consequently, it can be said that the sample size in this kind of research is large. However, the amount of information that is received from each respondent varies and it is not as substantial as it is in qualitative research. (McDaniel et al. 2010, 92)

The research method that was used in this study was qualitative research. Qualitative research seemed a better option since it makes it possible to get deeper insights from the respondents as well as understanding and knowing their attitudes and thoughts. An interview was created in Google Forms and it was based on the main theoretical frameworks of the study: Porter's Five Forces. The questionnaire included questions related to all of the Five Forces and hence it can be seen as a theme interview. According to Mäntyneva et al (2008, 71) interviews can be very strictly structured or the opposite. In structured interviews it is possible to stick in certain themes and these kind of interviews are often called theme interviews. In order to meet the requirements of qualitative research, the questions had interrogatives like 'why' and 'what'. The questionnaire had fifteen questions and all of them were open-ended questions.

4.2 Collection of data

Proctor (2003, 69) points out there are two types of data, primary data and secondary data.

According to Proctor (2003) a research that gathers primary data is conducted when the company is in need of a specific information and that kind of information is not yet available. Kotler, Keller, Brady, Goodman & Hansen (2009) agree that primary data is needed when the necessary information and data does not exist or it is outdated, unreliable, incomplete or inaccurate.

Researches that are conducted in order to gather primary data have a tendency to be more time consuming and less cost-effective compared to researches that use secondary data. The person gathering primary data has to take time to come up with the most convenient and best method to collect the information needed. Doing that takes a lot of time, energy and resources. However, the advantage is that the information discovered is specifically answering the wanted questions and gives accurate information. (Wenzel 2012, 26)

Research that uses secondary data as an information source takes advantage of already examined information that is gathered by someone else and hence it already exists. Exploiting secondary data is normally cost-effective, fast and relatively easy way to get information. When taking advantage of secondary data, it is important to make sure the sources of information are up-to-date and reliable. Possible sources for the information can be as an example books, magazines, published researches, databases, annual reports and internet web pages. (Mäntyneva et al. 2008, 29)

It is possible to only use one of the data types or both data types in the same research. In practice when both are used they complete each other and better answer to the specific questions and needs (Mäntyneva et al. 2008, 28-29). According to Kotler, Armstrong, Harris & Piercy (2017) it is rare that one could obtain all the information one needs from a research that only consist of secondary data.

This thesis is a mixture of both, primary and secondary data. The theoretical framework of the study consist of secondary data that was gathered from different kinds of sources. The sources include many books as well as articles and web pages in order to get a proper picture of the theories behind the study. The secondary data sources were both in English and in Finnish. The primary data of the study was gathered through qualitative research that was conducted by interviewing five individuals who are working in the timber industry in the UK. The interview was sent via email to people working in different kinds of positions in the timber industry such as director of a timber company, contractors, architects, timber importers and timber salesmen in the United Kingdom. However, it was made sure that the people in question had professional knowledge of cross laminated timber. All of the five respondents represent one of the occupations mentioned above.

The interview questions were sent through email as arranging personal interviews face-to-face was not possible due to the long distance between the interviewer and interviewees (interviewer was in Finland and interviewees in the United Kingdom.)

4.3 Analyzation of data

The questions and their answers are gone through in the 'Empirical part and results' in a slightly different order than they were in the questionnaire itself. In the questionnaire all of the questions related for example to the threat of substitution products or buyers bargaining power are not after each other, because the questionnaire was more logical in a different order. In the study the results are went through by analyzing all the questions related to certain Five Forces at once. That is why analyzing the results goes in a slightly different order than how the questions were asked in the questionnaire.

When analyzing the results the theory of the Five Forces was kept in mind. Additionally, the respondents' answers were supported by finding secondary data.

4.4 Reliability and validity of the study

According to Proctor (2003, 194) "Reliability refers to the consistency in reaching the same results when the measurement is made over and over again." This can be evaluated for example by considering whether the results would be the same if the research was repeated and whether the results be the same even though the executor of the research would be a different person (Saunders et al. 2007). Reliability also measures the ability of a research to give results that are not accidental but instead reliable (Mäntyneva et al. 2008).

It can be said that the research conducted is reliable. There were no previous relationships between the interviewer and interviewees and they did not know each other personally. Hence there was no personal relationships that would have had an influence on the interview, so even though the study would be repeated by another person the results would still be the same. Additionally, the answers received can be measured as reliable since the respondents were chosen because of their knowledge of CLT industry in the UK. In other words, the respondents had professional knowledge of the topic and hence, there is no reason why the answers and results of the study would be accidental instead of reliable. What also increased the reliability of the research is the fact that it has several references from different sources, such as books, articles, webpages and the information gotten from the interviews.

Proctor (2003, 194) states that "validity refers to the degree to which the question measures what it is supposed to be measuring." In other words, does the answers that were obtained in a research answer to the actual questions. Validity can be assessed by comparing the results of a research to the actual information about the examined phenomenon. Additionally, in order to achieve a high validity for the study the whole research process should be described in detail and decisions made should be explained and argued. (Mäntyneva et al. 2008, 34).

The study can be seen as valid since the respondents' answers did answer the questions and the needed information was received. In order to support the respondents' answers, secondary information was gathered and there was coherence between the respondents' answers and the information gathered secondary. The whole research process has been explained to the reader and argumentation is given to choices that have been made.

4.5 Limitations of the study

One limitation of the study is the fact that even though the theoretical framework explains three different market analysis methods, Porter's Five Forces industry analysis, SWOT-analysis and competitor analysis, the empirical part only takes into consideration the first two. Competitor analysis is left out in the empirical part because if all the three methods would have been used the study would have been too vast and more resources, such as time, would have been needed. Now the empirical part only focuses on Porter's Five Forces and short SWOT- analysis is also created. If the competitor analysis would have been part of the empirical part it would have given important information about the competitors in the industry.

A limitation for the study is also that it does not offer information about all the factors that have an impact to the market situation. As an example, the research does not offer information about the prices or distribution channels that are affecting the market situation of a product.

Another limitation of the study is the fact that the theory and the empirical part do not go perfectly hand in hand. The questions in the interview should have been more related and guided by the theoretical framework of the study. In this case the interview had a few questions to which it was interesting to know the answers, but which are not really directly related to the theory written.

5 EMPIRICAL STUDY AND RESULTS

This chapter consist of six different subheadings. The first five subheadings each present one of the Porter's Five Forces. The interview responses are analyzed under those subheading together with secondary data that was found to support the responses gotten. The sixth subheading is the SWOT- analysis that was created based on the interview responses and the information gathered for the theory.

As mentioned earlier in this study, five respondents answered the questionnaire. All the respondents will stay anonymous, so no names or companies where they work will be mentioned. However, it can be stated that all of the respondents had professional knowledge of cross laminated timber and the construction/timber industry in the United Kingdom.

5.1 Porter's Five Forces Industry analysis

5.1.1 Threat of substitution products

The first two of the questions, that is question one and question two, as well as question number ten were asked in order to find out the level of threat of substitution products. The first question was about the most used construction material in the UK at the moment and why the material in question is the most used. The answers about the most used material were quite similar. Two of the respondents said it is brick and block, two said it is concrete and the last answer was masonry construction on the whole, which includes all of the three, brick, block and concrete. Also steel frame was mentioned once. As reasons for why those materials are the most used ones are for example the cheaper upfront costs and the fact that those materials are the most familiar ones to the British since that is how they have built for a long time now. The materials are easily available as well as the needed skills. Additionally, by using masonry construction, the results are inert and non-biodegradable.

Concrete as a material has some important qualities that I believe make it such a popular construction material. As an example its raw materials are affordable and are available almost everywhere. Additionally, concrete frames are simple to build and maintain (Betoni 2018). Masonry, concrete and bricks have been part of the British construction industry for decades now. Concrete for example has the position as the main framing and cladding material when it comes to medium- and high-rise apartments in the UK. For low-rise buildings the main alternative to masonry construction in the UK is timber-frame construction. (Tuner, NHBC Foundation & Richards Partington Architects (RPA), 2015)

The interview answers and the information found support each other. By analyzing the answers and based on own research the most used construction material is concrete and other masonry construction materials. When analyzing why those are the most used ones, the answer lies in the qualities they offer. The UK is familiar with those materials since they have used those for decades, the contractors have the necessary skills and as a material it is affordable.

Question number two was related to the first one, since it asked whether the respondents predict the most used construction material to change in the near future. All of the respondents agreed it is going to change, however it was pointed out that change always takes time and hence, the change will be slow. Based on the answers timber and CLT will catch up and generally off-site manufacture will grow.

Even though masonry, concrete and bricks have had such a strong position in the UK construction industry all the respondents thought it is slowly going to change. There are few reasons that I thought might be behind the thought of change. According to Tuner et al. (2015) housing in the UK has an important role in the Government's carbon reduction strategy. This can be stated true when comparing the carbon emissions of two apartment buildings in the UK that have different frames, the other one having CLT frame and the other one concrete frame. The apartment building with concrete frame creates carbon emissions worth of 124,000. On the opposite, the apartment building with CLT frame (Murray Grove London, build in 2009) stores carbon emissions worth of 188,000. Hence, when concrete as a material creates more carbon emissions, CLT frame actually stores the emissions instead of creating them (Kuittinen, 2014). If the UK government wants to reduce the carbon emissions they have no choice but to change the way they build to more environmentally friendly materials.

What also supports the statement that change is most likely going to happen is the fact that there is a lack of constructor workers in the UK. What might bring a solution to this problem is offsite construction since completing a construction project that way saves costs and time (Government Europa, 2018). Hence, the lack of constructor workers also creates the need for changing the most used constructor material.

In addition, according to Puuinfo Oy (2017) a lot is being built by timber in London at the moment. Behind this timber construction boom is cross laminated timber. This could also be the reason behind the respondents' thoughts about the change.

Question number ten was "Which material is the biggest competitor to CLT in your opinion? Why?" Since the questions asked from the respondents reflects their own opinions the answers differed a bit. However, three of the respondents' opinions were the same and they agreed that the biggest competitor is concrete. That is because with concrete less up-front design is required, it is well known and widely used. One of the respondents answered steel frame and the reasons are mainly cost driven. Additionally, timber frame was pointed out since it is safe way to build and it is familiar. It has also made huge gains in the market place.

When thinking about the theory behind the threat of substitute products the idea, according to Capon (2009, 80), is that products that are considered to be substitutional products offer same functions as the original product. In this case it can be thought that concrete can work as a substitutional product for CLT since they can both be used to construct buildings and houses. Widely thought they both offer the frame for a building and protect the inside of the building. I think some of the respondents answered concrete as a biggest competitor, since as it was pointed out, it is the most used construction material in the UK at the moment. Timber frame as an answer might be based on the thought that timber construction is the main alternative for masonry construction when it comes to low rise buildings according to Turner et al. (2015). Hence, if it is competitor to masonry then it can be a competitor to CLT also.

5.1.2 Buyers' bargaining power

Questions number three to five were handling the buyers bargaining power. In question number three the aim was to find out who makes the purchase decision on material what comes to constructing houses and public buildings in the UK. The answers varied a bit between the five respondents. However, architect was mentioned four times and contractor was mentioned three times. Also the client and engineers were brought up. On the grounds of the answers one gets an impression that the person who makes the purchase decision on the material changes depending of the company procurement. This was also pointed out by one respondent so there is no one right answer. Summing up the answers the decision is made by architect and engineer, constructor or a client depending of the company.

According to PR Newswire (2018), architects' and engineers' preference towards timber construction materials instead of steel and concrete is strengthening the demand of cross laminated timber. This proofs that the architects and engineers have some kind of decision making power over the material if their preference can strengthen the demand of a material. Additionally, the client was also brought up in the interview answers. Grown in the UK has conducted a research via the UK Contractors Group. It turned out in the research that 71% of contractors who took part to the research felt that "clients would prefer materials to be sourced from Britain" (Driver, 2014). This implies that also the client has some power over the material choices. If clients, engineers and architects all have power over the material choice it makes sense that the person who makes the last decision varies depending on the company or project. Campbell et al. (2011, 152) claims that each supply chain has many stages and the amount of power in each stage can vary. Architect, engineer and client can be seen in different stages of the supply chain when thinking about building a house. In this case too the bargaining power can change between the different stages that architect, engineer and client represent.

Question number four asked the respondents what British consumers know about CLT and whether they know how it can be used. The respondents were not sure how much British consumers know about cross laminated timber but they assumed the amount of information they have is not that vast if it even exists. Couple of the answers even stated "I don't think the UK consumer would have any idea what CLT is or was" and "British public knows nothing about CLT." Nevertheless, two respondents stated that even though the consumers do not have that much information the professionals in the construction industry however are learning fast and they have a lot information and knowledge available about CLT by seminars and off site info.

Social factor that supports the respondents' thoughts about the scarce and negligible knowledge about CLT among British consumers is the low ability of British people to afford buying a home. When in the late 1980s around 47% of households afforded to buy a home, in 2002 the amount of households who afforded to buy a home had decreased to

37%. The situation has not improved and still many individuals who earn an average wage cannot secure a mortgage for a home that is average-priced. This has led to a situation where private renting has increased and private ownership of a home has declined. Knowing this it makes sense that the consumers do not know about CLT, because if they are not buying or building homes they do not really need to know about different construction materials, like CLT. Kuada (2008, 90-91) points out that the buyers' bargaining power is affected by the level of knowledge the buyers have about the industry and about the technological basis of production. In this case it can be assumed that normal British consumers have very little bargaining power, since their knowledge of CLT most likely very little. However, the professionals are on a different level of a supply chain, and they have stronger bargaining power due to the knowledge they have.

The aim with the question five was to figure out the best purposes for CLT in the UK. This question also allowed the respondents to reflect their own opinions and ideas so there was not just one answer to this. What was brought up was regeneration and construction for both commercial and residential purposes. Residential buildings were mentioned because according to one respondent the UK is short of around two million homes at the moment. One of the respondents defined that "residential buildings for four storey and greater." Reasons for choosing those purposes for CLT were the minimal waste CLT creates, speed of installation and the less disruptive way to build.

It is true that UK is having a housing shortage. The government's goal is to add 200,000 homes yearly to the UK's housing stock. However, even that is not enough to fulfill the demand (Rovnick, 2017). This problem can be seen as a part of social factors since its affecting the lifestyles of some people. The respondents thought that one of best uses for CLT in the UK would be residential buildings. What is behind this idea are most likely the qualities CLT could offer and hence maybe bring a solution to the house shortage problem. Like it was mentioned in the theory part CLT is an environmental friendly material that offers a short set-up time saving both time and money and it has space-saving dimensions as well. Additionally, CLT as a material is lighter than concrete (Stora Enso 2013; Stora Enso CLT 2016). When having a shortage of houses being able to build fast with a light material that has space-saving dimensions sounds reasonable. Additionally, when the houses would be apartment buildings they would create many new homes at once.

5.1.3 Threat of new entrants

Questions six and seven were related to the threat of new entrants. The objective was to find out has there been many new CLT producers entering the markets in the UK in the past few years and is it easy for foreign CLT producers to enter the UK markets. Based on the answers there have been new CLT producers entering the UK markets and factories are being built in the UK also. However, at the moment there are "still three to four main suppliers" and yet no operating British cross laminated timber producers. All of the respondents agreed it should be quite easy for new foreign CLT producers to enter the UK markets, since at the moment a lot of the timber is sourced out of the UK. However it is of course subject to logistics and according to one respondent "in the UK it comes down to price." Additionally the foreign CLT producers should be able to "deliver in accordance with what UK industry wants- manufacture, fabrication (including drawings and connection design) and installation."

All the respondents thought it should be quite easy to enter the British CLT markets since already a lot of timber is sourced outside of UK (Smith 2013). Next paragraph will support the respondents' thoughts.

According to Capon (2009, 79) an industry is attractive and the threat of new entrants is higher for example when there is strong customer base to support already existing companies and the new entrants and the potentiality to profits is existing. Since the demand for more ecological building is growing in the UK there will be more customers to purchase CLT. Entering the UK markets will hence be profitable. Additionally political and legal factors determine the threat of new entrants. Drummond et al. (2005, 37) argues that state-own policies or protection of patents by government's policies and legislation can work as an entry barrier for new entrants. I did not find any state-own policies or patents that would affect the import of CLT to the UK. However, when importing timber to the UK the legality and sustainability of the timber needs to be proved. There are few ways to prove the legality and sustainability of the timber (GOV.UK 2013). According to my judgments proving that the timber is legal and sustainable should not be difficult if the timber is indeed legal and sustainable. Hence, this should not create any difficulties for legal and sustainable CLT to be imported to the country.

5.1.4 Suppliers' bargaining power

Suppliers' bargaining power was taken into consideration in questions number eight, nine, fourteen and fifteen. Questions number eight asked about the amount of CLT producers in the UK and about their sizes and annual capacity. Already the previous questions pointed out that there are no operating British CLT producers at the moment so the respondents were not able to answer the question. One respondent pointed out that the CLT is mainly imported based on what he knows and other respondent told that a company known as an insurance group called Legal and General has built the largest CLT factory in the UK. However, the factory is not yet operating.

As it was mentioned in the theory part all the CLT has to be imported to the UK (Smith 2013). No information that the situation would have changed was found and also one of the respondents told that there are still no British CLT producers. Hence, we should take a look of the biggest CLT producers that are based in Europe and most likely export to the UK.

Listing the top five CLT manufacturers in the world, it can be seen that all of them are based in Europe. The top five manufactures are Stora Enso (Sweden/Finland), KLH (Austria), Binderholz (Austria), Mayr Melnhof (Austria) and Hasslacher (Austria). Since one of the respondents stated that there are still 3-4 main CLT suppliers in the UK, closer look will be taken to only for the first three companies of the list, assuming that they export to the UK.

The first one is a Swedish-Finnish company Stora Enso that is one of the high-end companies in the timber industry. The company has operations in more than 35 countries and it employs around 26,000 employees. Approximately 75% of its revenues are achieved from sales in European countries (M2 Presswire, 2017). According to Stora Enso's 2017 Annual Report the CLT capacity is 170,000 m3.

As a second on the list is KLH Massivholz BmbH. This Austrian company is one of the biggest CLT manufacturers in the world with the annual production capacity of 125,000 m3. The company's distribution network across Europe is vast and they sell their products to several countries, including Great Britain. The amount of the reference projects the company has is more than 15,000. (M2 Presswire, 2017)

The third company on the list is Binderholz. The company focuses on distribution as well as on industrial use of timber products. The company has all together nine sites around Europe, five in Austria, two in Finland and two in Germany employing around 1,400 employees (M2 Presswire, 2017). According to Binderholz (2018) their production capacity for CLT is 200,000 m3.

One of the respondents mentioned that an insurance group Legal and General are building a CLT factory to the UK. The company has invested 70 million euros to the CLT factory and it is going to be the biggest CLT factory in Europe as soon as it is ready (Puuinfo, 2017). No information was found that it would be operating already so it can be assumed that the project is still unfinished and hence, the factory is not yet producing anything.

The aim of question number nine was to find out where the CLT producers in the UK get their raw material and which wood they use as a raw material. One of the respondents did not answer since there are no British CLT producers at the moment. However, the rest did answer and it was assumed that they were thinking about the foreign CLT producers who are exporting to the UK. Hence, they answered spruce is common but also fin and pine are available. From where the CLT comes to the UK then, it was stated that it is coming from countries such as Austria, Germany and Switzerland and from companies like Stora Enso, but also independent suppliers have possibility as long as their balance sheet is good. One respondent also stated that there are some British timber researches and trials, but was not sure how commercial they are yet.

The introduction of the three biggest CLT manufactures supports the respondents' answers that the CLT is coming from countries like Austria, Germany and Switzerland. From the top 5 CLT manufactures four of the companies where from Austria and some of them had sites in Germany too (M2 Presswire, 2017). When it comes to the raw material of CLT, according to MacLeod (2013) the species of trees that are used for CLT are fast growing species like spruce, fir and pine. This goes hand in hand with the answers gotten from the respondents, since the three species of trees that came up in their answers were spruce, pine and fir.

According to Campbell et al. (2011, 152), suppliers bargaining power is strong for example in a situation when there are not that many companies who offer the same resource but the amount of buyers is still in a good level or if the resources they offer are unique and cannot be replaced easily. If most of the British CLT importers only buy from the 3-4 CLT producers who are already in the British markets, these CLT suppliers have a strong bargaining power.

In question fourteen the respondents had to think about how ecological building is taken into consideration in the UK or is it taken into consideration at all. Based on the answers, ecological building does not have a huge role in the construction industry in the UK at the moment. However, the respondents stated that it is “starting to become a major factor for some” and “people are becoming more aware of sustainability.” They know some certification signs such as FSC (Forest Stewardship Council), but based on the answers, at the moment ecological building does not have a big role in the UK. However, it can be said that there is change coming to this. One of the respondents also pointed out that “Regulations focus on energy use in occupation and not embodied energy of materials etc.” However, low carbon construction materials are of interest for some local authorities.

The respondents’ thoughts that ecological building does not have a huge role in the UK at the moment can be supported by the fact that I was not able to find any proper information on how it is taken into consideration. According to Stuart (2005) from the top 20 consuming nations the UK is in the place 15 and their personal consumption is in the place 11 from the top 20. What also supports the statement that ecological building is not taken into consideration that much are the facts that 30% of the UK’s total energy use is accounted by houses, as well as 24% of greenhouse gas emissions and 27% of the UK carbon dioxide emissions (Horton, 2005). However, WWF’s One Million Sustainable Homes campaign has conducted a survey in the UK which revealed that “87% of prospective homebuyers would like better information about the environmental impact of houses” (Faith, 2005). Based on this knowledge, the answers received from the respondents are accurate since there is much to improve in the ecological building in the country but since the homebuyers are showing interest towards the matter change is going to happen at some point.

Question fifteen was about the UK government’s goals for ecological building and it turned out that two of the respondents did not have the information about it. It might be that they did not have information since it is not necessary information in their work tasks. Nevertheless, the other three knew that the UK government indeed has some goals such as less energy should be used over the whole life cycle of a house (including low energy use in both use and occupation) and like many other countries also the UK should reduce the carbon emissions by 2020 by 30%.

As a matter of fact, the UK's carbon emissions reduction target is 57% by 2032 compared to the carbon emissions levels in 1990. There are policies that are aiming to support technologies which reduce the carbon emissions and energy demand of homes (Thomas & Ward 2017). Pfeifer (2018) argues that a report from the Committee on Climate Change states that "new homes should be built to higher energy-efficient standards --." This is supported by Turner et al. (2015) and their writing. They state that an important thrust in Government policy on new homes is to make sure that the carbon emissions are minimized in new housing starting from 2016. In order to reach the goal thermal performance of homes has to be taken into account as well as low-carbon energy technologies to ventilation, heat and hot water systems. Like the respondents stated less energy should be used in the life-cycle of a house and the differences in the percentages are understandable since there are most likely many different targets to different years.

5.1.5 Rivalry among existing competitors

Questions number eleven to thirteen were about the rivalry among existing competitors. The aim was to find out the competition among existing CLT producers in the UK, how has it changed during the past years, how it is predicted to change in the future and lastly what have been and will be the main reasons for these changes.

Three of the respondents did not describe the competition between existing CLT producers. Since the interviewer knows the occupations of each respondents, it can be said that the respondents who did not describe the competition do not work in positions where they would necessary need the information about the competition, such as purchaser of CLT would need. Hence, it is understandable that they did not answer to the question.

The respondents who did describe it gave quite opposite answers. The other respondent stated that in his opinion that there is little competition since so many new houses are needed in the UK. As it was pointed out earlier, even when fulfilling the government's goal to create 200,000 homes yearly, it is not enough to meet the demand (Rovnick, 2017). Based on that it can be assumed that the respondent thinks the competition is low since there is such a need for new houses and they of course need construction materials.

However, one of the respondents answered that the competition is very competitive and there are “very close margins between competitive tenders.” This can be supported by the claim of one of the respondents who pointed out that there are only 3-4 main CLT suppliers in the UK. These suppliers are competing from the same customers and might have similar offers.

When it comes to the changes, it was pointed out that change is always slow in the UK. However, it was predicted that the competition will grow since there will be more demand and CLT is becoming better known and more available. Only one of the respondents stated there will be no change. As a reason for the change, demand was brought up again, and additionally, cost environmental factors and the speed of build was taken into consideration. Speed of building will be one of the reasons since building with CLT has proved to be quite fast.

There is definitely demand for CLT at the moment since new factories are being built, like the one Legal & General is building in the UK (Puuinfo OY 2017). Additionally, in order for the UK to reduce the carbon emissions they have to think about their construction methods and materials as well. As it was pointed out earlier in the study CLT frame stores carbon emissions instead of creating them (Kuittinen, 2014) and hence it works in an environmental-friendly way. CLT also has other good qualities that grow the demand for it. The growing demand creates a situation where new factories are being built and the new factories are competing against the old ones, automatically creating more competition even though there would be customers to all companies. The respondent who said that no change will occur, might have thought that since the demand is already there and new factories are already being build the change has already happened and hence, the situation with the demand will stay.

5.2 SWOT- analysis

As a part of the empirical research a SWOT- analysis was created. It is mainly based on the questionnaire answers and the theory, but it also has some of the writer’s own thoughts. This SWOT - analysis evaluates the cross laminated timber product itself as well as the whole cross laminated timber industry in the country in question.

As a strength can be seen the qualities of CLT such as fast assembly time and the fact that it creates less waste (Stora Enso 2013). It can be used in different kinds of construction functions (Kiintopuu 2018), however, many of the respondents thought it would work best in the UK for residential buildings. Since in the UK a lot is built from concrete one of the strengths CLT has is that in a long run it turns out to be more affordable compared the costs when building from concrete. Furthermore, according to the respondents the professionals in the UK are getting more and more familiar with CLT and they are getting more information about it and increasing their knowledge.

One of the weaknesses is that according to the respondents consumers do not really know about it nor do they have information about it. It is likely that the demand would increase even more if more of the end-users would knew about it. Another weakness is that timber in general is not one of the most used construction materials, so it might need more work to convince someone to use CLT. Additionally, the constructors and builders may not have that much experience with timber construction since concrete and bricks are more common (Tuner et al. 2015). From UK's point of view it is a weakness that all of the CLT is imported from other countries (Smith 2013). That is because the country is dependent of others what comes to receiving CLT.

Cross laminated timber has quite many opportunities in the UK. First of all the demand is increasing and it's getting more known. CLT can also be considered as environmental-friendly way of construction (Stora Enso 2013) and according to the respondents ecological building in the UK is slowly becoming important part of the construction industry. The shortage of homes in the UK also creates an opportunity to CLT to step in thanks to its fast assembly time ((Rovnick, 2017). Puuinfo (2017) also stated that the UK is having the biggest timber construction boom since many years. Since the demand for CLT is rising and there are no British CLT manufacturers operating at the moment, it creates great opportunities for foreign companies to enter the markets in the UK. In big cities, like London, the only way to build new buildings is to build upwards, since the land area is limited. CLT would be a great option for this since it is lighter than concrete and because of London is above a vast underground network, building from a light material sounds rational. Furthermore, CLT can be used to build extra storeys to already existing buildings, so it creates great opportunities there also.

When it comes to threats, one of the threats is that the substitutional products such as concrete and bricks have such a strong position in the British construction industry. The opinions and thoughts about what is the best construction material might be so strong in the UK that changing those opinions might be really difficult. Another threat is the active work that construction industry does against timber construction. Apparently timber construction is seen as such a big threat that anti-lobbying is needed. (Puuinfo 2017, 47)

5.3 Summary of analysis

To summarize the research findings shortly it can be said that there is definitely markets for CLT in the UK at the moment and in the future the demand is even increasing.

When it comes to the threat of substitution products, concrete has a very strong position in the UK. However, it is slowly going to change and since a lot is being built from timber in the UK at the moment, it is likely that CLT will increase its popularity as a construction material. Nevertheless, since concrete has such a strong position in the UK it is one of the biggest competitors for CLT at the moment.

When thinking about the bargaining power of buyers it can be said that regular British consumers have a weak bargaining power since their knowledge of CLT is not in a high level. Additionally, depending on the company procurement the end users might not have any power to decide the construction material. However, according to Campbell et al. (2011, 152) each supply chain has many stages and in this case even though the regular British consumers have weak bargaining power, the professionals in the timber industry have a quite strong bargaining power. They know about CLT and their knowledge is increasing all the time.

The threat of new entrants in CLT industry is quite high in the United Kingdom. At the moment there are no operating British CLT manufactures but instead all the CLT is imported from other countries. However, there are still only 3-4 main suppliers. Nevertheless, there are no big entry barriers that would make it very difficult for new manufactures to enter the markets in the UK and since the demand is increasing it is likely that there will be new entrants.

What increases the bargaining power of suppliers in this industry in the UK is that if there are only 3-4 main suppliers the consumers do not really have that much options from where to choose from and that is good for the suppliers. However, what weakens the bargaining power of suppliers now is that ecological building does not have such a big role in the UK. Since CLT can be seen as an ecological material, selling it needs that the consumers are interested in about its environment-friendly qualities. However, since ecological building is starting to get more attention in the UK and government is starting to set goals for it, it will also increase the bargaining power of suppliers since CLT offers something that the consumers are going to need.

There was no clear opinion about the level of rivalry among existing competitors. The opinions varied between having little competition to having very competitive rivalry. However, it was predicted that the competition between CLT manufactures in the UK will be increased in the future since for example the demand for ecological building is growing.

To sum up the SWOT analysis, it can be said that the strengths of CLT in the UK are its qualities and the fact that the professionals are getting more and more familiar with it. On the other hand, a weakness is that the regular British consumers do not have knowledge of it and that concrete still has such strong position as a construction material. As opportunities can be seen the big timber construction boom that London is having and the fact that demand for ecological building is slowly increasing in the UK. As threats are the strong position of concrete and the anti-lobbying that concrete industry is doing against timber industry.

6 CONCLUSION AND DISCUSSION

The first part of this chapter is the conclusion of the study. In the beginning, it examines the links between the theory and the empirical study and in the end there are the answers to the research questions. Lastly, this chapter has suggestions for further studies.

6.1 Conclusion of the study

When comparing the theory and the empirical study there are some similarities that can be seen. Based on the answers most of the construction in the UK at the moment is done by materials such as concrete and bricks. However, slowly the changes are going to be noticeable and timber and cross laminated timber are going to grow their popularity. At the moment the biggest competitor to CLT in the country is concrete. In a big scale all these materials work as substitutional products to each other and currently the substitutional products for CLT such as concrete have stronger position in the construction industry.

As it was mentioned in the theory by Campbell et al (2011, 152) there are many stages in the supply chain and each stage has its influence on the industry structure. Each of the stages have bargaining power but the amount of the power can vary significantly. Kuada (2008, 90-91) also points out that the buyers have the bargaining power when they have good knowledge about what the industry has to offer and how is the technological basis of the production. This can also be seen from the analysis of the research results. It was pointed out that the normal British consumers do not really have any information about CLT but the professionals in the timber industry however are constantly learning more about CLT and their knowledge is on a better level. This proves that the stages in the supply chain can really have different bargaining power, since based on the theory and the research results it can be said that the normal British consumers have weak bargaining power but the professionals however have strong bargaining power thanks to their knowledge of the product.

Similarities can also be seen between the theory of the threat of new entrants and the information that was obtained from the empirical research. In the theory it was said that an industry is more likely to entice new entrants if the industry is attractive. What makes an industry attractive is for example if there is a strong customer base to support both new entrants and already existing companies. Additionally, if the barriers of entry are not difficult to overcome the threat for new entrants is higher. As an example of entry barriers is for example how regulated the industry is by the government policies and legislation. Based on the empirical study there have been new entrants in the industry and since the demand for CLT is increasing it is likely that there is a strong customer base that will be able to support both new entrants and old existing companies. Additionally, there was some government regulations what comes to importing timber to the UK but they did not seem to be difficult to overcome. Based on these, the threat of new entrants is quite high in the industry in question.

The bargaining power of suppliers is not only based on their relationship with one industry but instead it is based on their relationships with all the industries they serve. Additionally, the number of industries they sell their resources to has an effect to the bargaining power of suppliers. However, in this case there is no knowledge neither about the suppliers' relationships with other industries than CLT industry nor the amount of industries they sell their resources to. It was also pointed out in the theory that the suppliers have greater bargaining power when there are not that many companies who offer the same resource but the amount of buyers is high. In this case it can be assumed that the bargaining power of suppliers is quite high since the respondents argued that there are only 3-4 main suppliers of CLT in the country. What will also increase the bargaining power of suppliers is that, since ecological building is starting to get more attention in the UK and government is starting to set goals for it, CLT will become something that the consumers are going to need.

There were two points of views about the competition in the industry. One was that there is little competition and the other one was that there is definitely competition between the companies. The theory about rivalry among existing competitor based on Drummond et al. (2005, 37-38) argues that if the competitors in the industry are kind of the same size, it is very likely that each of them wants to achieve the dominant position and hence, the competition will be intense. Based on the secondary data found, all the CLT manufacturers that were introduced had almost the same annual capacities to produce CLT. Together with the theory this supports the thought that competition is tough. The theory also suggested that customer's brand loyalty and availability of substitute products has an effect on the rivalry between competitors. If alternative products are available it creates more competition (Campbell et al. 2011, 153). The research does not have information about customer's brand loyalty but it turned out that in the construction industry concrete has a very strong position. Since concrete can be considered to be a substitutional product for CLT and it is easily available, it creates more competition to the construction industry.

The objective of the study was to find out the current market situation of cross laminated timber in the United Kingdom. Additionally the aim was to find out whether CLT has possible markets in the country. The next few paragraphs will answer these research questions.

Based on the interview answers and information gathered secondarily, it can be stated that cross laminated timber has markets in the United Kingdom. At the moment it is not the most used construction material but there are growing demand for it thanks to its qualities such as less waste, environment friendliness and the fast set up time. The professionals in the industry are learning about it fast and are gaining a lot knowledge about the product. What also supports the conclusion that there are markets for CLT in the UK is the fact that was introduced earlier in the study that the country has a shortage of homes. Cross laminated timber could be on option to solve this problem thanks to fast set up time and its other good qualities.

Based on the respondent's answer at the moment there are still 3-4 main suppliers of cross laminated timber in the UK and there are no British CLT manufactures yet operating. However, new factories are being built since the growing demand for CLT and hence, there is going to be more competition in the future.

To sum up the main findings, the market situation of CLT in the UK is not as strong as it is for concrete for example but change is slowly happening and CLT is gaining more popularity and is becoming more known. There are possible markets for it in the future in the UK and competition is going to grow.

6.2 Suggestions for further studies

As a suggestion for further studies of course the same kind of research could be repeated in 5-10 years to see how the markets for CLT have developed in the UK. Since the respondents said that change is always slow in the UK, there would be no point to repeat the research in less than five years.

Additionally, I would suggest that the topic ‘CLT in the UK’ could be examined through competitor analysis or consumer analysis. These would offer more specific information about the competitors and consumers compared to the Porter’s Five Forces analysis which analyses the whole industry.

A competitor analysis would offer valuable information about the competing CLT manufacturers and hence, it would help to understand why customers buy from certain companies, what the competitors’ target market is, what their product looks like and what their goals for the future are (Yuhas 1999).

A consumer analysis on the other hand would offer information about the consumers. Analyzing the consumer behavior by finding out who buys the product, how often and from where they buy it, when they buy it and why they buy the product helps to understand what factors have an influence on the decision making process of consumers. This is important since understanding the expectations and needs of customers, as well as updating knowledge and information about those, makes it easier for the companies to build relationships with the customers (Nair 2009, 5-6).

Additionally, the country in question do not need to be the UK. It can be any country of interest or a couple of countries that could then be compared.

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APPENDICES

APPENDIX 1. Thesis questionnaire

Thesis questionnaire

This questionnaire is a part of Jonna Hautamäki's thesis at Vaasa University of Applied Sciences. The aim of the questionnaire is to find out the current market situation of CLT (Cross Laminated Timber) in the UK.

Thank you for taking time to answer the questionnaire!

Name and occupation (no names will be mentioned in the thesis):

Long-answer text

1. What is the most used construction material in the UK at the moment? Why?

Long-answer text

2. Do you predict it to change in the near future?

Long-answer text

3. Who makes the purchase decision on the material when constructing houses and public buildings in the UK?

Long-answer text

4. What British consumers know about CLT? Do they know how it can be used?

Long-answer text

5. For which purposes could CLT be best used in the UK? Why?

Long-answer text

6. Has a lot of new CLT producers entered the UK markets in the past few years?

Long-answer text

7. Is it easy for new foreign CLT producers to enter the UK markets? Why or why not?

Long-answer text

8. Are there many CLT producers in the UK at the moment? What size are the companies and what is their annual capacity?

Long-answer text

9. From where CLT producers in the UK get their raw material? Which wood they use as a raw material?

Long-answer text

10. In your opinion which material is the biggest competitor to CLT? Why?

Long-answer text

11. How would you describe the competition among existing CLT producers in the UK?

Long-answer text

12. How has it changed during the past years and how do you predict it to change?

Long-answer text

13. What have been/will be the main reasons for the changes?

Long-answer text

14. How ecological building is taken into consideration in the UK?

Long-answer text

15. Does the UK government have any goals what comes to ecological building? What kind of goals?

Long-answer text