Aalto University
School of Business

Consumerization of Interior Design Software
New Revolution or just another app?

International Design Business Management (IDBM)

Master's thesis

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2015

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School of Business

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Title of thesis: Consumerization of Interior Design Software – New Revolution or just another app?	
Degree programme: Master's Degree	
Major: International Design Business Management	**Code of major:** IDBM
First supervisor: Mikko Koria	
Second supervisor: Pekka Mattila	
Year of approval 2015	**Number of pages** 110 **Language** English

Abstract

One of the digitalization's sub-phenomena is consumerization, which can be either defined narrowly as employees bringing their own devices to work place, or more broadly saying that it is the phenomenon of companies being forced to implement consumer-oriented technologies as otherwise they will lack behind in the technology development. Consumerization is usually tied to IT context and has not been approached from a knowledge-intensive environment. In this research, I have approached consumerization within the context of interior design. Interior design industry is welcoming new interior design software that function on the technologies that have been used in the gaming already for decades. These technologies are 3D, Augmented Reality and Virtual Reality. If the professional interior designers start using these consumer-oriented new software, consumerization can be claimed to have happened in this knowledge-intensive industry.

I approached this research with the elements from the Grounded Theory, as it allowed me to gather empirical findings, sensitize them with the literature, pull the information together into an existing framework, and build my own analysis on top of that. In this case, I used Porter's (1980) Five Forces competitive analysis framework to visualize interior design as an industry today and in the future. My empirical findings consisted of semi-structured in-depth interviews with the top-tier Finnish experienced interior designers and the new interior design software providers. These were supplemented with mini-interviews from the Slush conference.

In my findings, I was able to explicitly state how consumerization is affecting business today, and how does it affect within the interior design industry, specifically. I found out that the interior design industry is somewhat technology-resistant, and that might be the main reason why there is no consumerization in the Finnish interior design industry today, as the interior designers are not willing to implement new technological tools. I also claimed that consumerization as such needs a better definition, as most of my interviewees would link it to the consumer empowerment, which is a separate phenomenon but which actually might have a link to the consumerization. This would need further research.

Overall, the interior design industry requires a disruptive technological change. As people become wealthier, they have more money to spend. The wealth combined with the consumer empowerment and the increasingly intelligent technologies create a perfect momentum for the interior design industry to adapt to the technologies of 2015 and to the renewed consumer behaviour.

Tekijä: Erika Kontkanen	
Työn nimi: Sisustussuunnittelusovellusten kuluttajistuminen – Uusi revoluutio vai taas uusi sovellus?	
Tutkinto: KTM	
Pääaine: International Design Business Management	**Pääaineen koodi:** IDBM
Ohjaaja: Mikko Koria	
Toinen ohjaaja: Pekka Mattila	
Hyväksymisvuosi 2015	**Sivunumerot** 110 **Kieli** Englanti

Abstrakti

Yksi digitalisaation ala-ilmiöistä on kuluttajistuminen (eng. *Consumerization*). Laajemman määritelmän kautta kuluttajistuminen on ilmiö, missä yritysmaailma implementoi kuluttajamark-kinoille tarkoitettuja teknologioita, sillä yritysmaailma ei itse pysty kehittämään teknologioita yhtä nopeasti kuin kuluttajamarkkina. Suppeammasta näkökulmasta puhutaan BYOD (*Bring Your Own Device*)-strategiasta, mikä tarkoittaa, että yritysmaailma sallii työntekijöiden tuovan omat laitteet työpaikalle. Usein kuluttajistuminen sidotaan IT-kontekstiin ja sitä ei olla tarkasteltu muussa ympäristössä. Tässä tutkimuksessa tarkastelen kuluttajistumisen ilmiötä sisustussuunnittelun näkökulmasta. Sisustussuunnitteluun on tullut viime aikoina uusia kuluttajille tarkoitettuja sovelluksia, jotka toimivat erityisesti pelialalta tutuilla teknologioilla. Näitä ovat 3D, lisätty todellisuus (*Augmented Reality*) ja virtuaalitodellisuus (*Virtual Reality*). Jos sisustussuunnittelun ammattilaiset implementoivat näitä sovelluksia työssään, niin voidaan puhua siitä, että kuluttajistuminen on havaittavissa tällä alalla.

Lähestyin tutkimusta Grounded Theoryn kautta, sillä se mahdollisti sen, että kerään empiirisen aineiston ja herkistän sen kirjallisuudella. Keräsin tutkimustulokset Porterin (1980) viiden kilpai-luvoiman malliin (*five forces competitive analysis*) visualisoidakseni sisustussuunnittelun alaa nyt ja tulevaisuudessa. Empiriani koostui puolistrukturoiduista haastatteluista Suomen tunnettujen sisustussuunnittelijoiden ja sisustussuunnitteluohjelmien tekijöiden kanssa. Täydensin näitä myös lyhythaastatteluilla Slush konferenssista.

Tutkimukseni selittää, miten kuluttajistuminen vaikuttaa meihin tänäpäivänä ja miten se vaikuttaa erityisesti sisustussuunnittelun alaan. Huomasin, että sisustussuunnitteluala on jonkin verran teknologia-vastainen ja luultavasti siksi Suomessa ei ole vielä havaittavissa tätä ilmiötä, sillä suunnittelijat eivät ole valmiita implementoimaan näitä uusia sovelluksia. Lisäksi väitän, että kuluttajistuminen vaatii tarkempaa määritelmää, sillä suurin osa haastateltavista liittää ilmiön kuluttajien voimaantumiseen (*consumer empowerement*), mikä on eri ilmiö, mutta mikä saattaa hyvinkin liittyä kuluttajistumiseen. Tämä vaatisi lisää tutkimusta.

Todellisuudessa sisustussuunnittelu kaipaa disruptiivista muutosta. Ihmisten varallisuus kasvaa, jolloin heillä on enemmän rahaa käytettävänä. Tämä yhdistettynä kuluttajien voimaantumiseen ja yhä älykkäämpään teknologiaan mahdollistavat sisustussuunnittelualalle täydellisen ajoituksen adaptoitua vuoden 2015 teknologioihin ja uudistuneeseen kuluttajakäyttäytymiseen.

Avainsanat Kuluttajistuminen, Sisustussuunnittelu, Suunnittelusovellukset, Augmented Reality, 3D

Acknowledgements

This thesis would not have come to an end without few key persons that have helped me throughout this journey. First and foremost my thanks go to *Antti Ylimutka*, who has helped me to survive this thesis with constant love and support, making me believe that I can do this. To *Otto Mattsson* who has mentored me and helped me to focus on my goals. To *Mikko Koria* and *Pekka Mattila*, my thesis supervisors who have given me the valuable comments and suggestions since the very beginning of this thesis. To all my interviewees who spent their time on this topic and gave me their honest opinions. Lastly, I want to thank all my good friends who have supported and cheered me when I most needed it. This thesis would not be what it is without all the late night discussions and ideations with my devoted supporters.

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1. Introduction

This thesis studies how consumerization and new interior design software affect the interior design industry. Consumerization is rather new phenomenon and it is usually tied to the IT industry or at least companies that have IT departments. However, consumerization as a phenomenon is affecting the other industries as well. This introduction chapter will show the background for this research and discuss the need and objectives for this research to be done. I will also shortly discuss the concepts that are relevant for this study, and talk more about the structure of this thesis.

1.1 Background of the Topic

Digitalization driving the industries towards a change

The world todays is transforming rapidly due to the combination of the increased consumer demand and the development of the new Information and Communication Technology (ICT). That movement is called digitalization. It started when the first computers arrived 60 years ago, and has only accelerated in the recent years. Major part in this change is the Generation C, people born after 1990 who expect to be *connected* to everyone and everywhere. (Acker, Groene & Schroeder, 2012). Once this connected generation enters the workforce, the tools and the habits of digitalization will integrate into every aspect of our lives. (Trends e-magazine, 2012).

The discussion concerning digitalization has existed for years. Digitalization is a hot buzzword and every tech magazine is writing about the digital opportunities. There can be seen three time spans of digitalization, each being 20 years long. In the first time span, 1971-1991, digitalization was in the form of PCs, which largely *replaced* the analog tools. The second time span of 20 years, 1992-2011, digitalization was seen as *enhancing* to the people in the form of the Internet, MP3 players and mobile phones. The third 20-year time span is considered from 2012-2031, and this will include the digitalization in the form of Internet of Things (IoT), Big Data and Artifical Intelligence (AI) transforming every aspect in our lives, including the industries we did not expect to change. (Trends e-magazine, 2012). As technology gets smarter and more intelligent it resembles the cognitive operations, which we associate with brains. The latest technology allows finding patterns and making autonomous decisions without human intervention. (Pye, 2014). IoT shows how digital shift is affecting not only the human-to-human interaction but it is enabling things and devices to discuss between each other. This is a feature from the larger digital shift, which is a bigger cultural change, affecting how we see technology and how we implement it in our daily life and our daily routines. It can also be claimed that overall, the move towards the

digital society is not about getting people to use the technology, but rather about the usage of the technology as a factor of impact and transformation in the lives of the people. (Evangelista, Guerriri & Meliacini, 2014).

Digitalization will affect so many different aspects that the big picture of all the impacts is not clear yet. It is crucial to understand that the digitalization effects go far beyond the utilization of ICT in business and in the public sector. (Digibarometri, 2014). From the perspective of the companies, digital change has been triggered as the clients keep asking for more and as the technology actually allows the companies to serve them better. In the best-case scenarios, the digitalization forces industries to change radically their business models, value creation and whole ecosystems. (Digitaalinen Polku). Digitalization affects the organizations not depending on the industry. (Digibarometri, 2014).

Due to the fragmented nature of digitalization, it has also been difficult to fully benefit from the effects of digitalization. (Digibarometri, 2014) People will be expected to do more and more tasks independently yet they will have better tools and possibilities to be more independent. Digitalization also means less patience in the consumer minds and thus the service providers will need to react instantly and be fast enough. (Hiila, 2014). There are already several examples that show us how technology has affected previously several industries that we did not expect to change. Music industry is still going through challenging transformation as the CDs are disappearing from the industry and music is moving more and more towards the digitized format. (Preston & Rogers, 2012). Also photography is changing as we take increasingly more pictures with smartphones, and paper magazine are struggling to obtain readers as so many prefer having the digital tablet version.

Consumerization becoming a visible phenomenon

The digitalization wave also carries with it the enormous amount of the new technologies that are aimed not only to the corporate world anymore but also for the consumer market. Furthermore, it is not always the companies nowadays that create these technologies and applications but the consumers themselves. The shift that the industries are facing is called *consumerization*. This phenomenon means that it is the corporate world that is implementing the technologies from consumer market and not vice versa. Consumerization itself can be seen as part of the broader wave of the digital shift.

Most commonly consumerization is tied to the Information Technology (IT) industry. It is usually referred to as "Bring Your Own Device" (BYOD) policy, which is a strategy where employers allow their employees to choose and buy the devices they prefer to use to perform their daily routines

at the workplace. (Stagliano, DiPoalo & Coonelly, 2013). Nevertheless, consumerization is more than just a BYOD strategy at the workplace. The traditional perception of the work-home division is changing due to the technological development and globalization of workforces. This concerns not only the physical place from where people decide to work but also the division of the work hours strictly between work and home. Often employees, especially the knowledge workers, are expected to be available even after the office hours, and on multiple different communication platforms. These, on top of the BYOD strategy, are all elements from the consumerization. (Bless, Alanson & Noble 2010).

Even though digitalization and consumerization are tightly linked to the technology and mostly to the IT environment, the fact is that we have several examples of industries that have been affected by digital technologies, even if they have nothing to do with IT. Interior design as an industry is one of these non-IT industry examples and digitalization, along with consumerization, will hardly skip this industry as it has not skipped the others either. Zachary Edelson wrote on Architizer (8/2013) specifically about digital technologies affecting the interior design industry. Already a year back he claimed that in the near future we will really see radical changes in how the interior spaces are designed due to the advancements in the smartphone applications and digital display surfaces. He sees this change to go far beyond the new iPad programs or smart fridges with embedded touchscreens, he sees it as a question of the personalization that the consumers have come to expect in the digital world. According to his article the rooms will know the color and brightness preferences of its users exactly as Google knows what the users are typing before they have finished typing. The personalization will be visible as spaces become more and more transformable due to the digital solutions.

The Ikea catalogs of 2014 are taking the industry a step further as the customer experience is extended with digital content that can be unlocked in the catalogue with a smartphone. 50 pages of digital content can be scanned after having downloaded Ikea's catalogue app. Features of the extended content include tips and ideas for home, videos, views (360° and 180°), zoom-ins, and other augmented reality tricks. With this new app Ikea's customers will be able to place the potential products directly in their home environment. As customers increasingly use smartphones as shopping companions, Ikea aims to ameliorate the shopping experience of its customers via the new Augmented Reality (AR) app. (Ikea Official Webpage). Furthermore, AR is expected in 2015 to move from the pilot stage to the real implementation as retailers aim to bridge the physical and digital environments through mobile phones to gain better customer experiences. (Gartner Predicts, 2014). Ikea is in a way thus forerunner. As Luke Barley tells on Architizer (8/2013), Ikea is eliminating our needs to use measuring tapes and wondering whether the product will fit certain spot in the room.

Nowadays, even the TVs are running interior design ads, encouraging the non-professional consumer to design on their own using the 3D design tools. (See e.g Lujakoti TV ad). Companies such as Oikotie & Etuovi, which are originally web platforms to search for apartments and open job positions, have started offering design services where they emphasize the 3D part of the design. By googling "design own home" one can see that several Finnish established furniture companies such as Lundia, Asko and plenty of construction companies are offering for the consumers the possibility to design on their own using the 3D platforms to show what could be the potential outcome. It seems that interior design is getting increasingly popular and consumers are getting used to the idea of practicing interior design on their own. Simultaneously, the interior design market is welcoming new interior design software, which are consumer-oriented tools to drag and drop items in the real home or office environment. If the professional interior designers become interested in these software and start implementing them in their professional projects, then these software providers will not only open the consumer market but they might also trigger the consumerization phenomenon. The first technological revolution was when the first Computer-Aided-Design (CAD) software was implemented in the 1960. In case these new interior design software become widely implemented, it is highly possible that the industry will see a "second revolution" since these software might change how we see and do interior design similarly as did CAD already decades ago.

To recap the research on the background for this thesis, digitalization will change majorly how we perceive technology and how we utilize it. It functions as an umbrella for several sub phenomena, such as Internet of Things and consumerization. There are already examples of industries that have been changed due to the digital shift and interior design is also expected to see major changes as digital technology enters more profoundly the habits and activities of the interior designers and the non-professional consumers. Augmented Reality (AR) is seriously affecting the retailing as in 2015 it moves from the pilot stage to the implementation. As AR is implemented in the retail, the interior designers are affected as well, as retail is a crucial part of their business. Thus, there is already evidence that interior design is affected by the digital shift and now I will look at the interior design industry as a case from the consumerization perspective. If the new interior design software that are aimed to the consumers will be implemented in the routines of the professional interior desigers, consumerization can be claimed to have affected the interior design industry.

1.2 Research Gap

Consumerization is a very new phenomenon and due to this fact it has not been studied thoroughly yet. There are few studies from the beginning of 2000 (e.g. Moschella, Neal,

Opperman & Taylor, 2004), yet the phenomenon has been evolving. Even when searching the Aalto University Master's theses, there is only one thesis on this topic from Katri Nopanen and that is from the 2014. Usually the phenomenon is seen very simply as a BYOD strategy (Bring Your Own Device) but as mentioned previously, it consists of more features than just the BYOD – policy (e.g Gens, Levitas & Segal, 2011). Consumerization has blurred the lines between work and private time, it has allowed communication and information access from several different platforms and allowed the employees to work physically from different spots (e.g D'Arcy, 2011).

When discussing consumerization phenomenon, the discussion is usually linked very tightly with IT corporations, or at least companies that have clear organizational structures and departments. Especially the benefits and the implications of consumerization indicate that the context is considered being a hierarchical organization, which has certain procedures and strategies to implement the new changes. This is most evident in the articles that specifically show tips and advices for Chief Information Officers (CIOs) or IT departments on how to control consumerization. (See e.g. D'Arcy, 2011; Harris, Ives & Junglas, 2012). What has not been studied is how the consumerization phenomenon affects the non-IT knowledge-intensive advisory industries. It is easy to tie the phenomenon to a structured organization with clear rules or policies concerning the IT and the devices that are used at a specific workplace. Nonetheless, consumerization should be studied better to understand how it affects the industries that are more vaguely defined and have less strict IT policies. Interior design as an industry is just one possible context. It has been poorly defined as an industry and it has been struggling to find its identity for decades. It is definitely quite the opposite from the structured IT corporation as most interior design agencies in Finland have probably less than 20 employees with no clear hierarchies or IT policies. Interior design as a context is fascinating as the new interior design software are entering the consumer market. It will be interesting to see, whether the interior design professionals will start using these new software for the professional purpose. If this happens then consumerization will take place in the interior design industry. Nobody has previously tried to tie consumerization to such a knowledge-intensive advisory context.

1.3 Research Questions

The core research question that drives me in this thesis is: "**How will consumerization change the interior design industry?**" I have divided this research question into several sub questions to approach this subject from several different angles. The sub questions to approach this research in the context of the interior design industry are:

1. *What is consumerization and how is it impacting business?*

2. *How does consumerization affect in the interior design context?*

3. *How will consumerization shape the future of the industry?*

Collis & Hussey (2003, pp. 68) present several categories of research questions. My first sub question is descriptive, as I want to describe how consumerization is seen today. My second question is explanatory, meaning that I try to find out the causes or consequences of the technology on the industry. The third question is exploratory as it asks about the future and I can only reflect on the possible scenarios as I, or my interviewees, are not able to answer the research question without holding a crystal ball in our hands. Already from the questions it can be seen that they are open and require more than just a "yes" or "no" answer. These are characteristics of qualitative method and thus the research questions have affected how I conduct this study. Furthermore, the sub questions evolve chronologically starting from the current situation towards the future of interior design. This also allows me to structure this thesis in very understandable way, and allows the reader to be on board with what is happening in the industry.

1.4 Research Objectives

Consumerization is still considered a rather new phenomenon and it has not been properly researched yet. It has been described in multiple articles but there are still only guesses on what will happen as time goes on and digitalization starts affecting us more and more. At the moment also, all the research that has been done on consumerization is basically tied to the IT context. Thus my first major objective is to *contribute to the literature on consumerization from the perspective of knowledge-intensive advisory kind of work* with no clear organizational structures and no IT department. Interior design as an industry will be my case industry and thus my second major objective is to *explicitly state the interior design processes, the value creation within the processes, and evolvement of the digital tools in the industry over time to this moment*. It means that I will not only contribute to the overall studies concerning consumerization, but I am also contributing to the literature about how it will affect the interior design industry. My third objective is to analyze based my empirical findings and sensitized with the literature review *how exactly will consumerization affect the interior design industry in the future*.

These three objectives are directly in line with my research questions. I am interested to discuss the possible scenarios and what will be the most probable situation through the lenses of the interior designers. As the new interior design software become available for the consumer market, the non-professional consumers will be able to design on their own. This will not make the non-professional consumers suddenly professionals, yet it will allow them to design entities

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with basic elements without proper education in the interior design. My aim is to understand whether these new interior design software will integrate into the routines of the interior designers or will these software stay purely consumer-oriented and be used by the non-professionals.

1.5 Relevant Concepts

In order to understand the language and topics in this thesis, and to be able to follow my story, I am giving short definitions for the crucial terms.

Digitalization = Digital technology is part of our daily routines and digitalization is happening because everything is turning digital. Industries that used to function with less technology will incorporate more and more digital solutions over time. The digital movement might be confusing as there is discussion about digitalization, digitization and digitilization without making a difference in the definitions. In this thesis I will not separate these terms either but rather say that in order to understand consumerization it is important to understand that we are increasingly implementing more routines based on the digital technologies. Digitalization in my thesis is thus industries moving towards digital technology in their daily routines. Just as industrialization was one era, digitalization can be considered another.

Consumerization **=** A fax machine is one very commonly used example of the time before consumerization. Fax machines used to be expensive devices that were found only in the professional world at the office premises. Later on, the fax machines became available in the consumer market in lighter and less expensive versions. Nowadays, the technology emerges in the consumer market and the enterprise world is lacking the pace of consumer-driven technology, thus making the consumer-technology more developed and progressed. *Consumerization is the phenomenon where enterprises implement technology from the consumer market and not vice versa as with the fax machines in the old days*.

Interior Design Software **=** This term is not a commonly used in the industry yet it is rather a term that I have created to function as an umbrella for all the new software that are designed to somehow ameliorate the process of interior design. Many companies who I would call interior design software providers, call themselves by using phrases such as "interior playground", "virtual room", "augmented reality" or simply "3D platform". Some prefer not to use a term for themselves at all; they only explain what can be done with their software without specifying what they are. Interior design software as a term is thus created to talk about these new

software providers that are somehow trying to break through to the consumer market with the easy-to-use intuitive interior solutions.

The above-mentioned terms are explained in common language to make sense and not to function as strict definitions from the literature. These terms are explained and analyzed later on in the thesis with reference to the literature and academic studies.

1.6 Structure of the thesis

The introduction chapter explains the relevant terms and shows the gap in the academia concerning consumerization, and especially within knowledge-intensive industry. The research questions and objectives are also in this chapter. Before getting to the literature review, I will first present *the methodology chapter* that will profoundly explain why this study has been done and why have certain methods been used above others. The theoretical framework is explained in the methodology, as well. Presenting methodology before the literature review is more convenient, as the readers can continue seamlessly to the empirical findings after the literature review. *The consumerization chapter* is what my main literature review focuses on. I will explain how consumerization is defined and perceived in the academia, and present what are the benefits and opportunities. This includes the background of this phenomenon and the current trends. Fourth chapter is concerning *interior design as a case industry*. In order to understand the industry I have approached the literature review with a more contextual approach. This chapter will present the processes and value creation in the interior design projects, and show a brief glance over the evolvement of the digital tools. I will also discuss the new interior design software that have emerged lately. *Empirical findings chapter* will explain the general perceptions of interior design software in the industry, and whether the consumerization phenomenon is recognized or not. In this chapter I will also wrap up my findings in the theoretical framework. *Analysis and discussion* will present the reflections on the research questions. *The concluding chapter* will summarize my thesis research and explicitly state the contribution that I have made with my findings. Conclusions chapter includes also the managerial implications and suggestions for further research.

2. Methodology

This chapter will thoroughly explain how the research of this thesis was conducted including all the reasoning behind the choices I have made concerning the methodology, and everything that follows those choices. I will start by stating the research questions that have been guiding my thesis work, and explain the research design on a more general level. From that on, I will towards the end of this chapter, give a more detailed explanation of how I have analyzed my data, including the collection of it and coding. I will also explain why I have decided to use the theoretical framework that I use.

2.1 Research Design

Usually it is said that there are two ways to conduct a research, either by doing a qualitative or a quantitative study. The research of my thesis is following the *qualitative methodology*. In my research it was not difficult to decide whether I would do it with qualitative or quantitative methods as I am looking at how different parties that are involved in the interior design sphere look at the overall phenomenon of consumerization phenomenon. I am interested to see the patterns in the responses and I want to let the people in my research to be able to explain the phenomenon and its effects in their own words. Collis & Hussey (2003, pp. 51) verify that seeking patterns and being able to explain in own words are both features from the qualitative methodology.

Some authors (e.g. Collis & Hussey, 2003) simplify the theoretical complexity and instead of quantitative and qualitative methods, refer to these as *research paradigms*, using terms phenomenological and positivist paradigms. The positivistic paradigm has a very objectivist and scientific nature to it. Phenomenological paradigm highlights the subjectivist approach and is also sometimes referred to as interpretivist paradigm because it suggests a broader philosophical perspective on the research with possibility to interpret. It could be said that mostly phenomenological research is qualitative and positivist research is quantitative. (Collis & Hussey, 2003, p. 47). However, it is too simplistic to state so as, even though several authors state that qualitative research is interpretative by nature, it is not always. There are qualitative studies that tend to follow more the natural science model, which includes, for example, the testing of the hypotheses. Furthermore, qualitative research can have very different epistemological starting points that then affect how interpretivist the study actually is. (Eriksson & Kovalainen, 2008, chapter 2, pp. 12-13). Epistemology shows what is the connection between the researcher and what is being researched. (Collis & Hussey, 2003). In my own research I am approaching the

subject from the *realistic epistemological viewpoint* as I am interested in the opinions of the interviewees as facts.

At first, it sounds that my approach is phenomenological and interpretivist as I am researching how different parties in the industry see the industry at the moment and in the future. However, I am not analyzing the shared meanings and interpreting the subjective opinions, which would be the features of phenomenological research (see Collis & Hussey, 2003). I am constructing an objective theoretical framework based on how the interviewees see the situation, the phenomena in the industry and the future scenarios. Nevertheless, my research is not positivist either, as positivist research means aiming to obtain a universal truth that will hold across industries and cultures. (Eriksson & Kovalainen, 2008, chapter 2, pp. 13). However, my own research paradigm resembles the postpositivism, which has developed based on the critique towards the positivist approach. Positivists state that the researcher and what is researched can be separated, whereas postpositivism argues against that. Postpositivism also questions the claim of positivism that there is only one single shared reality. (Eriksson & Kovalainen, 2008, chapter 2, pp. 14).

I am taking elements from the *Grounded Theory*, and postpositivism is stated to be a logical approach while doing research with Grounded Theory. (Eriksson & Kovalainen, 2008, chapter 2, pp. 14). This theory was developed by Glaser and Strauss (1967) in the medical field and has over time been developed in other fields as well. It has a systematic set of methods that are used to generate the data about a phenomenon. (Collis & Hussey, 2003, pp. 73-73). There are two basic logics with which the research can be conducted, induction and deduction. Inductive research means that the theoretical results are outcome of the empirical research. This means that the research process develops from the empirical material towards the theoretical propositions. However, pure induction is considered being very rare, or even impossible. The other basic model of research is the deduction which means that the theory functions as the first source of knowledge and the researcher deduces the hypotheses from what is known theoretically about the phenomenon. The research process is thus proceeding from theory to empirical findings, and the theory is developed by testing the hypotheses empirically. Anyhow, strict deductive thinking is not considered the best option for most qualitative research. (Eriksson & Kovalainen, 2008, chapter 2, pp. 18-20). In the case of Grounded Theory, the theory is thus created based on the observation in the research rather than finding an existing theory first, and building the research on top of that. The theoretical framework is developed by iteration between inductive and deductive thinking. First, the researcher starts gaining information inductively. Then he or she turns to deductive thinking and forms some conclusions that as third step can be tested and

verified with inductive approach. Then once again with deductive approach the conclusions can be modified. This iteration is called *grounding the theory*. (Collis & Hussey, 2003, p. 73-74).

Neither induction nor deduction could usually exist in the purest form, and that is why many researchers use both logics in different phases of the research, meaning that they progress iteratively between these two. Another logic that is referred to as a third option is abduction. It is the process of moving from the descriptions and meanings that are given by various people, towards the categories and concepts to be able to create an explanation for the phenomenon that is studied. (Eriksson & Kovalainen, 2008, chapter 2, pp. 18-20). The abductive thinking is the one that I am following in my own research.

The benefits of Grounded Theory are that it is very systematic, and even though it is often said that the theory just emerges from the data, it actually evolves through phases that are the above-mentioned induction and deduction. The core of this theory is constant comparison, clear coding, and by-phase development. (Mattila, 2006). Grounded Theory sounds very appropriate for my study as it allows me to systematically approach my topic by following the iteration rounds between the theory and the findings. Moreover, since it is a method with clear structure, it allows me to follow systematically my actions also in the coding and analysis of my data. Another very similar analysis method is called thematic analysis. Braun & Clarke (2006) describe thematic analysis as a method for identifying, analyzing and reporting pattern in the data that is being analyzed. They also state that it is a method that has been poorly branded and does not appear to have as strong identity as other methods, such as the Grounded Theory. Anyhow, they argue that a lot of analysis is in the end thematic analysis even though it might not be called so. They also tell the difference between Grounded Theory and thematic analysis; both theories seek for patterns but the Grounded Theory method is theoretically bounded.

There has also been some critique towards the Grounded Theory. The methods and principles of Grounded Theory are considered being very formalized and especially the emphasis on the formal coding process has evoked criticism in many qualitative researchers. The issue is that the Grounded Theory's formalized processes might prove to be good choice in certain research setting and with certain research questions, but there are also cases where this formalized methodology does not turn out to be useful. (Eriksson & Kovalainen, 2008, chapter 11, pp.7). However, in my own research I find the Grounded Theory's systematic and formal processes something that can guide through my research especially in the coding and analysis phase. After having evaluated the pros and cons of the Grounded Theory approach, I am still seeing the benefits outweighing the critique, thus I am taking the elements from Grounded Theory to function as flexible guidelines in conducting my research.

Whenever discussing Grounded Theory, it is important to mention the *sensitizing* concepts. Especially in my situation, as I am passionate about interior design and the technologies that concern it, I must explain what sensitizing concepts mean. Charmaz (2014, pp. 30) explains that the sensitizing concets give the researchers initial ideas concerning the topic they want to study. They are the concepts that start the research; they function as the guiding interests. Mattila (2006), for example, also discusses sensitizing concepts, saying that even though previous knowledge should not be considered in the Grounded Theory approach, it has been known for years that the previous knowledge can improve the research theory. However, there are also claims that sensitizing concepts can direct the attention away during the research. (Bowen, 2006, pp. 14).

Mattila (2006) states that abductive reasoning is strictly based on the reseach data but it also allows having inspiring theories on the background of the research. The researchers are, for example, allowed to focus on those research questions that emerge based on the background knowledge on the topic. Grounded Theory is always based on the research data, and in my case based on the empirical findings from the interviews. Having previous knowdlege in this area is in a way against the Grounded Theory's principles, but since I have chosen to go with the abductive reasoning, the previous background and the sensitizing concepts are actually an advantage to me rather than limitation; I have not started this research with no background in this topic and I want to utilize it to the advantage in this study. In this research, my sensitizing concepts are concerning interior design and how I see the industry from my personal perspective. However, it is a challenge as well, as I may see the sensitizing concepts guiding me to the direction I would want the research to go without it going there objectively. Nevertheless, as I am well aware of my own assumptions and my own perceptions, I am also aware that they might affect the research, and I can thus be focused on an objective research approach with my sensitizing concepts in the background.

2.2 Data Collection

After I had chosen to do the research using the qualitative methodology, I had to think of the specific methods within the qualitative methodology. I chose *semi-structured in-depth interviews* as my method to approach the research question and the following sub questions. Semi-structured interview questions allowed me to have a pre-prepared set of questions according to the topics I wanted to cover with the interviewees, yet still have the possibility to rephrase the questions or ask them in different order in each interview. The benefit of using semi-structured interviews is that the questions are prepared in advance, thus the interview is still conducted systematically, but the interview itself sounds informal and more like a regular conversation.

(Eriksson & Kovalainen, 2008, chapter 7, pp. 9). One big reason behind not choosing the structured interviews was that at the time when I started doing the research, I was not familiar enough with the topic to be able to decide a set of questions that I was committing to use with each and single one of the interviewees. I wanted to have the flexibility to ask the questions in my own words and to be able to change the order of the questions if the discussion went towards some specific topic. Having semi-structured interviews allows also the snowball effect where the researcher can build the questions based on the previous set of questions and answers, and have the answers cumulating the information as a snowball.

By doing in-depth interviews, my objectives are to understand how different parties perceive the interior design industry and its processes; whether it is clear what it means in the first place what is interior design. I also aim to understand how the new interior design software are perceived in the industry; whether they are seen as a major technological innovation and opportunity, or a threat to the current routines. One possible future scenario is that there will be no change, at least from the viewpoint of the interior designers, but I will come later to this once I will analyze and share my empirical findings. My goal is thus to find out what will happen in the near future of interior design from the perspective of technological change. The *context* of my study is interior design and specifically in Finland. I am pointing out that there are certain limitations that are due to the fact that the research is done in Finland and mostly with Finnish companies. It might be that the perceptions about technology, for example, would be totally different in the neighboring countries. It might be that the processes of interior design are different in other countries. So I am highlighting that this study is relevant in Finnish interior design context as it includes highly professional interior design experts in Finland. The full list of interviewees is in the appendix.

From the very beginning my purpose has been to approach this subject from several perspectives. Thus, I have utilized the data triangulation, which in my research means that the general phenomena of consumerization in the industry of interior design is seen from the different perspectives; the data is then also collected from several angles. (Collis & Hussey 2003, pp. 78). In order to utilize the data triangulation, I have categorized my interviewees in three categories according to the perspective I am interviewing them from. The first two categories – software produces and interior designers – might be seen as natural choice as they are the ones that are most involved in this phenomenon; software producers are trying to create innovative software with the new technological solutions, and interior designers' market and expertise might be affected if their clients decide to become interior designers themselves. The third category – furniture companies – is part of the research since their business is also affected quite directly by these software. Especially furniture companies have to rethink their way of doing business and value creation processes if, over time, competitor companies decide to push their

furniture in 3D models to online libraries and that becomes a common practice in the industry. Here are the categories summarized:

1. Interior design *software* producers – from technology perspective
2. Interior design *professionals* – from the perspective of the profession
3. *Furniture* companies – from the perspective of product sales

Each category includes three to four interviewees and has a slightly different set of questions. The questions are all about same topics just with a different emphasis on each section. Each interview includes a section of current processes of interiors, interior design software, consumerization and the future of interior design. However, the software companies know best about technology and the interior designers know best about the processes. Thus, I have emphasized different aspects in each category. Originally I was planning to have a fourth category that would be *construction* companies to approach the subject from the perspective of spatial sales. However, to understand the interior design industry from the perspective of the interior designers, and within the limitation of Master's thesis, I have left it outside my scope for further research. I will provide examples that come from construction area and that interlink with interior design but I am leaving the category out of my interviews.

It was a challenge to decide the structures for the interviews. As the research is interested in consumerization as a general phenomenon and the interior design software on more profound level, it has posed some challenges in structuring the interviews in a logical way. I decided to first ask specifically about the interior design software and whether they are used at the moment in the work of the interviewees, and only then if they are familiar with the phenomenon of consumerization in general. The reasoning behind this is that I wanted to know about the software usage before I explain the "theoretical" explanation about the consumerization as a phenomenon. Also, I decided that I will first ask my interviewees whether they are familiar with consumerization, and how they perceive this term, and only then explain it myself through the academic definition. If I first explained the term, I would not find out the first impression of the interviewees concerning consumerization.

The semi-structured in-depth interviews will be supplemented with short *mini-interviews* consisting of two questions at the Slush Conference in Helsinki 18th-19th November. The conference is tech-oriented and the crowd is possibly very potential to be the early adapters of new technologies such as these interior design software. I am conducting the mini-interviews to find out what is the general feeling of people concerning the adaptation of these new interior design software. With approximately 15 answers I cannot draw direct conclusions but I can see the general perceptions and whether possible clients of these software would use it or not in

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case they wanted to do interior design. As Collis & Hussey (2003, pp. 76) state, it is not unusual in business research to take a mixture of approaches or methods to collect and analyze data.

The research was designed before getting confirmation on certain people or certain dates. What I mean is that I had an idea of how to approach my research questions and I developed it further into a plan and a timetable. I never faced problems with the data access, as all the interviewees have been happy to help and be part of this study. There was no clear rule on selecting the people in the categories. Concerning the software companies, there are only few in Finland that are well-known and have raised money from investors, and they are involved in this research. In the sphere of interiors, I contacted designers that have been in the industry for decades and that have gained great reputation and brand in Finland. The furniture companies that are interviewed in this study are also established big companies in Finland that I believe would know about this phenomenon as they have been in the furniture business for ages, and would eventually have to redefine their business as well if the furniture business goes to 3D.

Concerning ethical aspect of this research, there are no clear topics that would be a taboo or difficult to address. However, I need to understand that since I am interviewing people from different backgrounds and fields, they all might have own strong opinion on the future of interiors. As a researcher, I need to stay as objective as possible and present what I find without any harm to anybody's brand or business. This is not an obvious case to happen but it is good to say aloud that the intention is to honestly tell my findings based on the empiria and the literature.

2.3 Data Analysis

Even though I am using several different data gathering methods – semi-structured interviews and mini-interviews at the Slush - the main focus in the research is still the in-depth interviews with the above mentioned three categories. The approximate length of each interview is one hour including the chit chatting and closing words. Each interview is done face-to-face, recorded and transcribed. The transcriptions are done word to word to be able to analyze the data with as precise information as possible. All the interviews are conducted in Finnish and transcribed also in Finnish. The transcriptions are sent to the interviewees and approved before used in this research.

The analysis of the data means coding it from the raw data until conceptual level. (Corbin & Strauss, 2008, pp. 65). Making codes means organizing the information and grouping it into categories. Even though it is not a linear process from codes to theory, it can be said that the

codes are grouped into categories and then formed into higher-level and more abstract concepts and themes. By interrelating themes and concepts, the theory can start to be developed. (Saldãna, 2013). Coding is more than just saying the same content in different words; it includes the interaction with the data, for example, by comparing the data. (Corbin & Strauss, 2008, pp. 65). There is a list of methods to do the coding of the data and certain methods fit me better than others. Coding will vary by the person who is doing it and thus can also be seen as interpretative work and not as a precise science. In the end, it is the view of the researcher, what are the findings, as each researcher will have their own filters through which they look at the data. (Saldãna, 2013).

The methodology of Grounded Theory has been considered one of the first methodologically systematic approaches to qualitative research. It has six particular coding methods that are considered as part of the theory but that can be used in other approaches as well. The coding methods are In Vivo, Process, Initial (also known as "Open"), Focused, Axial, and Theoretical (also known as "Selective") coding. (Saldãna, 2013, pp. 51). Mattila (2006, pp. 54) describes very well the three phases of data coding that are recommended by the creators of the Grounded Theory, Strass & Corbin (1990). As in Grounded Theory in general, the benefits are systematic progress and the depth of the analysis when linking the themes together from general view into a more thorough analysis. The first step is the *Open coding* where Mattila (2006) himself started by using colours, underlining and initial codes in the margins of the data. By comparing the codes he saw the emerging sub categories. The second phase is called *Axial coding* which means that the categories are compared and their interrelations are found. The third and last round is *Selective coding* which focuses on finding through induction the most important categories of the study. In my own research the coding was done by following the methods of Grounded Theory so that my codes are systematic and the theory evolves during the process and not out of the blue. I trusted paper and pen and lots of colours. First, I coloured all the relevant information and used keywords in the margins of the transcribed interviews. Second, I explored the keywords and formed categories from them. Third, I evolved the categories and saw the links between them, and formed an opinion of a theoretical framework that fits better this context.

In the end, it is still till some extent the view of the researcher, what are the findings as especially the coding can be very creative at its best. The common criteria for research have been reliability and validity. High *reliability* of a research shows same findings even though the research would be repeated. The other criteria of credibility of the study is *validity* that answers to which extent the research findings are representing accurately what is really happening. Faulty research procedures and poor samples can seriously undermine the validity of a study. Yet, with the phenomenological paradigm the purpose is to extract data that is rich in explanation and

analysis. Those researchers aim to gain full access to the knowledge and meaning of the people involved in the research, and thus it is considered that validity is high when following the phenomenological paradigm. (Collis & Hussey 2003, pp. 58-59). However, there are multiple researchers such as Golafshani (2003) that state that these criteria should be redefined when talking about qualitative research. Even though validity and reliability are used separately in quantitative studies, they are not treated as separate in qualitative research. Golafshani (2003) continues that better terms for qualitative study are credibility, transferability and trustworthiness.

Personally, as a researcher, I can keep similar questions in my interview categories so that I am able to draw patterns and find common answers. If the thematic patterns evolve to answer the research question, even though the categories involve people from several different backgrounds and fields, then it can be said that the validity is high. Anyhow, I would not be sure that somebody else doing this same study in different set of time would gain same knowledge and thus I would not keep reliability as valid criteria for this qualitative study. I would rather keep the thinking of Golafshani (2003) that, as mentioned earlier, believes in terms such as credibility, transferability and trustworthiness of the research. Glaser & Strauss (1967) talk about these aspects concerning the Grounded Theory. In the discussion about conveying credibility, Glaser & Strauss (1967, pp. 228-229) talk about two problems. The first one is getting the readers to understand the theoretical framework used in the research. The second challenge is concerned with how to convey the data of social world in relation to the theory. Even though, coding is one way to convey the credibility of the study, the reader should see the path to conclusions. (Glaser & Strauss, 1967, pp. 230.) I have been explaining my decisions so far and in the findings part I will back up my conclusion with answers from the interviews.

2.4 Theoretical Framework

The theoretical framework that I am referring to throughout the thesis is the Porter's (1980) competitive analysis. Porter's framework is globally used model that represents the driving forces in the industry competition. Porter claims that the state of the competition in the specific industry is affected by the threat of new entrants and substitute products or companies, by the bargaining power of suppliers and buyers, and by the rivalry among the existing companies. (Porter, 2004, pp. 3-4). The focus that I have with Porter's model is the competitive force that *the substituting products* have on the rivalry of the existing companies. (See figure 1)

Porter's competitive analysis is a model that I have found to function as a good basis even in the case of interior design. His competitive analysis of five forces is a classical model that I claim fits

the interior design context better than one would think. My approach is to have the existing interior designers in the center and see how will the substituting products affect the processes and value creation of those interior designers. The substituting products in this case could be the new interior design software that are available both for the professional designers but also for the non-professional consumers in the consumer market. I will discuss this later.
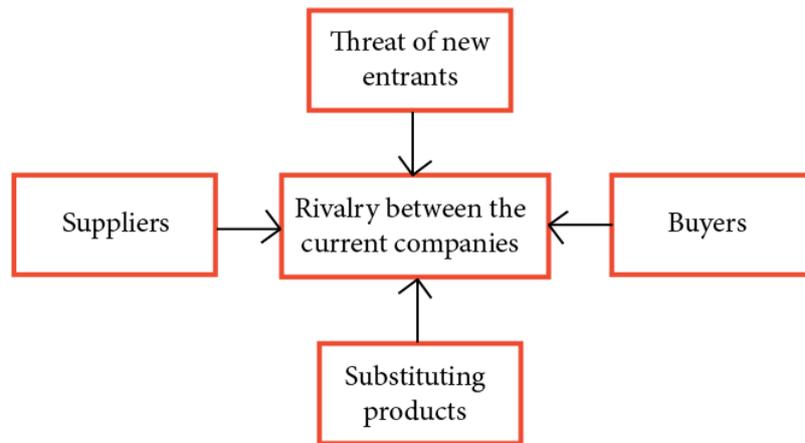

Figure 1 – Five Forces Framework (Porter, originally 1980)

Porter's model has been criticized for several reasons. Dobbs (2014) has gathered together his own observations combined with observations of other authors and Porter himself concerning the challenges of applying the five forces model. The first implication he states with the five forces model is the *lack of depth*. Many people understand the model in a shallow way and thus may lead to very incomplete and unhelpful results. At worst, the wrong analysis can lead to disastrous organizational outcomes. The second issue with the five forces analysis is the *lack of structured analysis*. This has to do with the lack of quantitative measures in the model. Basically all the elements in the framework are qualitative lists and even the examples that Porter provides are qualitative. The third challenge is the *lack of strategic insight*. Porter's model is usually seen as a tool to see the attractiveness of an industry rather than a tool to gain strategic insight of a particular industry to be able as a company to compete more effectively in that chosen industry.

Nevertheless, Porter's framework allows me to gather all the important elements of the interior design into a visual framework. Choosing Porter's five forces framework is also in line with my decision to go with the postpositivist approach and see the interviewee answers as facts on which I build the theory. My research categories are also aligned with the elements in the Porter's framework. Supplemented with the mini-interviews at Slush conference from the potential customers I can form a picture on the five forces of interior design and build a framework that can be used as a tool to discuss the competitive forces and what will happen in the interior design in the future.

As there is no commonly used framework to evaluate the effects of consumerization, I will use this framework to see the interior design industry and build another level of analysis on top of that with the results from the Grounded Theory approach. My main research question remains "*How will consumerization change the interior design industry?*"

2.5 Research Assumptions and Limitations

This study focuses on exploring the possible scenarios of the future. I had several assumptions before conducting this research. Even though I have been very careful and not stating anything that is not clearly argumented or well studied, I do believe that each research has a glimpse of their persona in the study. My personal assumptions are related to the technological change. I believe that the technological change will happen at some point and it is a matter of time: when and how. I believe that the technology will start a digital revolution in the sphere of interior design.

The subjectivity of a qualitative study has to be considered as a slight limitation to observe the overall situation fully objectively without pre-set assumptions. However, this does not mean that the study would not be credible, it only means that this study is one way to see the possible scenarios and there might be others as well. The research is conducted in Finland and with Finnish companies. It seems to me as a researcher a very specific study that is not comparable as such to other countries. Some references might be drawn from this study to other contexts, yet there are several factors that affect this comparison. First of all, the technological development in different countries is on different level and the overall process of interior designing might not be same either. Second, there are cultural differences concerning the people within the interior design projects, for example, the communication between the client and the designer can vary by culture.

Triangulation in the study should make this research robust since it shows that even though approaching the industry change from several perspectives and with several different means (e.g. in-depth interviews and mini-interviews at Slush) the overall perceptions and opinions are clearly aligned. However, by choosing different people to interview, I might have gotten different opinions. It is good to remind that this is a qualitative study that could have given different opinions of the research sample was different. In the end it is also about the interaction between the researcher and the interviewees thus it might be that not everyone wants to be fully honest especially if they need to tell negative side of their business.

To capture the most essential, I am summarizing my thoughts on the research of this study. I am doing qualitative study with the mindset of postpositivist paradigm. My thesis will touch the overall phenomenon of consumerization yet the context where it needs to be looked at is interior design in general. The context will be more specifically the interior design in Finland, including its processes and its value chain. The study is done using qualitative methods such as semi-structured interviews and mini-interviews. Next I will discuss the literature review on the consumerization phenomenon.

3. Consumerization as a Phenomenon

This is more of an overview concerning consumerization as a phenomenon. The focus is to understand how consumerization affects in the sphere of knowledge-intensive context such as interior design; consumerization is the umbrella that covers several industries out of which interior design is just one example. Consumerization is better covered in the academia, whereas interior design is less formally and precisely written about. This has also affected why the main literature review is based on consumerization, and interior design is approached with a more contextual review. Thus, to make it clear, I am introducing the literature review on consumerization since it is the phenomenon that affects widely the society we live in, and interior design industry is my case example of one of the industries it will affect sooner or later.

First, I will go through the consumerization phenomenon and the next chapter is dedicated for interior design as an industry, and to discuss how exactly the technology is changing the industry. I will start by stating the common definitions of consumerization in the literature. I will then explain how consumerization emerged and what opportunities it brings along. I will also introduce the current trends and the implications of consumerization towards the end of this chapter.

3.1 Common Definitions

In the very beginning of this thesis I provided a definition in my own words. To put it simple, I said that consumerization is the phenomenon where enterprises implement technology from the consumer market. Many authors in the academia perceive this phenomenon differently, and some state that it is at its simplest a Bring Your Own Device (BYOD) policy. BYOD is basically a strategy where employers allow their employees to choose and buy the devices they prefer to use to perform their daily routines at workplace. (Stagliano et al., 2013). In reality, consumerization of IT is fundamentally changing the way business and IT are operated today. It is not only about BYOD behavior but about a deeper and much further-reaching phenomenon. It affects both the internal employee-facing and external partner-facing business processes. (Gens et al., 2011). Intel's IMR Position Paper (Bless et al., 2010) gives a definition from John Taylor and Douglas Neal from the CsC's Leading Edge Forum showing slightly different approach to consumerization. They see it from the technology adoption perspective and claim that individuals, not companies, are driving the technology further. This way of thinking does not, however, discuss whether it is consumer market or professional market.

Consumerization of IT can be seen from various perspectives. It is an ambiguous term that depends on the stakeholders and generates different definitions from the various perspectives. From the *employee's* side, consumerization is the individual's usage of and familiarity with devices and applications that are used in his or her private life, and are found to be useful in the work environment as well. Thus, the experience from the personal life can seamlessly affect the work life. From the *perspective of organization's IT department*, consumerization is all the devices and applications that might not be on the approved list of the company, and may not be thus within the corporate firewall. They are seen either as a threat or opportunity. From the *market perspective*, consumerization is about the devices and applications that derive from the consumer market and were originally not even targeted to the use of enterprise IT. This third definition also highlights the trend that more and more consumer technologies are finding their way to the enterprise environment. All the three perspectives, which seem different, are affecting across the stakeholders: IT consumerization redefines how employees use the technology, how markets offer it and how the IT departments implement and maintain it. (Harris et al., 2012).

The core in the consumerization is the combination of dual-use devices, public networks and value-added applications and services. Over time, more and more of the services and devices in public network infrastructure will be shared in usage by both businesses and consumers. Nevertheless, the rate of improvement for the consumer infrastructures is so good that consumer infrastructures will eventually exceed what companies can do at the moment on their own. (Moschella et al., 2004). Previously the best IT experiences were in the office premises whereas today technology has been democratized, and users are able to do things on their own without the company premises. (The Economist, 10/2011).

3.2 Background of the Phenomenon

Rapid technology development allows consumerization to prosper

First revolution in IT happened over 40 years ago, when corporate offices were invaded by Commodore Pet, Apple 1 and TRS 80 - all personal computers. In 1980s, IBM was a dominant vendor that transformed hobby computers into professional tools with their IBM PC. Nowadays there is no such dominant vendor as IBM was then. (Harris et al., 2012, pp. 99). However, the continuous development of technology has allowed the hardware to become what it is today. The famous Moore's law, which means that the number of transistors on a chip doubles every two years, has affected today's situation as well and there are arguments that iPhone today is 40 times more powerful than the versions from the 2000. Apart from the technology getting better, a big change has also happened in the experience of computing. Apple has been very actively

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driving the shift from the PCs towards the so-called post-PC devices such as smartphones and tablets. (The Economist, 10/2011). Fax machine is an example of a device that was first for corporate use and later became affordable in the consumer market. Since the early 1980s, as microprocessor-based systems emerged and got a hold of the momentum, IT innovation has been increasingly driven by the consumer market. With the emergence of more powerful PCs, mobile phones, digital cameras and so on, this trend has only become more obvious. DVDs are an example of technologies that were first targeted for the consumer market but business usage came lagging behind. Nowadays, many employees have significantly more capable devices and services at home than those that are provided at the work place. (Moschella et al., 2004).

There are different versions about what has triggered consumerization. However, mostly the reasons behind consumerization are recognized similarly in the different articles. The trend of consumerization was initially observed with the emergence of Web 2.0 technologies. Examples of those are wikis, social networks and blogs. (Weiß & Leimeister, 2012). This is also confirmed by the analysis from Blount (2011), which states three factors behind consumerization. The first one is the *massive use of social media as communication platform*. The use of social media has strong benefits in customer satisfaction and loyalty, increase in the revenue and increase in the market share. It has also allowed to access totally new market segments. The second factor is told to be the *major growth of personal consumer devices* such as smartphones, tablets, etc for business use. The usage of personal devices at work means that the users are demanding access to corporate information from the devices they are used to use in their personal life. The third factor by this same source is *the growth of cloud-based services*. Cloud computing has allowed people to stop storing the data and entertainment on hard discs and USBs, and move it directly to the cloud storage. Companies such as Amazon have build storages that allow to save, for example, electronic books all in their cloud service. (The Economist, 10/2011). Nowadays, Google Drive, iCloud, Dropbox and SlideShare are all widely used cloud based platforms.

Consumerized software might trigger the next revolution

Consumerized systems will evolve faster than the corporate business systems at the moment for few very irreversible reasons. The most important of these is the *volume*. Already now many electronic devices and products are sold in hundreds of millions of units. There are more than three billion connected users on this globe (see Internet Live Stats, 2015) and services from Yahoo! and Google can without bigger challenges acquire 100 million customers and get major economies of scale along with the technology, experience and understanding. When the volumes are as high as mentioned above, the research and development costs are only a fraction of the total costs. Even though business infrastructures are often better concerning security and control, their pace in terms of price, usability and performance is lacking behind compared to the

consumerized technologies. (Moschella et al. 2004). *Mobility* is also accelerating and amplifying the effects of consumerization - smartphones, tablets and laptops are more used than regular desktop PCs. The work flow has become more seamless since work is integrating into personal time as well. (Gens et al., 2011).

Consumerization can be seen as a part of a bigger shift in the society towards the digital technologies and opportunities. Part of digitalization is the development of technologies towards increasingly intelligent software. Proof for intelligent technologies is for example the trending Internet of Things (IoT), which enables people-to-object and object-to-object communication. As technology becomes smarter, it increasingly resembles the cognitive operations of a human brain. Technology of today allows finding patterns and deciding autonomously withouth human intervention. (Pye, 2014). For a long period in history, technological innovations were top-down processes where early users were customers with significant financial resources and needs, and military projects were usually the primary source of innovation and advance in IT. The benefits of the resources in R&D expanded to large organizations, and later to small businesses and consumers. (Moschella et al., 2004).

Today's revolution will be most probably even more invasive and threatening than the first one. This second revolution is driven by the powerful consumer technologies. (Harris et al., 2012). In 2011, a milestone happened as the first knowledge workers raised with the Internet started graduating from college and entering the work life. This generation learned to read when the Internet and emails were in the period of mass expansion and commercialization. This same generation was in elementary school when dotcom boom peaked, and in college when social media and smartphone usage exploded. (D'Arcy, 2011). Those digital natives are the tech-savvy workers that enable the development of technology and its implementation in both private life as well as the work life.

3.3 Benefits and Opportunities

Intelligent technology is adapting to its users

Consumerization has a number of features and benefits. Technology is getting so intelligent that it is adapting to its users rather than making the users adapt to the technology. Even toddlers know how to use the touchscreens as the user interfaces are so intuitive. (The Economist, 10/2011). Often employees see their own applications to be more powerful, more useful, easier to use, faster to obtain and more fun than the ones that are provided at the workplace. Both the devices and the applications are attractive and inexpensive. The web-based services and the million plus mobile apps that run on the devices are readily available. With little time, motivation

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and resources the developers are able to create new tools and distribute them further. (Harris et al., 2012).

In many ways, it might be seen that the employees of today are actually getting training and knowledge about possible consumerized technologies of the future. For example, text messaging is an example of activity that is usually learnt outside the workplace. Simple activities that can be done with consumerized free applications seem often to be much more simple, reliable and functional than the expensive ones at work. Great examples of these activities are email, wi-fi, storage and file transfer, automatic backup, and social networking. Google and other consumer systems are often more useful and intuitive than the internal systems in the company. (Moschella, et al. 2004).

Consumerization affects companies on a profound level

Consumerization is a powerful trend and its technologies, infrastructure and application can dramatically lower the costs and still equally improve the functionality and ease of use. Usually companies have had private IT infrastructure but nowadays consumerized alternatives are available. Most probably the private infrastructure will be left only for those companies who can afford it; consumerization will transform the traditional infrastructures and revitalize them. (Moschella et al. 2004). Consumerization also impacts what are the demand, supply and use of information in the company, and thus affects the overall management. As smartphones and tablets increase in use, the required information can be accessed from almost any location. The private usage may affect the information as it can be discussed, appraised and supplemented with social networks, blogs, and wikis. This though, only supports the information demand and supply in the companies, and thus improves the management of information exchange. (Weiß & Leimeister, 2012).

Global standards go along with consumerization and they make it possible for most consumer markets to evolve in a commodity-like manner. Compared to the existing corporate networks, there is more choice and offering in the consumer market. Especially over time, the Internet will make it even easier to integrate the consumerized systems into existing business environments. The benefits of the consumer systems can eventually result in a profound organizational change. (Moschella et al. 2004). Another impact of the trend is on the management of the information systems in general. Management of data, processes, application lifecycles and system landscapes in the companies are all affected as mobile and Web 2.0 applications are involved as components in the corporate information systems. To fully benefit from the trend, some companies change or modify their business processes. For example, sales process can be optimized for iPad usage. (Weiß & Leimeister, 2012).

The trend towards IT consumerization is strong and not likely to be stopping soon. Devices will become only smaller and less visible. They will also be cheaper, more capable and faster. App stores will evolve into low-cost "engines of innovations" and be distribution channels that will allow vendors of big and small sizes to bypass the blocks of IT organizations. Consumer devices, app stores, cloud and tech-savvy people that enter the market are all together forming a classical picture of a disruptive technology for enterprise IT. It might be extremely important to recognize consumerization and proactively embrace it. (Harris et al., 2012). Ability to take advantage of emerging consumer infrastructures will be critical success factor in many companies within few upcoming years. CIOs will have to find a way to change from private to public infrastructures and from the environment of controlling employees to the environment of increasing employee freedom and choice. Consumerization will resemble the change from corporate mainframes and minicomputers towards personal computers, though this will be on a much broader scale. In a way, consumerization can be seen as another IT innovation and companies will have to come to grips with it. (Moschella et al., 2004).

Companies should learn how to use the opportunities

The increased use of social media, emergence of cloud computing and the tendency of using consumer devices will all combined offer new channels for the companies to grow, increase efficiency and improve the convenience for the users. Nevertheless, the companies will need to be certain that they have effective controls to ensure that the users are always authenticated and that the access to critical information is controlled. Also the use of the information provided by the company should be controlled to be within the company policy. Furthermore, these elements are important not only in an IT company but also in other environments as the use of consumer devices is becoming dominant outside the company environment as well. (Blount, 2011). With a survey including over 3,000 information workers and business executives in nine countries, IDC found out that the employees who use PCs, smartphones and tablets for work are those who are much faster to adopt and use new consumer technologies in the workplace. These technologies are becoming more and more important for reaching the customers, prospects and partners. (Gens et al., 2011).

There are several strategies on how to respond to consumerization, and how to actually benefit from it. Harris et al. (2012) say that the organizations want to have the benefits of consumerization but stay alert with the risks that the trend involves. The research that was conducted by the authors shows that organization have two extremes: either "laissez-faire" strategy that allows all the consumer technologies at the workplace, or "authoritarian" strategy that is very strict and tightly in control of consumerized devices. They have identified four middle-ground strategies between those two extremes so that the companies can decide

themselves, how ready they are concerning consumerization in practice. Another set of strategies to benefit from the consumerization is shown, for example, in the D'Arcy (2011) article. That article has practical recommendations that include articulating technology philosophy of a company, evolving the security policies to protect even the heterogenous device environment, and piloting tablets to test whether people could start bringing their personal tablets to work. Basically the recommendations aim to enable companies to allow the BYOD behavior.

3.4 Current Trends in Consumerization

Employee expectations have changed

Mobile devices and applications are pushing their way through into the corporate world and iPhones in particular are increasingly used in the corporate sector as substitute of business smartphones. Also Apple's iPad is increasingly used in the work life as replacement for notebook PCs. The trend is told to be most prevalent in North America where a study by Strategy Analytics (2011) shows that in 2010 38% of all the smartphones worldwide were bought for business use whereas in North America it was 55%. To compare, in Western Europe, the number was 26%. (Weiß & Leimeister, 2012). Smartphones were more sold than PCs already in 2010 and now it is the time that the tablets outsell the PCs. (The Guardian, 3/2013). An article in the Economist (10/2011) states an opinion that consumerization is something already unstoppable.

Intel conducted a study (Bless et al., 2010) to find out the effects of consumerization on IT departments and their workers. There were few themes of needs that kept emerging in the discussion about the expectations towards the workplace. The first need is the need for *reciprocation*, which means that as employers expect the workers to be accessible even after work hours, the employees in return expect that they are able to decide the physical location they work from, as well as the schedule and tools they decide to go with. This is the dilemma concerning division of work life and private life, which gets increasingly blurrier as technology continues to develop along with the globalization of workforce. These same employees are also expecting from their employers the *adaptation* to the preferences the workers have. The employees are expecting that they can, for example, bring their own devices to workplace so that they are not slowed down with the employer technologies or tools. So if they prefer using certain operating system then they expect the employer to be fine with it. *Speed and access* is the next on the list as the workers are expecting that they can access the information when they need it, and they expect that the security issues are taken care of. The last on the list of needs is the *relevance*. The relevance in this context means that especially the knowledge workers are expecting to work with the latest technology that will keep them productive without excessive limitations or restrictions. The generation Y has grown up with the mobile phones, the Internet

and technology in general, and they expect to have these elements also in their professional life. However, this same study shows that not only generation Y but also the older workers are experiencing a disconnection between the tools they would use as a personal choice and the decision that the company goes for.

The struggle between users and IT departments exists because users seek freedom and IT departments seek control and security. The consumerization phenomenon is not only about the BYOD and buying new devices to the employees; it is about increasing the control over the usage and interaction of the IT resources in the company. The role of enterprise security does not stop at the firewall of the company as the company network extends to the users' devices to the other locations outside work. This will involve profound IT planning to guard the potential attacks. However, at the same time the actual level of control a company can exert has diminished, as users adopt the technology they like on the basis of their needs. (Blount, 2011).

Global trends affect the companies on a broader scale

Studies show that at first, many companies resisted the change that was due to the consumerization. Though, soon they understood that this phenomenon is inevitable and thus they learned to adapt their processes so that they could allow the new devices of the employees. (Blount, 2011). As presented in D'Arcy's article (2011), some organizations are already waiting for the post-consumerization period when companies that at the moment cannot stop the mass arrival of personal devices will be able to stop totally managing the devices used by the workers. This same article presents five global trends that will affect the enterprise mobility. They also emphasize *the rise of social media* and that it will mean that it is the people and the society, not only technology anymore, which are evolving alongside with the new online world. Another trend is the *blurring line between work and private hours.* This will complicate the employee technology policies and will make it difficult to control the technology usage. The *emergence of the new devices* is the third trend. Each decade there is an exponential growth in the number of devices and a new paradigm for the end-user computing. Till this moment there was an era of mainframe computing, minicomputers, personal computing, desktop Internet, and now as most recent, mobile devices for Internet access. This is seen as a tendency to bring own devices to work. The fourth trend lies in the fact that *shifting to new business models will require tech savvy employees.* As social media and mobile devices are expandingly more used, the technology-based relationship between the employer and the employees is changing. The Internet savvy employees who can navigate through the social media will be needed as the business shifts to the social media; corporate brands shift to the online conversation making the personal recommendations matter even more than before. In this context, consumerization becomes a business decision and not only a technology decision anymore. The fifth and the last trend is *the*

changing employee expectations towards corporate IT. Companies that implement the newest and the most innovative end-user technology will be able to recruit a new generation of knowledge workers. (D'Arcy, 2011, pp. 3-5).

Since consumerization is very much attached to the general digitalization shift, the trends should be analyzed not only specifically in the consumerization context but also on a broader scale, looking at what happens within digitalization context. It is said that digitalization has six trends that will impact the companies within the next three to five years. First of all, there is a *need for bigger and faster data centers* as the software are developing rapidly. Second, *applications are getting everywhere* and more and more companies have their own app stores for managing the corporate apps and to connect with their customers with these apps. Third, the *Internet of Things* is allowing companies to use data faster and more intelligently as the smart devices are growing in number while their production costs are falling. Fourth, in the future *consumers will be directly involved with the companies for collaboration and ideation* on certain products, instead of just answering emails from those companies asking for consumers' wishes and preferences. Fifth trend is that *data needs to be managed differently*; data should be seen as "products" in the supply chain, meaning that it will flow through the entire organization. The last trend is the *importance of IT architecture* to function perfectly. According to one study, an average one minute of being down costs the companies 7 000 US dollars. (Peterneck, 4/2014). These trends strongly indicate that neither digitalization, nor consumerization phenomena are stopping any time soon.

Early adopters ensure the success of the new products and software

Usually when discussing adoption of a new technology, Moore's "Crossing the Chasm" is mentioned. (See figure 3). Moore's model explains the challenge of new technologies to cross the gap called the chasm, which is between the early adopters who are willing to take the risk and try out the new technologies, and the mainstream buyers in the middle of the bell curve who seek only incremental and measurable improvements. The early adopters are critical to the success of a new product. (Adams & Martin, 2009). From the perspective of the technology curve, the development is happening no longer by companies or their IT departments but rather by the tech-savvy workers who use their own devices for work. (Bless et al., 2010).
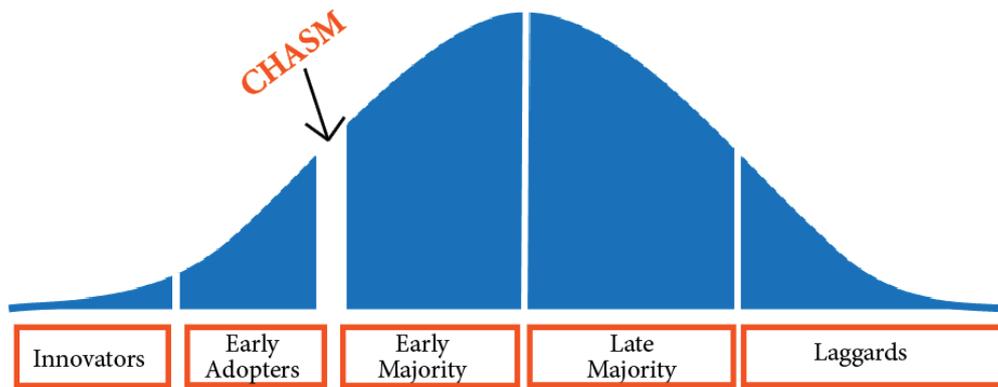
Figure 2 – Geoffrey Moore's Technology adoption lifecycle

3.5 Implications and Impacts of Consumerization

Consumerization brings challenges to the company IT management

Consumerization brings along also certain challenges. The lifecycles of corporate applications can be expected to become shorter and approach the lifecycles of the applications in the consumer market. The reasoning is that the staff will always want to use the latest innovations. Also, the license management will become a challenge due to consumerization. For example, in the case of Apple AppStore, the license is always for a private person and not in the name of a company. As there are no business accounts with Apple, the employees carry all the company-paid applications with licenses with them even if they leave the company. The applications from consumer market usually, though, do not have the interfaces appropriate for the professional use of IT. Integrating these applications from consumer market into the professional use of companies results thus in a disintegration of the previous classic system architectures. (Weiß & Leimeister, 2012).

With all the consumerized elements in the companies, new demands are placed for the storage, processing and communicating the data. Consumerization only further increases the already growing amount of data storage requirements to be met either internally or externally. Applications such as Yammer or Dropbox store the data outside the company in a virtual cloud infrastructure and even though they might increase the volume of data, this can still result as a smaller amount of data to be stored within the company. With the increasing amount of data volume on the mobiles, bandwidth requirements of corporate communication networks are also affected. Especially the private use of company smartphones results in an increased consumption of bandwidth with multimedia content. The combined use of private and business makes it challenging from the perspective of data protection requirements. Appropriate technical solutions and usage policies and guidelines are recommended. Consumerization also pressures the companies to be able to ensure integration of consumer applications and devices even at

30

short notice. (Weiß & Leimeister, 2012). Data security, reliability, performance, dependability, availability and connectivity are all challenges that are recognized in other articles as well. Harris et al. (2012) continue, that the employees welcome the technological revolution; they want to use their own tools at work. They claim that consumer apps are cheaper, easier to use, quicker to implement and are more updated technology-wise. Those consumer apps foster innovation in the opinion of employees. Furthermore, there is a growing gap between the technologies that the tech-savvy workers use at home and at work, as the gap between what is adopted by the consumers and what is offered at work is increasing. (Bless et al., 2010). Especially the "digital natives" – mostly considered generation born after 1980s – who grew up with the Internet and mobile technologies, are demanding for technologies familiar in their private life to be used also in the corporate world. (Weiß & Leimeister, 2012).

Impacts are not only related to the IT infrastructure

The impacts of the consumerization can be divided into two areas. First is the *organizational* level and the second is the impacts on *technology*. On the organizational level speaking, the significance of this phenomenon comes as the users get more control over how they interact with IT resources in a company. Consumerization, however, will both expand the scope of IT, yet also reduce the control over it as the users will increasingly demand the flexibility to use the IT resources they want. As IT becomes more and more flexible, it should be seen as an enabler of the technology innovations in the business. As such it should also be seen as a supporter of the totally new and flexible business models. Consumerization also challenges the companies in the hiring process, as today's graduates will mostly not work for a company, which is not competitive and adapting to the new technology standards. Technology-wise, the security issues become increasingly important as more and more consumer devices enter the companies. This includes managing the web acces and encrypting important data. Consumerization poses also challenges concerning the user authentication since elements such as location, time of the day, user activity, and so on need to be established to accept the authentication. Instead of relying on the static information, the companies will have to implement dynamic processes to analyze the data. (Blount, 2011).

Even though security is an issue, which can generate considerable costs, it should not stop companies from emerging the consumer infrastructure usage. Companies should treat their users as consumers: encourage employees to be responsible, have ownership and trust by providing choice, simplicity and service for them. To fully benefit from consumerization, the companies should acknowledge the blurring line between work hours and personal lives, and provide differentiated employee usage and support models. Those companies, who understand to gain

knowledge in consumerized technologies, and the issues related to them, will have a significant cost and usage advantage. (Moschella et al., 2004).

Wrapping up the consumerization phenomenon

To summarize, consumerization as a phenomenon has existed for years already and is only becoming more evident as the technology continues to develop and digitalization brings along trends such as Internet of Things. Usually consumerization has been seen either as BYOD policy or on a broader scale as a phenomenon of the companies implementing the consumer technologies. Also, consumerization can be understood as the movement of the users becoming more empowered concerning the technology resources within the companies. As the digital natives keep entering the work life, they bring along the expectations of flexibility towards the technology, meaning that they require to use their own devices and that they expect the company to be adaptive and up to date in the technology decisions. Consumerization can be seen as a side phenomenon of the digitalization movement, and it is said to be the result of the massive use of social media, major growth of personal consumer devices for business, and growth of cloud-based services. Consumerization will offer companies new channels to grow, increase efficiency and improve the convenience for the users, yet it brings along certain challenges especially concerning the security, storage, processing and communicating data. Auhtentication of users, for example, has to be changed into a dynamic analysis instead of static. The whole IT infrastructures are affected. There are strategies to benefit from the consumerization yet mostly they are concerning companies with clear structure and IT department. On top of these, consumerization has blurred the lines between the private life and work life, and the work expectations have changed both towards the employers and the employees.

As this chapter has shown, consumerization is often tightly linked to the big companies with IT departments or broadly IT context. Nevertheless, consumerization should also be considered in the knowledge-intensive environment where the actors are either small companies or freelances that provide advisory or consultancy sort of knowledge as a service. I will next discuss my case industry interior design as my case industry, to be able to analyze later in this thesis how consumerization could be seen in the interior design context. In the interior design industry the amount of big companies, and now talking about Finnish context, is only a handful. Most interior designers are still either freelancers or small sized companies with less than 30 employees. The environment is very different from the IT corporations. Nevertheless, if going back to the very beginning of this chapter, I explained consumerization as a phenomenon where enterprises implement the consumer-oriented technology for their professional use. As interior design is welcoming new technologies and new software that are aiming to the consumer market, there is

a possibility that the professional interior designers will find these software helpful for their professional use.

If the interior design professionals start using these consumer-oriented software, then consumerization can be claimed to have happened in the interior design industry.

4. Case Industry: Interior Design

Since interior design as an industry is poorly defined both in practice and in the academia, I will stick to the contextual review, which means that I will approach the industry from several different approaches to build the context of this industry. I will start by discussing the difficulty of defining this industry, and the identity crisis that interior design has been going through already for decades. I will then introduce the evolvement of the industry through the brief glance at its history. From there on I will move towards the current processes and value creation. Towards the end of this chapter I will discuss more profoundly the technological tools and software that have been or will be introduced in the interior design routines. The empirical findings and the analysis of the interviews on the consumerization phenomenon and the interior design software are found in the next chapter.

4.1 Overview on the Interior Design Industry

Interior design is poorly defined as an industry

There is not much literature to define interior design as an industry. Several industries have, however, publications called Body of Knowledge (BoK), which are used to define the activities, terms and concepts of a specific industry. Even though interior design is poorly defined as an industry, it does have a BoK to give certain guidelines. (Anderson, Arch, Honey & Dudek, 2007). BoKs are usually done by some professional associations or industry professionals. BoK of interior design studies the aspects of interior design profession's knowledge areas to determine the importance of separate knowledge areas to the sphere of interiors. BoK is static and reflects the information at the single point in time. However, by writing down even the abstract knowledge, it is easier to communicate about interior design to people within the profession and outside of it. The first study was done in 2001 and has been updated in 2005 (with the newest updates in 2010) by the same authors. The authors completed the BoK study with a "Career Cycle Approach", which represents professional interior designer's full career cycle. By this approach they identified 96 knowledge areas that were divided into six categories, which were further divided into three weighted groups. The weight was given by the importance of the group to the practice of interiors. (Martin & Guerin, 2005). The weighted groups are listed below:

1. **Human Environment Needs**: *Understanding how people interact with their environment and with one another to build a space that fits their characteristics and behavior.*

2. **Interior Construction, Codes, and Regulations**: *Specifications and documentation. Jurisdictional requirements.*

3. **Design**: *Design thinking, implementing design process, aesthetics, design concept.*

4. ***Products and Materials***: *Furnishing, finishes, fixtures and equipment that users experience in the space.*

5. ***Professional Practice***: *Contract administration, project management, accounting, budgeting and other tasks related to the business itself.*

6. ***Communication***: *The tone of collaboration between the parties involved. Oral, written, visual communication.*

Interior design is shadowed by architecture

Interior designers have been trying to define their sphere as a distinct and valued profession for more than fifty years. Interior design is a fractured discipline and some professionals are trying to clarify the specializations to clarify which interior designers are qualified and for what kind of work. The status of interior design to architecture is probably the hardest issue to tackle and has led to conflicts with terms that are borrowed originally from architecture. Examples of the terms are "interior architecture", which can be considered same as interior design or as a separate entity. (Anderson et al., 2007). In the 1930s and 1940s the educational programs and criteria for competency were created to differentiate interior design from interior decoration. To maintain and develop these criteria, several professional organizations such as American Society of Interior Designers (ASID), the Foundation for Interior Design Education and Research (FIDER), and the National Council for Interior Design Qualification (NCIDQ) were created. These organizations created legal definitions and body of knowledge for interior design. Even though this helps to legitimize interior design in curricula and professional life, the organizations have helped only little to battle the question of how not to be a supplement to architecture. Especially in academia, there is an atmosphere of opposition and exclusion between the interior design and architecture. (Havenhand, 2004).

Interior design practice is more than a sum of the components of knowledge. A big part of the profession is tacit knowledge. In ideal, interior design is a combo of rational (explicit) and intuitive (implicit) forms. (Mendoza, 2009). One way of defining interior design is to see it as a distinct design field with specialization on interior space's design requirements such as color, texture, lightning, heating, acoustics, furniture and other details related to the human use. However, interior design has not fully benefitted from the technology. (Senyapili & Bozdag 2011).

Somewhat proper, and even to some extent official, definition for interior design is set by the National Council for Interior Design Qualification (NCIDQ). This is how they define interior design on their official webpage (accessed 2/2015):

> *"Interior design is a multi-faceted profession in which creative and technical solutions are applied within a structure to achieve a built interior environment. These solutions are*

functional, enhance the quality of life and culture of the occupants and are aesthetically attractive. Designs are created in response to and coordinated with the building shell and acknowledge the physical location and social context of the project. Designs must adhere to code and regulatory requirements, and encourage the principles of environmental sustainability. The interior design process follows a systematic and coordinated methodology, including research, analysis and integration of knowledge into the creative process, whereby the needs and resources of the client are satisfied to produce an interior space that fulfills the project goals."

Some state that there is a need for a more flexible BoK for interior design. One that could be easier updated and changed according to the events in real-time. The current BoK is a static set of knowledge and to better utilize the resources from BoK there is a suggestion to create a platform that would allow access, creation, and adding of information dynamically. The platform could resemble Wikipedia for interior design. Even though Wikipedia is not always seen as a reliable reference, it would allow the users to familiarize themselves with the topic and understand whether there is a need for further research. This could be extremely beneficial especially for the students but also for the educators, professionals and their clients or potential clients. However, challenge with an interactive platform is that those who are not comfortable with technology and the Internet will contribute less, yet those people are often the ones that have the longest experience in the industry and thus possess valuable information. (Mendoza, 2009).

4.2 Processes and Value Creation

No commonly used process model

Depending on the source, the interior design process can be described differently. For example NCIDQ webpage (accessed 2/2015) provides pretty detailed interior design process yet they are emphasizing that the project in the end may end up having all the phases or only a limited number of a long list. It shows that there is no certain model which to follow. Anyhow, NCIDQ states in the beginning of the interior design project a *research* phase with an analysis of the goals, requirements, client needs and so on. This is followed by the *preliminary concepts*, including selection of colours, materials, finishes, furniture, fixtures, and actual layouts. These have to meet the general guidelines for accessibility, environment and sustainability. NCIDQ also emphasizes the importance of the *contract documentation* to facilitate the pricing and the procurement. They also have a separate phase of the *project management*, which includes the project timetable and budget preparations. Important in the NCIDQ list is also the *preparation of*

the construction documents including elevations, details, and specifications for all the designs. This is then followed by the *observation and reporting* on the implementation and completion.

Online world is full of Do-It-Yourself guides both for the regular consumers and for the professionals. Online Design Teacher, is focusing on design tutorials from those who practice design as their profession. (Online Design Teacher Webpage). They are also focusing on interior design and share the basics for the process, styles, layouts, materials, and so on. In the figure 4 is shown their suggestion for a 9-step process. This graph is basically guiding the interior designer from the very beginning until the end. Senyapili & Bozdag (2011) conducted a study concerning CAD utilization in different phases of the design process. In their study, the design process was divided into three main phases: conceptual design, project development and presentation phases.
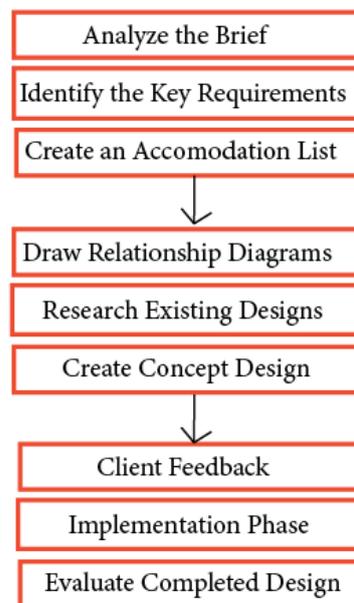
Figure 3 – Interior design process by the Online Design Teacher webpage

Several interior designers specify their own version of the project phases on their webpages yet those are highly individual and based on the individual experience of those particular designers. For example, Sisustusvimma states each step of their project. It starts with a meeting with the client and is followed by a written offer and a design contract that states the brief and the timetable. They also tell directly that all the plans, layout and projections are done using the Auto CAD program, which is computer aided design software. In the last meeting the client gets all the needed documents concerning layouts, projections, fixtures, furniture, materials, pricing and construction. However, Sisustusvimma does not specify further than this. (Sisustusvimma Webpage). I will provide more examples in the empirical findings.

It seems that the interior design work is always in the form of project work. Each project has certain phases and stages that need to be passed after the project has started and before it has ended. Mainly it can be said that any project has from the project management perspectives six main goals to reach. In order to make the project successful all the six goals must be reached and not a single one can be dismissed. (Ramroth, 2006, pp. 22). The goals are following:

1. *Reach the project end*
2. *Reach it within budget*
3. *Reach it on time*
4. *Reach it safely*
5. *Reach it without errors*
6. *Reach it while having met everybody's expectations*

Basically Ramroth (2006, pp.33) is saying that the design process phases move simultaneously with the project management phases. They are visualized in the figure 5.
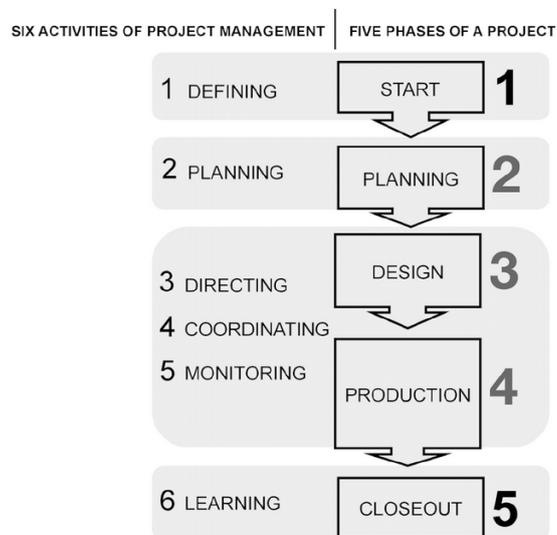
Figure 4 – Six activities and five phases (Ramroth, 2006, pp. 33)

One can easily find similarities between the Ramroth (2006) and the two other examples mentioned above. They all have a start and a planning phase, which then progresses into the design and the production, and end with the implementation. Ramroth's project management version emphasizes on top of these phases the learning part, which is not explicitly stated in the other examples. Basically Ramroth (2006) is providing a simple backbone for any design project and as interior design does not have commonly used models for the process, the general project management scheme can function as a guideline to succeed in the project.

Value creation through an active participation of the clients

The question of what is the value that interior designers provide is almost as tricky as the question of the processes. Each client perceives the value very uniquely yet there are certain elements that can be generalized. Very simple reasons are stated once again depending on the source. One source states that first and foremost, interior designer is needed to make homes nicer. The second reason is that the property has more value if it is well designed. Third, interior designer will create a layout where the space is utilized to the most and thus again this will increase the value of the property. The last reason for interior designer services is that most consumers do not have the skills to do it themselves. (Co-Star Webpage). Hotel Business Review published an article concerning the value that interior designer brings in the hotel industry (Locke, 2015). They describe interior designer as somebody who knows fabrics, lighting, textures and decoration basics, but also architecture, building codes, electrical and HVAC systems (heating, ventilating, and air conditioning). The article says that the interior designers are part artists and part engineers. As the regulations become increasingly demanding, the interior designers have to have the knowledge of a complex process that resembles a real construction work.

Part of the problem of stating the value for the interior design is because it is mainly intangible work. It exists only when the outcome is ready. Furthermore, frequently the judging of the outcome is based on the aesthetics and that is very subjective opinion of an individual. (Piotrowski, 2014). However, the general tendency has been shifting from the tangible goods towards the intangible specialized skills and processes. This is seen in the marketing studies, for example. Vargo & Lusch (2004) present in their article the idea of a fundamental shift from the producer perspective, which is all about the tangible goods, towards the utilization and customer perspective, which is emphasizing the value creation in the services. The whole marketing world has shifted towards service-dominant view. The same article also presents an idea of the operand and operant services. The former, operand, means the resources on which an operation or act is performed and the latter, operant, means the act which is performed on the operand resource. Usually technology has been seen as an operant resource that has had value when utilized on the operand resources to gain lower costs, for example. What the disctinction between the operand and operant resources shows is that in the emerging service centered logic, the customers are seen as an operant resource, which is instead of a passive recipient of goods as an operand resource, an active participator in the value creation. As consumers become more active participators, the dynamics in the service production changes. The consumers are better informed concerning the company offerings and they conduct their own research online. (EU Business innovation observatory, 2014). This shows how much the customers' role has changed from the traditional recipient to an active participator.

The service-centered logic sees consumers as part of the value production and the focus is on continuous processes. Thus the companies, or professionals, can offer value propositions and it is up to the customers to determine the value and to participate in the value creation as co-producers. (Vargo & Lusch, 2004). It is quite evident that the interior designers work very tightly with the customers, and there is interaction between the designer and the customer in several phases as everything is agreed upon together with the customer. If we put the service-oriented logic into the context of interior design, it could be argued that customers are co-producers as the ideation happens together with the designer. Furthermore, as each interior project is so unique, it is up to the customers to determine what they are seeking from the project as the actual value. The service-oriented model puts the customers in the center to receive the service but also to be actively involved in its creation. (Vargo & Lusch, 2004).

One way to divide the services is to address them as enabling and relieving services. In the *relieving* processes the company, or in this case the interior design professionals, provide relatively direct services to the consumer, whereas in the *enabling* processes the company or the professionals provide tools or means to provide the service indirectly. A toaster is used as an example. In the relieving service the toasted bread is provided directly to the consumer, and in the enabling service the consumer is given a toaster to do the bread him or herself. (Vargo & Lusch, 2008). For now, interior design has been seen as a relieving service as the consumers hire an interior designer to do the project for them. However, the question is, whether interior design as an industry will move more towards the enabling service as the consumers have increasingly more tools to design on their own with tablet software and DIY publications and blogs.

4.3 Interior Design and its Digital Tools

CAD software was the first technology revolution in the industry

The credits of developing the world's first interactive computer aided design (CAD, or also somewhere referred as CAAD) software go to Ivan Sutherland. In 1963 he developed a graphics hardware and a program called "Sketchpad" as his Ph.D. dissertation. Sketchpad was a drawing assistant that cleaned the rough drawings by, for example, straightening and connecting lines, and constructing geometric patterns. It took Sutherland eventually six years to develop the technologies that would allow CAD to be a production tool. In 1969, the first commercial CAD program was introduced. By the early 1970s the new CAD companies were founded monthly. The media attention gained by CAD in the 1970s is comparable with the emergence of personal computer in the 80s and multimedia in the 90s. (Eastman, 1990, pp. 35). In the 1980s, CAD software was already rapidly integrated into the interior design profession. Later, in the 1990s,

the interior designers and the educators had integrated CAD not only into 2D usage but also to 3D usage. (Zuo & Malonebeach, 2012).

CAD, modeling and visualization programs eventually seek to replace drawing as much as possible. (Laiserin & Linn, 2000). CAD has enabled the interior designers to articulate their ideas much faster and with more detailed view. By CAD and other similar programs the designers are able to present their vision into a presentable document. Due to the technology the drawings are also shared easier between the co-workers and the clients. (Lyon, Ownbey & Kang, 2009). A similar technological tipping point in the history happened before CAD when blueprint machine was introduced. Suddenly, an unlimited number of drawings were inexpensively and quickly distributed to the contractors and the subcontractors. Communication improved between the parties and standards occurred in the presentation of the drawings. However, this rapid distribution of information represented also a transfer of authority and power from the designer or architect to the contractor. This changed the inter-relations between the parties involved in the design project. (Laiserin & Linn, 2000).

The availability of technology and the change in the types of technology have influenced the interior design profession as, for example, the work performance and production have ameliorated due to the skills in certain technology or software. Technology is changing not only the workload but also the type of work that designers perform on daily basis. Professionals rely on technology as a means to do design implementation, resource generation and data gathering and not only for documentation and presentation anymore. (Lyon et al., 2009). Software and digital tools are used to support and to be part of an integrated approach to building geometry, materials, technical systems and construction. As a result, the emerging technology has introduced new methods and processes that influence the problem-solving process from schematic design throughout to final design implementation phase. (Zuo & MaloneBeach, 2012). Conceptual design phase has traditionally been done using hand-drawing techniques and often CAD software have been incorporated into the latter phases of interior design to transfer the drawings into construction drawings and specification documents, which require high level of accuracy that can be achieved with CAD. (Brandon & McLain-Kark, 2001). With the emergence of computer-aided drawings the presentation phase has become more important both in education and professional market. (Senyapili & Bozdag, 2011).

Interior design is not fully benefitting from today's technology

Even though CAD is in wide usage, it is argued that currently interior design is not fully utilizing the digital opportunities. CAD software are found adequate, yet there is a need for domain specific programs, which could provide photorealistic image rendering, interior design details and

easy transition from 2D to 3D. Most software packages in the interior design sphere are general-purpose packages like CAD, which are originally developed for architecture rather than for interior design. (Senyapili & Bozdag, 2011). Many programs have add-ons - LiveStyles for ArchiCAD and Squiggle for AutoCad – that make the digital drawing look like hand-drawn. With those add-ons, one can make the digital version look like hand drawn sketching or rendering with pencil or marker. (Laiserin & Linn, 2000). Yet, if the user wants to customize the program the responsibility is on them. The number of the individual software packages in the companies is increasing as the interior design companies depend more and more on the digital technologies for their daily operations. However, there are no domain-specific packages that would be widely accepted in the industry. Due to this, some propose software packages for specific tasks. However, there is also an opinion that those students who only learn general-purpose softwares, such as CAD, often face troubles when starting to work in interior architectural companies that use their own customized software packages. (Senyapili & Bozdag, 2011).

As programs and tools evolve, they become more intuitive and resemble more and more the work that is done on paper. (Laiserin & Linn, 2000). Instead of presenting still slides it is important to create simulations that are animated and show how will the space be used when the project is realized. Software packages that have the possibility to simulate, for example, the behavior of sun, wind and rain, or assess the acoustics behavior, or show the lightning quality, will be beneficial in indicating the atmosphere of the space. (Senyapili & Bozdag, 2011). Computers will also help design professionals to rapidly execute complex mathematical calculations and simulations of, for example, daylight, electric-lightning effects, acoustics and energy performance. To be able to analyze the computer simulations, one would still need to be experienced with architecture. (Laiserin & Linn, 2000). Nevertheless, by giving interior design the digital opportunities it could eventually change the way this profession is perceived. Digital tools are better than any other medium in displaying the above-mentioned elements of space. It is even assumed that that the simulations and high-order surfaces will become common practice in interiors education and profession. Contractors, among others, have started producing optimized interiors, which due to the computer aid look professional. Even the clients themselves are becoming capable of producing their own interior design collages through do-it-yourself packages. (Senyapili & Bozdag, 2011).

The industry has a resistant attitude towards the technology

There is a growing worry that the emphasis of teaching more digital tools will eventually lead to the neglect of the fundamentals and a question that bothers professionals is whether efficiency will eventually lead to generic design work. (Laiserin & Linn, 2000). Some directors of the design companies feel that the basic understanding of interior design is lost as the new generation of

the interior designers focuses more on the technical skills rather than the core of design. (Lyon et al., 2009). Design companies should be careful not to let the computers to become the repository of knowledge for standard details and specifications because that would substitute the creative detail development. (Laiserin & Linn, 2000). However, the students of interior design state that CAD had ameliorated their problem solving skills and they have not noticed any weakness in their design competencies due to the technological changes and actually their technical method has allowed them to present the solutions in more details. (Lyon et al., 2009).

The success of trying to integrate technology into the design education is highly dependent on the students' attitudes towards technology. However, one fear towards the technology is that supporting CAD teaching in design education will lead to worse hand drawing skills. (Pektas & Erkip, 2006). It is claimed that students who have CAD skills tend to design mostly on computer and sometimes even at the expense of conceptual and freehand drawing. It is questioned whether they even see paper-based drawing too outdated and unnecessary for today's world. (Meneely & Danko, 2007). Nevertheless, CAD skills are still in high demand in professional life (Laiserin & Linn, 2000; Pektas & Erkip, 2006) and in the employers' expectatons two-dimensional design is not enough; employees also need to be aware of the advanced three-dimensional rendering programs. The ability to draw by hand is expected as well. (Lyon et al., 2009). Especially in the early conceptual design phase when the ideas are still abstract, the traditional hand drawing techniques – sketching, drafting, rendering – are universally applied. However, interior designers intuitively combine those traditional skills with digital techniques. (Zuo & MaloneBeach, 2012). The transition from only hand drawing to an integrated solution that would combine both hand-drawing and digital tools leads to new challenges concerning efficiency, productivity and teamwork in the design process. (Zuo & MaloneBeach, 2012).

Gap between the old school and the tech-savvy newcomers is clearly visible

There is a clear gap between those who have been in the business for ages and the new designers. (Laiserin & Linn, 2000). Taute (2005, in Lyon et al, 2009) claims that it is due to the young designers having more knowledge in the latest software, whereas the older generation is still using pencils and sketchbooks. This means that the young designers might become the pioneers of the new methods of interior design. (Lyon et al., 2009). It can be claimed that much of the miscommunication between the groups is because of the loss of hand drawing as a common medium. As more architects and designers graduate with the knowledge of the digital tools, the gap that exists now between the seniors and the juniors will eventually disappear. (Laiserin & Linn, 2000).

4.4 Emergence of the new Interior Design Software

Interior design industry is seeing an evolvement of multiple new software and tools that will allow the consumers without any professional background to design spaces with intuitive and easy-to-use platforms. Even the term "interior design software" is not commonly used, nor is there any other substitute term to describe the new software in the interior design industry; there are as many terms as there are companies. Some prefer calling themselves "interior playground" or "interior platform". Many prefer names that do not indicate only the specifics of interior design, such as "3D platform". In this research I talk about interior design software and that term functions as an umbrella term to the software that are aiming to the interior design market with features that enable to visualize the content of interior design projects.

Development towards the 3D world

3D has affected several industries and the big players in the global markets are showing the tendency towards 3D world. In 2014, Facebook acquires Oculus Rift for 2 billion US dollars. Oculus Rift is a virtual reality headset that combined with social media could reinvent how people communicate. (Techcrunch, 7/2014). Ebay acquired Phisix – a virtual fitting room – also in the beginning of the 2014. (Techcrunch, 2/2014). It tells something as the big players in the social media and e-commerce start acquiring 3D technology driven companies. 3D goggles have been a noticeable trend as several companies launch their products. Epson has their own smart glasses called Moverio that aim to set a new standard for Augmented Reality (Epson Official Webpage), and Samsung recently launched Virtual Reality Innovator Edition (that is though powered by Oculus as well). (Oculus Official Webpage). Sony is aiming to have profit with their own Virtual Reality headset called Morpheus. (The Wall Street Journal, 9/2014). In the beginning of the 2015, Microsoft launched their product –HoloLens - a holographic headset that mixes real world with the digital one. (Techcrunch, 1/2015). Google glasses are not directly specifying to be 3D glasses, yet they fall in the same category of the wearable technology that visualizes the content in a headset so one can directly see the virtual reality layer. Even though there are studies that show that 3D could save money it is still claimed that its potential is not fully utilized. Especially the industrial professionals need more proof of the cost-efficiency. (Westerdahl, Suneson, Wernemyr, Roupé, Johansson & Allwood, 2005).

Augmented Reality (AR) is *supplementing* our real reality

There are few emerging technologies that should be mentioned. First is Augmented Reality (AR). Augmented Reality uses information in form of text, graphics, audio, and other virtual elements integrated with elements of the real world. Usually the Augmented Reality elements are presented with display or projected onto something. (Gartner Hype Cycle for Emerging

Technologies, 2014). Augmented reality has been studied only for a decade or so yet its growth and progress has been highly remarkable in the past few years. AR technology has been considered as a new approach in architecture and also in interior design specifically. In the case of the latter, interior designers apply the three basic principles – color, scale, proportion – within a predefined environment. AR gives the users flexibility within these three principles. In the augmented reality environment the design work can be more lively, convenient and intelligent. (Choo, Heo & Kang, 2009). Brands, retailers and manufacturers have been interested in the AR technology to adopt in their business processes as they can combine their physical campaigns with their digital assets. (Gartner Hype Cycle for Emerging Technologies, 2014). AR has been considered as a new design approach also for the interior design sphere. With the help of AR technology, the users can have an interactive experience with both virtual and real-world environment in a combination, as AR overlays the computer graphics into the real world. Typically AR applications include data glasses connected to a computer and tracking markers on the floors and walls to define the scale and coordination in the space. (Choo et al., 2009).

Virtual Reality (VR) is *substituting* our real reality

Another much discussed technology is called Virtual Reality (VR), which is fully computer-generated 3D environment. (Gartner Hype Cycle for Emerging Technologies, 2014). It allows planning, creating and testing the environments before the actual construction as it allows simulations of the existing environments, furnishing and architectural components in a three-dimensional environment. The observer of such a simulation can move head, eyes and body inside the program to explore the simulation better, and the observer can decide the scale of the simulation and manipulate the objects inside of it without any additional drawings. VR gives an understandable and realistic view, whereas the traditional presentation methods such as elevations or perspective views do not allow the observer to estimate the distance at which an object or person is positioned in the space, or in a relation to other objects. (Lindsey & McLain-Kark, 1998). VR technology has evolved from being very expensive and implementable only on the supercomputers by the experts to a technique that is affordable even for the small companies and may be used also by the non-professionals. (Westerdahl et al., 2005). For example, the designers can cooperate with their clients in the configuration of the space in the virtual environment. They can move virtually the machinery, office equipment and wall systems. Experimentation with colors, textures and lighting is also possible in VR. Virtual reality is a valuable technology that allows evaluating how certain changes in the environment will affect the appearance and function. The simulation may be changed and re-evaluated without having to do any costly changes in the existing environment. Especially those clients who are not experienced with the construction and design documentation can value the solutions viewed through VR. (Lindsey & McLain-Kark, 1998). To clarify the difference between AR and VR,

Augmented Reality aims to ameliorate the interaction between the user and the real world, whereas Virtual Reality is separating the virtual and real realities. (Gartner Hype Cycle for Emerging Technologies, 2014).

As the hype around the technology has calmed down, the companies have been able to see beyond the wow effect and see how the technology could really provide value to the business. So far the challenges with Augmented Reality have been that the solutions do not actually provide more value – they just act as gimmicky tricks to create the wow effect. Gartner's Hype Curves, which indicate in a graph the evolvement of a technology from hype to commercially viable option, show that VR is much further than AR. (See figure 6). It is even said that Virtual Reality might actually take of in 2015. However, before that happens, major technological and usability-related changes must happen, and the requirement is to do it with lower costs than at the moment. With the growing interest in 3D glasses and projections that do not even require glasses, there is a risk that Virtual Reality will be a small niche. (Gartner Hype Cycle for Emerging Technologies, 2014).
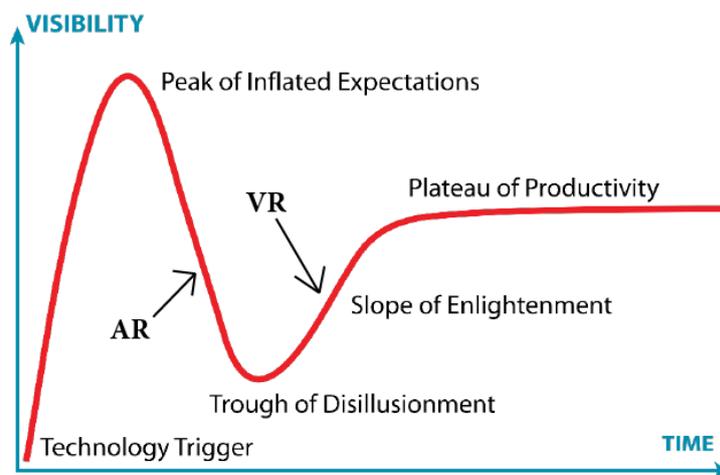
Figure 5 – Hype Cycle for Emerging Technologies 2014 (Gartner Reports)

The emerging interior design software are disrupting the balance of the industry

The near future of interior design might look very different, as there will be radical changes in how interior design is done due to the new smartphone applications and digital surfaces. Digital world will enable not only the drawing of a dream house in an application but also the tendency of personalization as, for example, the rooms will know what color and what brightness should the lamps be once the user enters. (Architizer, 8/2013). Interior design software can even be discussed in the context of Internet of Things as the forecasts suggest that smart lighting would become key trend in the IoT. (Pye, 2014). Companies such as Philips are already offering solutions for smart lighting. (See e.g. Architizer, 1/2015). Ikea has been a very good example of opening the 3D planning tools in the furnishing business into the wide usage of the consumers. Their

introduction to these tools is: "*Become your own interior designer with the help of the IKEA Planner Tools. -- View it in 3D and print with all the measurements, just like an architect*" (Ikea Official Webpage). There are several other companies that are already doing the same. Lundia has their own 3D software (see Lundia Official Webpage) and Isku as well (see Isku Official Webpage). Also construction companies are welcoming 3D design tools as, for example, YIT partners with Intelle Innovations, a 3D visualizing company, to offer finalized views from the buildings that are still not built. (Intelle Official Webpage).

There are examples both in Europe and overseas. *Houzz.com* is a well-known application in the US market. Houzz functions as an inspirational space for the end-users to collect the ideas on others' collages and also a platform where the users can search for the interior designers. Thus, the interior designers, constructors and architects can use the software to function as their visual CV as well. It is also linked to the e-commerce and allows purchasing the items directly online. (Houzz Official Webpage). In Sweden, a fast-developing software provider is Amagumo Games with their product *Neybers*. They call themselves interior design playground that allows users to decorate and share their creations. It is software for anyone interested in interior design. It was also founded just few years back in 2012. (Neybers Official Webpage). Autodesk, that is one of the leading CAD programs, has also their own lighter version of the interior design tool called *Homestyler*. (Homestyler Official Webpage). Autodesk has usually been perceived as a tool for the professional use so their Homestyler might be oriented as a lighter version for the interior design enthuasiasts. For this thesis I have picked three Finnish companies to function as examples of interior design software providers. The companies are *Intelle Innovations, Sayduck Ltd,* and *VividWorks*. They currently do business with furnishing and construction companies, and they are all aiming to the interior design segment, thus they have all approved the term "interior design software" to function as umbrella in this thesis. Their main purpose is to visualize the products or the spaces and allow the users to modify the elements in the software. Visualizing the content can strengthen the purchasing decision of a consumers and that is what these software aim to do – sell more products. The companies are not specifying whether they sell to the non-professional or professional users. (See official webpages of Intelle, Sayduck, and VividWorks). More detailed descriptions of these three companies that I am interviewing can be found in the Appendix.

Theories concerning the industry disruptors explain the situation

Emergence of the high-performance consumer technologies and networks can be seen as a classical case from Clayton Christensen's Innovator's Dilemma. He has claimed that the first new technologies are seen as a toy or a joke, then they become threat and only later they become obvious. He has labeled these cases as "disruptive technology". As the new technology emerges,

it usually brings shortcomings such as performance, reliability and security that make it challenging for the business environments. Thus, corporates are not significantly affected by the technology. However, if this new technology consistently improves and at a faster pace than the previous technologies, it will eventually exceed the capabilities of the older technologies. Even though this might take years, those companies who ride with the disruptive innovation from early on tend to go through the learning curve successfully while others face a major adjustment later on. However, the learning from Christensen is that companies should beware of focusing only on the shortcomings of the emerging technologies. (Moschella et al., 2004).

Burgelman & Grove (2007) continue the idea of the industry disruption by introducing in their article two models on the industry disruption, first the Schumpeterian case, and then their own cross-boundary disruptor case. Most of the time, the companies have certain dynamics within an industry and they usually proceed with somewhat linear strategic decisions, which are easy to understand. Christensen's disruptive technology, among few others, has re-awakened the interest in the Schumpeterian entrepreneurial model. Schumpeterian entrepreneur is a new-comer in the industry, usually a startup, who brings into the industry non-linear strategic dynamics. While succeeding with the non-linear strategic choices, the Schumpeterian entrepreneur creates *positive feedback loops* as a result of their interaction with other players in the industry. (See figure 7). With the positive feedback loops, the Schmpeterian company is able to change the dynamics within an industry by forcing the other companies to either adapt to the new rules, or exit the industry. Schumpeterian companies, thus, are able to radically change the industry structures.
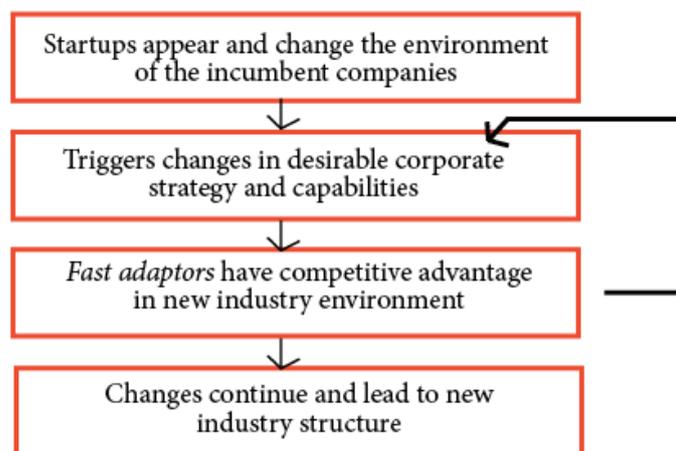
Figure 6 - Schumpeterian case of an industry change (Burgelman & Grove, 2007)

Nevertheless, Schumpeterian companies are disrupting the *intra*-industry dynamics, whereas in today's world, which is driven by the collision of the different industries and digitzation, it is important to discuss also the *inter*-industry disruptions. This is why Burgelman & Grove (2007) propose a cross-boundary disruptor (XBD) model. Cross-boundary disruptors are companies,

which affect also the neighboring industries. In the XBD case, the first efforts are also usually from a startup that enters an industry and changes its conditons. Though, in the XBD case, the startups trigger a defensive reaction in the industry incumbents leading to the startups' failure. The efforts from the startups signal a possible opportunity to a possible XBD. The XBDs change the existing viable strategies of the leading companies, as well as the barriers and boundaries to enter the market. This all results into a new mix of XBDs and leading companies that adapted to the industry change. These actors together become a *force multiplier*, which supports the change process until the new boundaries are set for that specific industry. (See figure 8). The article uses Apple as an example of a XBD company within the music industry, as Steve Jobs strategically recognized an opportunity to create their own iPod and iTunes digital music services right after Napster, a free peer-to-peer file-sharing company, had tried to disrupt it and failed. In the Apple's case, there were few factors that made them a successful XBD. First factor was that the music industry was already in decline with business models that were increasingly unpopular, and the second factor was the resistance to the new business models that were already possible due to the new digitization possibilities. Also, the industry was weakened by multiple startups that had tried to enter the market, and this resulted into a situation where the industry was finally ready to negotiate. (Burgelman & Grove, 2007).
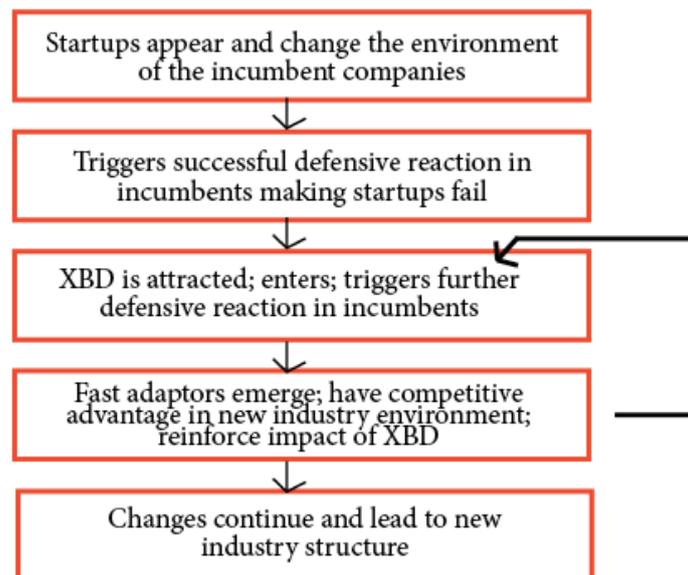
Figure 7 – Cross-boundary disruptor case of an industry change (Burgelman & Grove, 2007)

The difference between Chistensen's Innovator's Dilemma and XBD model is that the first model identifies reasons why top leaders or incumbent companies fail to capitalize the disruptive technologies, whereas the latter focuses on the failure to recognize those XBD opportunities in the first place. (Burgelman & Grove, 2007).

Boldness and perseverance are key elements on top of the strategic recognition of an opportunity to become a XBD. (Burgelman & Grove, 2007). As these new interior design software are entering the interior design market, they can be considered as entering a market that is more of a neighboring industry rather than their primary industry, which means that they are affecting on an *inter*-level. However, it raises questions whether these new interior design software will become XBDs of the interior design market or will they fail trying, and allow other players to become the XBDs. These software companies are proposing to the industry new tools, new technologies and new routines. As the new-comers, they have a good basis to become the disruptive actors, yet it is also up to the industry incumbents to adapt to these changes.

5. Empirical Findings

By now it should be clear that consumerization is the overall phenomenon and interior design is one example of the industries that are affected by it. I have discussed both topics individually and also shown what is the link between them. This chapter will bring the practical knowledge on top of the literature review. My main research method is the semi-structured in-depth interviews. The mini-interviews are supplementing the Porter's five forces framework from the consumer perspective. They are, however, only a small sample to show the general perception of the potential consumers towards the interior design software.

The in-depth interviews were divided into three categories – Interior design software companies, interior design professionals, and the furniture companies. Each of the three categories had a set of questions with different emphasis yet the same thematic topics. In my analysis, I will follow the same order as in the interviews. I will first evaluate how interior design is defined at the moment, and what are the processes it consists of, including the value creation within the processes. Second, I will introduce the findings concerning the new interior design software and how are they perceived in the industry. From there, I will move to the bigger picture and explain how consumerization is seen in the interior design context and whether it is recognized at all yet. Last, I will introduce the evolving technological trends that are affecting interior design. It is agreed with the interviewees that their real names can be used in this research. My core research question remains: "***How will consumerization change the interior design industry?***"

5.1 Interior Design Process & Value Creation

Defining interior design with the interior designers

Already before moving to the empirical findings, the literature review had shown that there are only few proper definitions concerning interior design as an industry. This industry lacks especially the academic literature. There are multiple Do It Yourself (DIY) books and websites, and this world is full of decorating magazines. When discussing interior design it sounds obvious to us what it means, yet I am now convinced that even though we think we know what it is, it is actually very difficult to articulate it clearly.

Even on the practical level, the defining part does not get any easier. Interior design seems to be extremely difficult to define. I do not remember hearing even one interviewee, regardless of the category, to be able to give a clear and commonly used definition. For example, Kaisa Blomstedt, an interior architect from Studio Kaisa B, with long career in interior design, admits that it is a very obvious question yet how exactly to define it, is not obvious. She does not give a direct

answer, yet emphasizes that interior design is very important and much needed. For her, interior design is more about how the space feels. She also states that interior design is always done according to somebody's needs and that is why it is so difficult to compare the projects, as they are always unique.

Päivihelena Hallanoro, an interior architect from Isku Interior, used an example of a cake when discussing what interior design is about:

> "Interior design is about taking control of the space, while taking into consideration what is the function of that particular space. It is about finding optimal solutions for the space, the activities and the function. Interior design consists of the structural level, joinery fixtures, the products themselves, atmospheres, and small details. It is like a giant cake of layers that you need to control."

Some interviewees, such as interior architect Vertti Kivi, see interior design at a very abstract level:

> "Which ever item in which ever space. You could go under a blanket and notice that some sort of space has been formed. It's like in music, it can be one sound or even a pause."

When asking what kind of professional requirements are needed for the interior design sphere, there are also mixed answers on what are the most important elements. Some emphasize the educational factor saying that a true interior architect can only be the person who is educated to be an interior architect. Others would emphasize that it is extremely important to have knowledge from other spheres as well, for example, from construction. Kaisa Blomstedt puts it well:

> "We define the visible surfaces and the professional knowledge is knowing how to install or attach those surfaces, and how much time, energy or money does it take to implement the surfaces."

Kaisa also emphasizes the importance of diplomatically listening to the client and having excellent relationships with the workers and constructors. She teaches interior design at the Helsinki Design School and in her own course, she spends one full day on discussion concerning the relationship between the designers and the constructors.

Marko Paananen, a well-experienced interior architect, also emphasizes that there are as many definitions as there are designers. In his opinion, for the interior design sphere one needs to be systematic, creative, excited, intellectual, and have everything that is taught in school. On top of these he emphasizes that one needs the ability to see spaces in a three-dimensional vision.

However, if for some reason the designer is not able to see the spaces in 3D it is just a matter of finding the tools that help to see the space in 3D. The designers need to have systematic tools to fix the abilities that they lack as designers, according to Marko. This goes very well along with the mindset that Vertti Kivi practices for the interior design saying that a lazy designer will not succeed. Also Päivihelena Hallanoro from Isku Interior agrees with Marko's opinion concerning the three-dimensional vision and adds on that the importance of understanding what is realistic and possible to do in the space. She also reminds that a good designer will stick to the budget while accomplishing the end-result that corresponds with the client's wishes.

Concerning the interior design as a profession, Marko Paananen points out that there will probably always be demand for the services of an interior designer:

> "If the gap between incomes grows bigger, it is somehow even positive for the interior designers as the wealthy people usually use the services of the interior designers. Vice versa, if the income gap gets smaller, then there will be more people with money to be used. So in both situations, interior design services will most probably be used."

To wrap up, interior design seems to be difficult to define even in practice. Interior designers are able to explain interior design in own words, yet it becomes challenging for the software providers as they are not directly involved with the interior design as a profession. The software companies see the interior design as an industry in change and from the perspective of the technological changes. Thus, when reading about the interior design industry having an identity crisis, I kind of see that the challenge of defining the industry does not make it any easier to find an identity. Regarding the professional know-how, the interior designers in my interviews strongly emphasize the ability to see the spaces in three-dimensional vision.

The interior design processes are highly individual

The process of interior design is very different depending on whether the interior design project is to do with a private home or public company. Many interviewees pointed this out from the very beginning and emphasized that it is not only about the practicalities in the process, but these two also differ in their approaches on a more philosophical level. For example, interior architect Marko Paananen was educated to design public spaces, yet his whole career he has worked in the private domain, thus he claims that he would not even know how to do public projects even though he was educated to do them. Kaisa Blomstedt has a two-day-program in her course only to define the processes of interior design. Once I asked her during the interview to define me the process of interior design, she laughed kindly that I should take her class and maybe, only maybe, after those two days I will know more about this.

When starting the project, whether it is private or public, the process can start either by the client finding the designer reactively or the designer him or herself approaching the client proactively. Päivihelena Hallanoro says that in the public projects, the situation can be both ways, whereas Marko Paananen says that the dynamics of the private project changes a lot if he is the one who contacts the client. Whichever way, the interior designers I interviewed said that usually the project starts with a call.

None of the interviewees could give an exact description of how does interior design process look like. Several of the interviewees emphasized that the answer they give is theoretical and that in reality it goes differently. They also emphasized that each client is an individual case and there is no pre-set formula on how to manage an interior design project. Marko Paananen described the process of an average project this way:

> "We meet, we sign the contract, we discuss the timetable for the payments, timetable for the project, and the possible concerns towards the project, for example if I notice that the client is overly optimistic. Then I start doing the draft for the object. I do 6 to 7 out of which I show 2 to 3 to the client. I was educated to draw with CAD but I draw by hand."

Kaisa Blomstedt gave me rough estimates for the interior design project phases. She said that around a month for the design phase, few weeks for the construction budget, and two to three months for the actual construction. So all together almost four to six months a project. During that time the designer is taking care of all the project management and communication with the client.

Päivihelena Hallanoro also explained to me the regular interior design project with the public clients. She explains that the first contact can be either reactive or proactive, meaning that the communication can start from the client or as a sales call from the Isku Interior directly. She says that usually the project starts with her going to see the potential space and discussing with the client what they want, what is the function of the space, what is the purpose with the new design, and so on. This is followed by first layout options and these can already include potential products as the sales happen by creating visualizations to the clients. In the public projects, Päivihelena goes to the company and interviews the employees to understand more strategically what the function of the space is and what people want from it. Each person's work place is located in the actual floor plan and all the decisions concerning products, materials and lighting are discussed with the client before the implementation. Vertti Kivi explains the process very similarly saying that the client explains what kind of problems they have, hopefully accepts the offer and after the first ideation the designers do sketches to discuss with the client. Also floor plan, materials, colours, lighting, and furniture choices are presented. After these are accepted,

some computer-aided designs will be produced, if it is required, and this will be followed by a separate technical package to the constructors. Vertti claims that the process is the same both in home and public projects.

I attended a course in the Aalto School of Arts, Design and Architecture, and their Space in Practice course had divided the interior design process into six separate phases that are progressing simultaneously during the project. It was emphasized that the process is not linear and discussing with the students in the spatial department only confirmed that usually there is no official process that is given to them during the courses. According to the university teaching the first step is to do the *background research and analysis*. This includes studying properly the regulations, understanding the context, and paying attention to the functions. The second phase is *understanding the client needs*, which means doing interviews and proper discussions with the client to have an idea where to lead the project. The third phase is *finding inspiration and references* of the similar projects and context. This is followed by the fourth phase, which is *preliminary concept with preliminary drafts* to discuss with the client. The fifth phase is all about constructing the *working plans* for the construction site when the project gets built. The last phase of interior designing by this course is *presenting the actual budget and final concept* to the client to be able to verify the choices and proceed with the work. This course has thus shown that the phases are more as practical milestones rather than linear steps to follow, and everything happens simultaneously without clear borders in between.

To capture the essential, there are clearly some phases in the interior design process that are referred to in the literature, and were visible also in the interior design course I had a chance to participate in. I discussed the processes of interior design with all my interviewees and I expected precise answers from the interior designers that are trained to do interior design projects. After discussing with the four interior designers, I understand that all of them have different approaches to the projects and processes. Nevertheless, even though the process seems to be different with each individual case, there are certain phases that do happen during the project. To summarize what phases are in the interior design process after analyzing the empirical finding and what is presented in the literature I would state these are the phases each project will go through:

1. *First contact either proactively from the interior designer or reactively from the customer*
2. *Getting to know the project either by visiting the site or through a phone interview*
3. *Making an offer*
4. *Showing and approving sketches and options for layout, materials, lighting, furnishing*
5. *Drawing a separate technical package for the constructor*
6. *Implementation & Reporting*

Value is created in the eyes of the clients

Every interior design professional I interviewed kept bringing up that of course the most valuable aspect for the client is the end result. As Kaisa Blomstedt states:

> *"Value for the client is only the last 10% of the work. Everything else is not that important; it is the end result that matters to the client the most"*

By saying so she emphasizes that before reaching the 10% of the final design there is the 90% of the work related to everything before that. Vertti Kivi claims that it is the vision that they sell to the client. Of course this includes the execution part as well. Marko Paananen emphasizes that when buying an interior design project, the client wishes to have a less-painful process of the interior design project. He commented:

> *"Even the rich client doesn't want to go through the process of buying one sofa, buying a second sofa, buying a third, and not getting it right. They rather pay the interior designer to do that for them. Though this is in the ideal situation."*

None of the designers pointed out the importance of technology during the value creation. However, as Vertti Kivi states, they use computer-aided design as a sales tool so whenever they are not sure on the sales, they will produce a gorgeous computer design that will attract the client to buy the project. Technical drawings are crucial part of the interior design process, especially when something goes to the construction, however, that is not directly the value to the client, as the technical drawings done with the computer are more of a tool to get from the start point to the vision.

Kaisa Blomstedt strongly believes in the user-centered design and aims to design always for the people who use the space in question. There is a big group of people who will not like the design and it is important to remember that the value is in the eyes of the owner. A slightly different approach to the value of interior design is from Päivihelena Hallanoro. She sees that the value to the client is when the space is functional, durable and cozy. Marko Paananen sees the value of the interior design in better chances to succeed and with faster results than if the project was done on your own. Home is considered very important and the project might be too big to handle alone. Paying an interior designer, in his opinion, has also to do with the use of your own time and effort. He gives an example:

> *"Some prefer having a chef simply because they do not like or want to cook themselves".*

To summarize, the value creation in the interior design projects can also be seen from several perspectives. Most would emphasize that obviously it is the end result that matters most. Others would approach it from the perspective of receiving a design that is durable, functional and cosy.

All in all, the value in the interior design projects comes from delivering great end result while keeping the process easy for the client.

5.2 Perceptions on Interior Design Software

Interior design software is a term I have created to function as an umbrella for all the those software providers that are providing easy-to-use and intuitive interior design platforms that could open the consumer market as never before. This is not a commonly used term as the companies usually call themselves anything from "virtual room", "augmented reality software", "3D platform" to a similar term that is not always self-explanatory. In my interviews I use the term interior design software and I explain it to my interviewees as I have done it in the introduction chapter.

Interior designers' perspective

My purpose in the interviews was to understand how the interior designers perceive these software and do they utilize their potential, or consider them as threats, or do they simply not care about these new software. Already in the literature review I pointed out to the discussion concerning the gap between the old school hand drawing generation and the new generation of more tech-savvy designers who will potentially lead the industry towards more digital processes. Kaisa Blomstedt, who has been in the interior design industry for 40 years, states directly that she is still in the old school group, which prefers hand drawing. She says she draws all the sketches by hand and claims that for the client it feels easier to change the content in the sketches when they still look like draft versions. Kaisa also says that the computer-aided pictures look too "finished" and customers perceive them as a design that has been decided. Furthermore, Kaisa continues that customers do not always understand the CAD drawings and it is usually easier for them to understand and visualize the content when it is hand-drawn. Also Marko Paananen claims that his hand drawings are always easier for the client to understand rather than the technical drawings. This makes me question why hand drawing is compared with the technical CAD drawings, which for sure are difficult to understand without previous knowledge in that sphere. Maybe the comparison should not be between the technical drawings and hand drawing but rather, for example, hand drawings and interior design visualization software.

Many furniture factories or suppliers already have 3D renders online so the designers can directly download the pictures from the suppliers' webpages and use them in their drawings without the modeling process of several hours. Kaisa Blomstedt says that she expects everybody to know how to use CAD programs but she also realizes that learning to draw 3D and keep using the 3D modeling is still very time-consuming and difficult. This also means that the 3D pictures as a

result are very expensive, since doing them properly takes more than just few hours. Kaisa's studio uses the so-called "half-3D" software. For the 3D visualization she draws by hand the perspectives of the space. She says that the whole drawing with colours and actual products takes her an hour whereas the 3D modeling would take her a day.

Some of the interviewees pointed out that few interior designers already do virtual co-designing with the client. Kaisa Blomstedt says that virtual help is extremely beneficial and will bring amazing opportunities. Though, she has never done it herself and says that does not see the point in learning it anymore. Anyhow, she eplains that some designers already design the space virtually and as they speak with the client they can together – the designer and the client - change the elements in the design.

Concerning the interior design software of today, Marko Paananen criticizes that the interior design software are unable to understand the client needs well enough, and the programs he has seen so far change the outcome too much. He still believes that in theory he could build software for the interior design projects, yet it would still be about yes-or-no answers for all the questions that need an answer in the interior design project. Thus, would it really be easier for the client if they had the 6000 questions to answer on their own? Marko believes the easiness of a software turns against the user when the user needs to do too many decisions on their own.

Marko Paananen reminds that it is important to understand that CAD did not change the interior design, it changed the tools. Also, Vertti Kivi reminds that it is the means and the way to present that has changed, not the core. Nevertheless, the designers seem to already benefit from these software when they are used for example in the kitchen planning. Kaisa Blomstedt says that it does make her design process easier when the kitchen suppliers can make the design into 3D or axonometric projections:

> "It is extremely useful tool and there is no point for me to draw the kitchen with software when the kitchen providers are willing to do it as a free service. With the drawings I also get all the measurements and offers."

The interior design software are also seen to ameliorate the interior design process in the communication towards the client. As Marko Paanenen says:

> "I never feel the need to see it, usually by closing my eyes I can visualize the outcome in my head. Sometimes I even get frustrated that the clients want to see the end result in 3D picture. No, they don't, they need to trust me. Yet, yes, it could help."

Marko also wants to add concerning the interior design software:

> "Think of an online dating. It helps to start the dating but it doesn't make the actual dating any easier".

Vertti Kivi admits that they use proper 3D modeled pictures for those clients who still need the proof to buy. It sounds to me that it would be beneficial, if these 3D model pictures could be done easier, for example on the interior design software. However, several interior designers seem to be hesitant on the new interior design software. The designers do not trust that the programs will give them the exact and precise measurements. This is noticeable, for example, in Päivihelena Hallanoro's talk. Also a student from Aalto School of Arts, Design and Acrhitecture, Mari Sollman, says that for visualizing SketchUp and similar visualization programs are fine yet if something goes to production, it has to be precise till the last millimeter. Furthermore, the designers point out that at the moment the software do not have enough of variety content-wise and that is why the designs are in a way "limited" as one cannot design new products to supplement the basic library. Maybe an option would be that the consumer version has a certain library of products and the interior designers would get a premium package, which would give them an opportunity to design on their own. This was an idea from Päivihelena Hallanoro who said it would be very beneficial if the designers could design and draw on these software the furniture, for example. This would also add a variety to the content and make the designers avoid the problem of having too small library of products.

To summarize, so far, 3D modeling has taken a lot of time and energy, making the end result too expensive for the client. That is probably a big reason why many designers prefer drawing the pictures by hand as there simply is no software, at least what they would be aware of, that would do the modeling for them in a similar amount of time as the hand drawing. Basically, till this moment hand drawing has been cheaper than the 3D modeling on the computers.

Software producers' perspective

Interior design software providers consider their product from a much more technical perspective and also they believe in it strongly as it is their vision to make their product or service widely used. Several interior design software companies have background in 3D from the gaming world. They have noticed that 3D has potential in the other industries, such as furniture retailing and interior design, as well. The interior design software providers that I have interviewed for my thesis are not stating that they are targeting the interior design industry as such, as mainly they work with the furniture suppliers or as Intelle Innovation, with construction companies. However, they are all admitting that interior design as an industry is something that is either part of their business or as a potential industry. For now, for example, VividWorks is focusing on the furniture retailers, producers and manufacturers, where they functions as a visual surface linked to the e-commerce and sales programs of their clients. For VividWorks, interior design is just one possible business area. As Jorma Palo, Chief Operating Officer (COO) of VividWorks says:

"Our main focus is to sell the product and one area is to show how to use that particular product in the interior design."

The main purpose of these software has been to be a tool for sales. Mikko Martikainen, CEO of Sayduck, says that they have certain consumer focus and certain focus to sell the products yet the shopping is not always the main focus, it might be that the end-user uses the app only for visualizing and ideation. Also Jorma Palo, COO from VividWorks, emphasizes that they are a tool to do purchasing decisions based on the visual information. Jarkko Hämäläinen, CEO of Intelle, believes in "3D designing" and says that consumers have never before had a stylish program which would be easy to use and with wide enough library. These kind of software, according to Jarkko, are probably the first of a kind when talking about "what you see is what you get" approach. Interior design as such has become more popular and as Mikko Martikainen, CEO from Sayduck says, the Internet has allowed more content and with easier access. According to him, this has allowed people to want and demand more, and as the standards of life get better, there is more money to spend.

It seems that many of the interior design software are not specifically defining who the end-user of these software is: a professional or a non-professional user. Some prefer segmenting their users by the age or usage. For example, Sayduck's CEO, Mikko Martikainen, says that one of the challenges is that the most common segment to use their software is women 35-50 years old who have the money to spend and love reading the interior design magazines. However, he continues, this segment is also very challenging for adoption of the new technologies. Thus, the challenge is to make people download the app and then also know how to use it. Also, Jorma Palo from VividWorks says that mainly their customers are those non-professional but some of the users are professional interior designers as well. Intelle's CEO, Jarkko Hämäläinen, told me that every time he presents their software to an interior designer they get excited and give him comments like "I wish we had this" or "very visual, I can move inside and experience the space". He also told me that there are already few high-end interior designers that utilize this kind of software to present to their clients the outcome before it is even built. However, these designers have built the software they use for their private use with their own money.

There are apparently still no clear business models for the interior design software companies concerning the partnership with the professional interior designers. The software are free-to-use for the end-users and the direct clients, for now, are based on the business-to-business (B2B) partnerships with the furniture suppliers or construction companies. In both cases, the clients of the software are selling their products or services with the visual help of the software to their own end-users. Thus, the business chain is basically business-to-business-to-consumer (B2B2C).

Furthermore, mainly the business models of the interior design software are based on the licence costs from the B2B side, and the end-users get to use these software for free. Nevertheless, the license costs make it difficult for the furniture companies, or other clients of these software, to try different software. As Lundia's CEO Michaela Von Wendt says:

> *"It's quite expensive now. We'd need to sell thousands of products to cover the registration and licence costs. Our program is so expensive that we can't afford several programs. That binds you and kills the natural competition."*

All the software providers recognize an upcoming change in the interior design industry. Vividworks already has tools such as 3D floor planning that shows the surface materials, for example, which could be very beneficial for the professional interior designers. They are already testing with a group of interior designers a pilot to understand what kind of tools and means they need to provide for the interior designers so they could use these software as a professional tool. Jorma Palo, COO of Viviworks, says that instead of drawing by hand or having a specialist do the CAD renders, which ends up being time-consuming and expensive, one suddenly has the opportunities to present immediately and visually the results with these software. Jorma continues that the interior design software nowadays can be used online in real time, and instead of drawing on CAD, the designers can design directly on the tablet software. These software allow much faster communication of the designer's vision to the client. They aim to teach the interior designer how to use the interior design software as a supplementing element in the interior design process. From the technology perspective, these software are already able to provide the tools. Now it is a question of which tools are needed for the professional use. For example, the crucial feature of integration with the furniture companies' own production and warehouse systems is probably not needed for the designers. Jorma adds:

> *"The next plug-in is that you can take a picture of the space and drop the product into that authentic environment in real time."*

Some believe that technology has not changed much in the context of interior design. As Mikko Martikainen says:

> *"Everything done by computer has become easier, for example the gathering of a moodboard or visualizing in 3D. However, I do believe that interior design is very visual whereas 3D programs are very technical".*

Mikko also pointed out that interior design in his experience has felt very resistant towards the change, which complicates the advancement of the technology in the industry. He believes that people are scared that the technology will somehow eat their expertise.

Others believe that the technology has changed a whole lot in the interior design industry. For example Jarkko Hämäläinen, CEO of Intelle, believes that the technology has allowed a second revolution in the interior design industry. The interior design software have allowed the non-professional consumers to do the design on their own. Also, as e-commerce has changed the habit of going to buy a sofa from a large warehouse, so will 3D design change the way consumers practice interior design on their own online. Jarkko continues:

> "Probably Ikea's decision to release the 3D assets will push the other companies to do the same and the process in the future will be that one does not need to be present physically, as they can design online, and have the delivery their way, and with their timetable, to the place they want. This will resemble a lot the e-commerce value chain".

Both interior designers and the software providers recognize two very different interior design markets: one in the US and one in Europe. Several of my interviewees emphasized that there are major differences in the behavior in Finland and in the US concerning interior design. For example Mikko Martikainen, CEO of Sayduck, says:

> "It feels that they spend much more money in the US on interior design from scratch and they also search for interior designer professional according to the style they want".

Mikko continues that the trend of interior design is visible in two areas:

> "There is this Augmented Reality where, us including, nobody has made it yet, and then there is purely moodboard software. One of the biggest in the US, Houzz, which has over a million of users, is coming to Europe. Their business model is based on the interior designers who are able to upload their works and projects so that the end-users can scroll them through and contact for a new project. Also the end users can directly buy products which is kind of against the business model of the interior designers uploading their own pictures".

So to summarize, even though the term suggests that the interior design software are only for interior design, several companies have strategically decided to focus on the furniture business for now. That has a lot to do with the challenge of finding the right business model in the interior design market. There are clearly noticeable advantages for the furniture companies to use these software as, for example, if a product is bought through this software, it will directly connect to the company's own product management system, as it is able technology-wise to integrate the separate systems into one transaction to the client. The advantages for the interior designers have been considered especially in form of better communication to the clients. It is also claimed that the interior design market in the US is far more advanced than in Finland.

5.3 Consumerization in the Industry

Consumerization means the phenomenon where enterprise world is lacking behind in the technology development that happens in the consumer market, and ends up implementing the software that is oriented to the consumers. Previously, the trendency was vice versa; the consumers would get a lighter version from the corporate world. Consumerization is rather new phenomenon and is definitely not well-established term. I did my interviews in Finnish and I noticed that this term was not very familiar to my interviewees neither in Finnish nor in English.

Consumerization is seen to be coming to the interior design industry as well

The software providers do believe that consumerization will come to the interior design context as well. Jorma Palo, COO at VividWorks, believes that the new generation that is entering the work life is the generation that was raised with 3D games and visualization platforms. So in a way, VividWorks believes that this generation and their habits to use 3D will pull these technologies to emerge in the markets of interior design. As I already mentioned previously, VividWorks is already piloting with the interior designers to package them a tool that they would use in the professional interior design work. Sayduck is also claiming that they already have the technology, it is more about figuring out the right business model and the right set of tools with the interior design professionals. They also believe that consumerization will happen in this industry at some point. Absolutely same ideas are followed by Intelle, which also has plenty of interest from the interior designers for the professional use. Jarkko Hämäläinen, CEO of Intelle, says that at the moment the consumers do not have proper tools to test the possible solutions of interior design on their own without the help of a hired professional. He says that there are some apps for the measurements but they need to be combined with the right materials and in the right environment.

Tools like these interior design software will, according to Jarkko Hämäläinen, CEO of Intelle, probably revolutionize the consumer market as the consumers will not need to be professionals to be able to design on their own. Jarkko continues that it is a big change that the consumers do not need the expensive software to do the design. Also, the availability of these software on tablets is something that allows people from every age category to use these software with the basic touch screen commands. Jorma Palo from VividWorks says that the wide usage of tablets has taught people to use the basic features like zooming, yet those who are not used to the tablet behavior might find the software difficult at first. Thus, simplicity and intuitive usage are something to take care of before the wide spread of these software. Jarkko continues that the consumers are demanding these software and the technology is allowing the software to exist in the consumer market. Thus, the new interior design software are starting to enter the consumer market for real. He also emphasizes that the popularity of Ikea's 3D planning tools shows that the

consumers are demanding these solutions. Though, once again, coming back to the example of Houzz from the US, they already have tens of millions users and they are expanding to Europe. They also have managed to acquire the basic base of the consumers and have created premium accounts for the design and decor professionals. (Techcrunch, 6/2014). So one company, at least, is doing this same business very fine in the US market.

Consumers will define whether the interior design software will be widely used

Several interior designers are somewhat skeptical that will these software become popular in the consumer market. Vertti Kivi points out well:

> *"Consumers have always had the chance to design on their own. But it's the same as I give you a pen and a canvas and ask you to draw me a painting. It doesn't work that way."*

Also Kaisa Blomstedt is hesitant that there is a big part of the consumers that design with basic items from the regular department store and those consumers will barely need software to decide, which coloured bedspread to buy. Kaisa also says that these software take away the human factor of the design:

> *"All the designs start looking same because everybody uses same elements. And also you have the limitations that you cannot do something you want as the program is not flexible enough and thus creates same pictures and implementation."*

The interviewees point out that in the end, it is still the consumer who decides. As Michaela Von Wendt from Lundia puts it:

> *"The consumer is the King"*

This means that it does not matter what the companies and professionals think as it is the consumer who decides what happens. Also Jarkko Hämäläinen from Intelle notices that consumers are the ones who vote with their actions and they are also the ones who bring the turnover to the companies. This is also the answer I got from Mikko Martikainen, CEO of Sayduck:

> *"It doesn't matter what nobody of us thinks as the consumers will do what the consumers want. If this will help the consumers' life, they will do it. We can battle against and die from the market or we can understand this and change."*

Mikko also continues that consumers will adapt the technology much easier than the professionals because they do not have any history or fear with the interior design as a profession. Once again, it is about consumers adapting technologies that make their life easier.

The adoption of technology by consumers will eventually diminish the level of resilience by the professionals, Mikko continues.

Interior designers are not fully convinced yet

Before these technologies could become in the use of the interior designers, there are certain elements that need to be fixed or developed further. One major challenge is to make sure that the software looks realistic so that the product they visualize is in real life exactly the same looking item. Another challenge is the usability. As Jorma Palo from VividWorks says, the expectance level grows all the time:

> "Technology gets more challenging and the expectations still grow. Few years back when we introduced Augmented Reality we got questions already a week later asking whether certain parts can be deleted. -- In a way the usability level is expected to be so good that the software will automatically fix everything for you."

Also Sayduck's CEO, Mikko Martikainen, admits that the technologies like 3D and Augmented Reality still have big challenges as the software still requires those 10 minutes of learning it before the use. Nevertheless, he continues that the consumers in today's world might not be ready to spend that much time on learning the software.

Interior designer do not necessarily think whether the program they are using is consumer or professional oriented. As interior designer Vertti Kivi says:

> "We can use 2€ or 2 000€ on a program. Choosing the one that does better result."

This indicates that it is not about *not* using consumer software, it is more about having the right tool for the job that needs to be done. Marko Paananen adds that these software could be a tool to show the potential result to the client so it could be the means to communicate better with his clients. Also Vertti Kivi said that he could use these software if they were easily available. However, they still have to be further developed first. Beni Kjisijk, export manager at Lundia, believes that if the interior designers would implement the consumer-oriented technologies to their interior design processes to do the plans faster and more efficiently, it would only be good and cost effective solution.

Michaela Von Wendt from Lundia sees that those companies who are in this phenomenon from the very beginning are the ones who can succeed. She sees their partnership with their interior design software as something of today's world. She also adds that she does not see a difference between the company environment and the consumer environment anymore:

"It's like in the work life, I don't work 8.16 anymore, I work 24/7. Because I am available and online in twitter, instagram, facebook, and as CEO I need to respond immediately if we get a question."

These are directly features from the consumerization defined in the literature review.

What is fascinating is that the software providers claim to have a lot of interest from the interior designers yet at the same time they face a lot of resistance from the interior designers in general towards the new technology in the industry. There seems to be some sort of fear from the interior designers' side that these software will diminish their professional demand. However, some designers also believe that the consumers who would use these technologies are not the clients of the interior designers in the first place. In a way, this is linked to the literature reviw, which clearly shows that there are the old-school designers who believe in the hand drawing, and then there is this "new-school" of mostly young graduates who are trained to use the technology and have very different mindset from those of the old-school generation.

Supplementing the findings with the Slush mini-interviews

In the methodology chapter I discussed that one of my research methods is the mini-interviews. In November 18th to 19th, was the startup conference Slush, which hosted this year more than 10 000 technology oriented visitors. I utilized that chance to discuss with the potential users of these new interior design software to see how in practice the consumers see these software, and whether they would themselves use them. I picked few examples to show the reactions of the potential consumers. Erika (female, 34) says her friend who is an interior designer was trying at some point to research possible interior design software and she was helping her out with that research. She also tried one or two herself and thought they are quite handy. However, she would not use the software for her own home design unless it was a very large space. Aleksandra (female, 21) had not heard much about the interior design software but thinks they would definitely help her to design the apartment. Stefanie (female, 25) does not know anything about these software and would use only Pinterest to get inspiration. Though she claims she is not very much into interior design anyways. Oxana (female, 23) would also consider using these software once designing her own home if it was simple enough and would still have all the needed functionalities. The success in her opinion would depend on how developed these software are and how well they are communicated to the consumers. Minna (female, 29) would not go search for these software but would try them if she saw them available somewhere. Antti (male, 27) believes that the industry will change as the consumers will buy directly furniture online and the companies will only have showrooms to show the products offline. Kati (female 37) would design with software if it would give her good solutions that she had not thought about on her own.

Toni (male, 34) has never used the software but would also use them in his own home as he likes approaching challenges with visual help. He also is very much into technology and would like to try for that reason as well. Larisa (female, 26) said she had to sketch out her own apartment last time she moved and had to go to the stores and measure the furniture so she would definitely find theses software useful.

To sum up the findings from the Slush conference, the majority finds these software useful and would use them to design their own homes. Some said they need to try and test with physical items and not with the software. Also majority approached very positively these software and mainly the interviewees see no reason why these software would not succeed. Some, though, said they are not much into interior design and thus cannot quite tell. Few emphasized that the software should be more recognized first so they would know about their existence in order to start using them. Many said that especially for the big public spaces these software could work well as the software would help with the visualization. These findings show that there are consumers that would really use these software so maybe indeed it is just a matter of time, when these software become widely used at least in the consumer market.

5.4 Emerging Technological Trends in the Interior Design

I ended each of my interviews with a question "What is your wildest vision concerning technology in the interior design context?" There are certain topics that kept emerging in the discussions and certain visions are already possible technology-wise.

Digitalization allows real world to mix with the virtual

My interviewees have pointed out that, for example, furniture companies are forced to have smaller showrooms, as people tend to do their shopping online. One Nordic is an example of a furnishing company, whose whole business relies on them having partners, such as cafes and hotels where they showcase their products offline and allow the purchasing only online. (See One Nordic Official Webpage). Jarkko Hämäläinen from Intelle innovations explained that the statistics show that the shopping centers are getting all the time smaller due to the same online behavior of the consumers. Beni Kjisik, export manager of Lundia, says that the technology will revolutionize the tools that will be used and it will be about playing with the visuals. He says that we will forget the magazines, and with a click of a button we will have one to two plans, and the user will change the designs with few clicks. Furthermore, apart from it being more efficient and cheaper, he believes this kind of designing would create more interaction with the interior designer and the client.

The tendency that my interviewees are noticing is that the real world and the virtual world start mixing together and the line between those two gets thinner. Mikko Martikainen, CEO of Sayduck, has a vision concerning the blurred line between the real and the virtual reality. His visions consist of the interior designers doing the work over the virtual wolrd so that the client would put goggles on and wander around the house and see directly the suggested proposition through those goggles. As Facebook buys Oculus Rift, the 3D goggles, and eBay acquires Phisix, the 3D virtual fitting room, it is clear that the big players are showing the tendency of the social media and e-commerce going to the 3D Internet. Jarkko Hämäläinen, CEO of Intelle, is very passionate about gaming and sees that it is time for the other industries as well to realize, how to utilize the 3D technology from the gaming industry. He also claims that the usage of 3D is extremely wide, as 3D model will always tell more than 2D picture. In the interior design context it is about showing visually the potential outcome. As Jarkko puts it, it would be very weird if in the future, the builders, architects and interior designers would not have the tablet software with the 3D models, as 2D models are too difficult to interpret similarly. Intelle for example cooperates with construction company YIT and their software allows the potential buyer to see directly the apartment, play with the interior design, place the electric plugs right, and even see the view from the windows. All this digitally in the software.

It seems that the companies are really moving towards the 3D Internet and 3D e-commerce. Many of the interviewees pointed out that, for example, furnishing companies are already having their products in the online libraries as 3D models so the designers can download them easier and design using these products. The software are also relying on these 3D assets as they need to have the 3D models of the items to place them in their own libraries. As Jarkko Hämäläinen from Intelle says:

> *"It [Interior design] will go to the 3D e-commerce. -- It is such a concrete thing and easy to put in the virtual world."*

The wildest visions include high-tech solutions

As technology evolves and these software become better, they bring along more benefits than just the visualization. The items in the software will become customizable so that the users will be able to play with them. Jarkko Hämäläinen, CEO of Intelle, continues the list and adds the pricing integration, which tells the consumer directly the pricing of certain items. Also Jarkko adds that Massively Multiplayer Online (MMO) will be noticeable also in the interior design. It is a term from gaming and means that several people can experience the same space in 3D virtually. One option for virtual designing would be cooperation with an interior designer from any spot in the world; the designer could be in Japan and the client in Finland, for example. That is an idea from Jorma Palo at VividWorks. He believes that the ability to do everything virtually will really

change the world we live in. The access to the content will be all the time easier and the ability to test the items will all be different from today's world, he continues. Though, Jorma continues that the biggest change will be the communication with the client.

As other software providers, Jorma Palo from VividWorks believes in the idea of designing with the 3D goggles. Vertti Kivi sees the situation even further. His wildest vision would include entering the floor plan of a space into the computer and getting virtually the models of that space and suggestions based on what you like. In his vision, the computer would directly suggest combinations including lighting, materials, and pricing:

> *"Then it would do our job. But it is still a long journey to get there."*

Lundia's CEO, Michaela Von Wendt, gave an example of Audi's Virtual Reality showroom in Berlin where they had not even one physical car presented, rather they had everything in the digital format on digital surfaces. Once the users entered the showroom, they were given goggles that allowed the user to even look inside the digital car and see what materials would be in that car once it was physical.

Apart from the Virtual Reality, the Augmented Reality will also be more used. This will be tightly linked with the kinetic development. As Jorma Palo, COO of VividWorks, tells me the next step from the AR technology is the camera technology with the kinetic features. It will mean that the cameras will directly have the depth recognition built in, and they will be a major help in the visualization of a space. Jorma continues that there have already been some apps that try to do this by marking corners, for example. The kinetic cameras will allow the depth measurement much easier and all together these technical tools will allow anybody to visualize the space immediately. Jorma also says that the next kinetic cameras will be directly built into the mobile phones. These will, of course, be majorly beneficial for the interior design software providers and the users. Also Michaela Von Wendt and Beni Kjisijk from Lundia say that the kinetic gesture recognition is their wildest vision. Beni had already been to a kinetic helmet show and was very impressed by it. He also stated that kinetic helmets will be very big thing for the constructors, especially if they create more active cooperation with the interior designers, architects and other partners.

People will only get wealthier with time and they will have more money to spend. They will also have more opportunities as the technology keeps evolving and developing into our daily routines. As Jarkko Hämäläinen from Intelle says, consumers get better hardware and software and once you add 3D software with a great user experience, that is when the real change happens. He also adds that soon 3D software will be absolute defacto for us.

The core of interior design might still stay the same

Even though there would be thousands of these new software and technologies, some interior designers still point out that the actual work happens in the head of the designer. Kaisa Blomstedt puts it very well, saying that people are not computers and there is no magic chip that one can eject from the brains and transfer to the computer or tablet. She does admit that the presentational part is a different story, as especially in the big public projects it does make a whole difference how the idea or concept is presented. Furthermore, Kaisa does emphasize that interior design lives and evolves with lifestyle, architecture and technology changes. She adds:

> *"There will be smart houses and what not. -- Interior design adopts according to the users, architecture, and technology. -- Interior design is what comes on top of everything else and adopts and bends."*

Also, interior designer Marko Paananen strongly believes that the interior design will change. He believes the core will stay the same, yet as the Internet has changed so many industries, he finds it very arrogant to say that it would not change interior design as well. However, he believes designing online will always be very product-oriented, as it is tied to the furniture suppliers, their warehouses, and their catalogues. For the interior designers, in his words, the driving force is to do good design rather than sell certain products.

What is sure is that interior design will see new technologies and tools and it is a question of time when our wildest visions of today become our defacto routines of tomorrow.

5.5 Pulling it together within the Five Forces Framework

First and foremost, it is important to understand that the industry of interior design in this thesis means the industry from the perspective of the interior designers. Thus, if looking at the Porter's model of the competitive forces, the element in the middle is the competitive situation between the interior designers as freelancers or as interior design offices. (See figure 9). To give an example, the middle point could also be the interior design software, which would make the situation whole different, as the focus would shift from the interior design professionals towards how to make the software commercialized and how to create the right business models for each different industry.
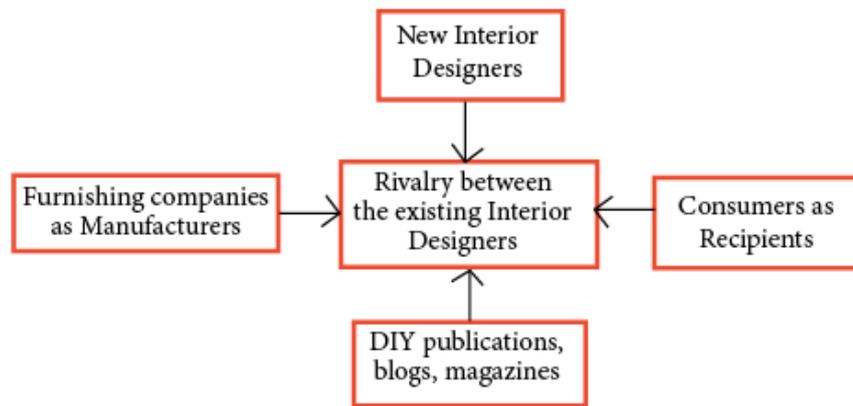
Figure 8 – Interior design as a traditional industry

Next, I will introduce each of the elements in the competive analysis framework. The four other forces that affect the industry apart from the competitive force amongst the existing interior designers are the new interior designer entrants, interior design DIY blogs and books, furnishing companies and of course, the actual customers. As this is only a Master's thesis, I have focused my attention on these components and ruled out, for example, the other product and service providers. These elements in the framework are described based on the empirical findings and sensitized with the literature review. My focus is on the substituting products, which is the element below.

Rivalry between the existing interior designers

It seems that both empirical findings and the literature review show that interior design is something much needed yet very poorly defined. It has had identity conflicts for decades as people have no idea where is the difference between interior designer, interior architect, and simply decorator (see e.g Anderson et al, 2007; Senyapili & Bozdag, 2011). The terms and the professions are linked tightly together yet as separate entities. The processes of interior design are as vaguely defined, as the whole profession, yet there are clearly certain phases that each project goes through. This also goes hand in hand with many interviewees emphasizing that each case is so individual that it is difficult to generalize them. What is also clear is that the professional interior designers who have worked in the industry for years are somewhat noticing that a whole new mass of "wanna-be" interior designers are entering the market making it even blurrier than before. This also makes it extremely difficult to define who is the real interior designer and who is only decorating for hobby. This makes the component in the middle – the existing interior designers – a mass of people with very different backgrounds and professional skills. It also makes the power relation between the current interior designers and the new ones somewhat unclear, as there are so many new interior designers that are not considered as a threat in the current interior designers' component in the middle.

The competition at the moment is considered tough, as there is certain amount of projects that are divided between the interior designers. Yet, according to my interviewees, as the new interior designers enter the market, the amount of projects does not increase relatively to the amount of the new interior designers. This means that the struggle for each project is tougher and thus it feels like there is some competition to get the project.

New interior designers entering the market

The literature points out that there is a clear distinction between the older generation who are considered the old school designers and the new digital native generation that is said being much more open towards the technology and they adopt it much easier and faster (see e.g Laiserin & Linn, 2000; Lyon et al., 2009). It is also said that the educational programs include much more technical courses than before. Also my interviewees pointed out that they are the old school generation who prefers drawing by hand instead of CAD, and that they are not as keen on technology as the new school. Thus, there seems to be a gap between generations, which is shown both in theory and in practice. It makes me questions whether the upper component – the new interior design entrants – are thus more tech-savvy and tech oriented. If it is so, it means that the industry will slowly but firmly implement more and more technology into the daily routines of the designers.

Furnishing companies as manufacturers

For this thesis I have restricted that the supplier component is only concerning furnishing companies that provide the interior designers the items to design with. This component could also include tile, piping, and other material providers, constructors, or any other party that the interior designers depend on material- or work-wise. Yet, for this thesis I am looking only at the furnishing companies. Based on the empirical findings, it seems that the link between the interior designers and the furnishing companies, for now, seems to be very much the same as it has been for ages. Some designers prefer working directly for the furnishing companies and some prefer designing independently without any partnerships, so called "non-affiliated" designing, as Marko Paananen would say. Furthermore, the interviewees seemed to notice that the furnishing business is going through a change, as showrooms become smaller and digital technologies are more and more implemented in the furniture industry. (See e.g case One Nordic, Lundia).

Consumers as passive recipients

For now, it seems that the consumers are bying the services directly from the interior designers, yet as there is a discussion of furniture companies offering their own interior design services (think of Isku Interior, for example, as part of Isku) it might be that the framework will change.

Though, the furniture companies' services have also been available for years, thus, it is a question of how popular they have been before and how good results they have delivered. Furthermore, consumers have previously been considered as passive recipients in the service providing (see e.g Vargo & Lusch, 2004). However, lately the change towards the active recipients has been noticeable especially in the form of consumer empowerement. (e.g Lundia's "Consumer is the King" approach). Today, the consumers are very aware of the different possibilities in the market and my interviewees pointed out several times that the consumers do what they prefer doing, and the companies, and whole industries, need to adjust to the actions of the consumers.

DIY publications, blogs, magazines as substituting products

At the moment, though, the component below, the substituting product, might not be ready to be called interior design software. As the interior designers have not adapted the software into wide use yet, a better name for the component would be recycling, interior design blogs, magazines, DIY publications and so on. The consumers have always had the possibility to look for the ideas from the blogs and DIY publications, yet now it seems that interior design is a real trend and the interior design blogs are extremely popular. Today, even the TV's show interior design ads (see e.g Lujakoti TV ad) and the Finnish webpages Oikotie and Etuovi, which are mainly known for the job and apartment ads, have also started an interior design service. (See Oikotie and Etuovi Sisustus). Thus, the consumers can now order interior design services online even from the webpages that used to have nothing to do with interior design. The tendency towards interior design is clearly noticeable. The consumers are exposed to interior design through the increasing amount of the interior design blogs, TV channel tips (see e.g MTV Sisustus) and now even through the TV ads.

6. Analysis & Discussion

The previous chapter has presented my empirical findings, which I wrapped together into the five forces framework by Porter (originally 1980). Since I have approached my research with the Grounded Theory, I am basing my analysis and discussion mostly on the empirical findings, which I have sensitized with the literature review. In this chapter I will answer the sub questions that I have posed in the beginning of this thesis, and I will discuss what are the possible answers concerning consumerization and especially its effects in the interior design. My research question remains: "***How will consumerization change the interior design industry?***" I will approach it both on micro and macro level.

6.1 Consumerization and its Impact on Business

Difficult to define the phenomenon and to measure its impacts

Consumerization as such has been studied for a decade now, yet the definitions concerning it vary a lot. Some see it as a simple Bring-Your-Own-Device (BYOD) policy (see e.g. Stagliano et al., 2013) and some try to approach it more strategically from several perspectives such as Harris et al (2012) who see it from the perspective of the emploees, organization's IT department and the market in general. There seem to be still some challenges to decide how broadly consumerization should be understood and especially how to define it so that it explains properly this phenomenon. I defined consumerization in the introduction more broadly saying that consumerization means that companies are lacking behind from the consumer market's technology development and thus are forced to implement the technologies that are originally for the consumer market. Simply put, consumerization is the phenomenon of the professionals implementing the consumer-oriented technologies. However, my definition is too wide whereas the BYOD perspective is too narrow. There is a need to define consumerization somewhat more properly, yet without seeing it too narrowly.

Concerning how consumerization has been visible. Bless et al. (2010) see that it has changed the balance between the work and private life, and the work can physically be located wherever nowadays. Also, the expectations towards the workers have changed as often they are expected to be available even out of the office hours and on several communication platforms. Lundia's CEO, Michaela Von Wendt, mentioned in my interviews that she does not see a difference anymore between the work hours and private hours. Especially as CEO, she feels that she has to be online 24/7. She also emphasized that it is not due to consumerization yet as digitalization in general. On a broader scale, consumerization does really seem to function under the bigger umbrella of digitalization that has been considered even as an own era.

Usually tightly linked to the IT context

According to Blount (2011) there are three factors that have resulted into the consumerization phenomenon. First, there has been a major growth of the personal consumer devices for business use. These include smartphones, tablets, and so on. The second factor is the massive use of the social media as a communication platform both for the personal life, but also for the communication towards the clients and consumers. This has turned into better customer satisfaction, better loyalty and increase in the revenue and market share. It has also opened access to new market segments. The third factor is the growth of the cloud-based services, which allow the companies to have greater efficiency in the IT processes. However, these factors resemble the factors of digitalization on a broader scale, so I wonder what exactly makes these factors resulting into consumerization and not digitalization in general.

When reading literature about consumerization, it seems that it is linked only to the IT context, whether to IT companies or companies with IT departments. All the presented strategies and tips to prepare and to benefit from consumerization are indicating this. (See e.g Bless, et al., 2010). However, what is strange is that this phenomenon is not studied in other contexts. The research is lacking more contribution especially in those industries where there are no clear departments, no clear IT policies and the work itself is more based on the knowledge-intensive advisory kind of position. There are several industries, out of which interior design is just one, that lack the corporations and lack IT departments. However, the studies only discuss the phenomenon in the context of well-structured companies with somewhat clear policies. Nonetheless, none of the articles points out explicitly that the phenomenon is only visible in the IT context or should be studied only in that context. The broader definition of consumerization, which is about professionals implementing consumer-oriented technologies, is well feasible to other industries as well. However, if consumerization is seen as BYOD policy within an IT company, then the whole phenomenon needs to be approached from a different perspective.

Consumerization might be linked to consumer empowerement

When it comes to my empirical findings concerning consumerization, I noticed that even though the phenomenon is something that many of us can recognize in our daily life, it is not that evident to explain explicitly what consumerization means. None of my interviewees were able to directly define what consumerization is. Not many were even familiar with the term. Once the term was explained to them, almost each of my interviewees could agree on noticing the elements of consumerization. The software providers knew the term slightly better than the interior designers, yet that is somewhat not surprising as they function in the tech environment and are forced to follow the technological trends to stay competitive. It seemed that when I asked about consumerization, many of my interviewees linked it to the word "consumer" and, in

a way, saw the consumerization phenomenon not from the technological perspective, but rather from the perspective of consumer empowerement and consumers pushing the technology into the market. This raised a question in my mind, whether consumerization could actually be seen from this perspective rather than strictly IT perspective. This would make sense, as either way one decides to approach the phenomenon, it is still about the users actions concerning the technology. Especially in the knowledge-intensive environment, the users can also be professional freelancers, for example, acquiring the technology for business purposes.

The new tech-savvy generation sets high expectations towards the technology

Consumerization as a phenomenon is barely going to end especially as the younger generation enters the market and brings along the demands for the technology that they are used to have in their private life. For now, there still seems to be a gap between those old generations that are satisfied with the technology they use, and the younger generation that demands better technology. (See e.g Bless et al. 2010; Weiß & Leimeister, 2012). Some studies are pointing out that few years back, the Generation Y, which is also referred to as Digital Natives, was at the age that they started entering the work life. (See e.g D'Arcy, 2011). As more tech-savvy new generation enters the business life, the gap between the old and the new generation should get smaller as there will be more tech-savvy employees relative to the others. This would thus mean that the demands for the technology will only get stronger, as the younger generation will not settle for old technology and old software. Once there are more tech-savvy employees, the technology adoption curve could change as there would logically thinking be more potential early adopters that would cross the chasm sooner. Though, this is a topic to discuss further in the next research.

Companies at the moment seem to have million reasons why they are lacking behind from the consumer market, and security issues usually emerge first. (See e.g Moschella et al., 2004). There is no denying that there are major challenges with the security as the employees wish to use their personal devices to access the company information. The changes are also very costly to make. However, the articles and the whole digitalization shift, show that consumerization as a phenomenon will not disappear any time soon. (See e.g Harris et al., 2012). Thus, it is crucial for the companies to innovate and find solutions how to benefit from this phenomenon instead of finding excuses why avoid it. At the moment the strategies are for the companies within the IT context and it seems that they all in practice mean strategies on how to implement BYOD policy and nothing on a broader scale. (See e.g D'Arcy, 2011; Harries et al., 2012).

The division between the professional and the basic software is blurrying

Already now there are emerging software that are in-between the professional and the basic versions, which can be referred to as "enthusiast" level software. Furthermore, as Internet of Things is evolving, the technology will at some point move from the connected and smart towards *intelligent*. Pye (2014) acknowledges that the level of intelligence is already starting to resemble the operations of a human brain. Also, the Economist (10/2011) states that the technology is so intelligent that it is adapting to the users and not making the users adapt to the technology – even toddlers know how to use the interfaces of today. What I wonder is, whether we should talk about consumerization or should it be considered just as a small phase before something bigger. The world is experiencing digitalization as a broader phenomenon, or even era as some claim, and consumerization is almost like a transition phase, which will unify the consumer market with the professional market. Obviously there will still be tools that are only for professionals who know how to use them and nobody can take that expertise away from them. Yet, there is a possibility that the distinction between the professionals and the non-professionals will be approached differently. This would again force us to re-define how we see consumerization if suddenly the line between the professional and the non-professional software becomes blurrier.

6.2 Consumerization in the Interior Design Context

Interior design as a context is challenging

As I already have emphasized, consumerization as a phenomenon is usually tied to the IT context and there are no proper studies on consumerization in the knowledge-intensive industries. Interior design as a context is already very poorly defined and tying it together with consumerization is a blurry mess. However, especially as the new interior design software emerge to the consumer market, interior design is going to face the question of how much will consumerization affect this industry. By definition, consumerization means that companies, or in the interior design context the professionals, start implementing the technologies or software that are originally targeted for consumer market. In the interior design, thus, consumerization can be claimed to have happened if the interior designers start using these new software that are targeted for non-professional consumers.

The challenge with the interior design industry is that the industry is overall resistant towards technology. Thus, discussing consumerization within this context is also challenging, as consumerization itself is only possible when there are technologies for the professionals to implement from the consumer market. Technology has changed the industries when it was least

expected and the music industry was an example when the vinyls changed into CDs and then into digitized formats. Some of my interviewees pointed out very strongly that consumerization and the technology development will not skip interior design either, even though we do not want to see the change right now. Technology could be considered as a tool to be implemented only in part of the processes, and especially utilized to the advantage in the presentational phase, which is the phase where clients need to be persuaded. Several interior designers do acknowledge the importance of the technology especially in this step of the interior design project, yet for some reason the interior design software still face resistance. It makes me questions whether the interior designers are afraid that the software will be able to do the whole design process. There would be opportunities to use the software only for parts of the process yet still the interior designers have not embraced the new interior design software.

Another difficulty is to define who exactly is a professional in the interior design industry. Many of the interviewees said that there are many new interior designers that have entered the industry in the recent years. Apparently there have also been many people who claim to be interior designers but have not managed to deliver good results and have gained a reputation of the not-so-respected designers. Interior design is also somewhat "every momma's hobby nowadays" as several interior designers in the interview said to me. As the distinction between the professionals and the less professionals becomes blurrier, there emerges a new challenge of defining who is professional enough to claim that consumerization has happened in case there will be usage of the new software. With blogging, and lifestyle coaching getting only more popular, the industry is likely to see, not only those who obtain the degree in Arts, but also a category of people, who have originally nothing to do with interior design and have only later decided that they could do some consulting, or coaching in the interior design. It seems, thus, that the division between the professional interior designer and a regular user who is enthusiast of interiors or decoration is not that easy as it used to be. This also makes me question whether the interior design market has grown bigger than ever, yet with a larger variety skill- and education-wise. This makes it extremely difficult to state whether consumerization is happening already today as those software could be used by the interior designers who are somewhere between a true professional and a non-professional consumer.

What is challenging, and what still needs to be considered when researching consumerization in the interior design context, is that the interior designers are mostly either freelancers or work for small companies. In these cases, the interior desginers might work on their own computers and they might already have their own software meaning that they skip the whole BYOD policy arrangements that are usually how consumerization is defined. This is a good example of a knowledge-intensive context where the employees are not part of a big company with IT

departments but rather freelancers who also probably have both private and professional information on the same devices, including already the security issues as a defacto. The core is still to see whether the professionals use the consumer-oriented technologies or stick with the software that are mainly for those professionals that have spent hundreds of hours to master the specific CAD or similar program.

Consumerization is not recognized in the current interior design context

The fact is that neither my interviewees, nor literature in general, recognize consumerization in the interior design market. At least not yet. One reason might be the resistance in general towards the technology. There are several articles (see e.g Laiserin & Linn, 2000; Lyon et al., 2009) that showcase a gap between the old school professionals who still draw by hand, and those who represent the new generation and prefer working with CAD and other technology solutions. The gap is very visible even today as each of my interior design professional interviewees still draw by hand and almost each of them prefers to skip the technology all together in their own routines. As Marko Paananen says, for the past 14 years he has done CAD drawings only few times, and even then it was not him doing the actual work. Even though articles (see e.g Pektas & Erkip, 2006; Meneely & Danko, 2007) state that hand drawing is a skill that we might lose due to the technology, it is very amazing to me that the interior designers are so much against the new technology integrating into the routines of the industry. In the end, interior design has to be more than just hand drawing, and the technology has brought humongous benefits in the other industries, as well. First and foremost, if the designers did not have to draw everything, and could simply drop and drag with interior design software everything they needed, the designing part would be much easier and faster. It would also highly benefit the communication between the designer and the client. Now, many interior designers seem to prefer drawing also because the other options is drawing by CAD which is simply too time-consuming.

There are two major challenges for the software providers concerning the consumerization phenomenon in the interior design context. First, the software needs to be widely used by the consumers so that the companies will survive and will be able to properly open the consumer market. Second, these same software need to be used by the interior design professionals in order to be able to claim that consumerization is affecting the interior design context. In the end, it is about the consumers and them deciding what they want and what they will use, yet the process of implementation is much slower if the professionals do not adjust to the change. What one can speculate about is, whether these new interior design software will trigger or cause a new revolution in the industry or will these software provide just another new tool. The transition from the current processes and tools will not happen overnight, yet it would still need

to happen fast enough so that the companies do not die away while waiting for the success with the interior design segment.

Interior design industry is overall resistant towards the new technology

In my personal opinion, I see no point of the professionals being resistant towards the technology. I find it frustrating that the industry has slowed down and is not up to 2015's standards with the tools and technology that could be used. After all, interior design is supposed to be about the idea or vision, not about the level of the hand drawing. It is understandable that the interior design professionals feel threatened by the new technological opportunities, yet that is not a reason to *not* implement the new technologies. The whole digitalization movement is not going to end any time soon as Internet of Things, sensor technologies, wearable technology, and so on only become more popular and more used. Augmented Reality, Virtual Reality and 3D overall are integrating into our everyday life already, and interior design has all the possibilities to utilize these technologies to benefit all the parties involved. Technology keeps developing and it becomes more affordable also for the non-professional consumers. The software interviewees, especially, pointed out that the young generation has grown up with tablets and touchscreens, thus there is no reason why would they ignore those devices and technologies once they grow up. As years go by, those more tech-savvy new interior designers will possibly bring new digital routines into the industry and enable consumerization to prosper better than now.

In a way, interior design can be considered in a transition period towards consumerization. The technologies and new software are becoming available, the resistance towards them is still strong and the consumers have not yet adapted these new tools into a wide usage. Nevertheless, empirical findings show that the interior designers would use these software if they would present the items in a photo-realistic quality and with extremely precise measures. Thus, consumerization might depend on the interior design software providers developing their software to be of a quality that fits the designers. Furthermore, the potential consumers at the Slush conference validated these findings by stating that they would try designing their own home with a software if it was easily available. This also makes me wonder whether it all comes to the marketing and piloting better from the software side. They are already testing with small test groups what could be a beneficial package for the interior design professionals, and they are doing their best to find the proper business models for the partnerships with the interior designers. Yet, I see not much effort from the interior designers' side. The software providers do claim that they are getting interest from the interior designers yet the designers that I interviewed claimed not using the software themselves and not even knowing anybody that would use them.

Capgemini's article (Westerman, Tannou, Bonnet, Ferraris & McAfee, 2012) concerning digital advantage discusses the digital maturity, or digital DNA, of companies. Their message is that leaders in every industry can benefit from the digital transformation. The article discusses mainly the companies that have clear organizational structure and managers, yet this is also valuable in the interior design context. Maybe in the interior design context it would require few visionaires that could even as freelancers embrace the digital movement and make the others follow their example. Even the small interior design studios could move towards the digital maturity. Many studios already use the digital tools, yet it is not only about the digital tools but it is also about having the right attitude towards the technology and being open to the changes that digitalization will bring along. Digitalization might mean not only the new software but also new routines, for example, *wearing* 3D goggles.

Consumerized technologies would benefit the interior design industry

If the core of interior design is the idea, the vision and the easy execution, then why are the interior designers so afraid and resistant towards technology? These software could seriously benefit the interior designers. The value of the software may lie in the possibility to do better and faster visualizations to the client, thus enhancing the communications, and leading to better end-results than the regular session of looking at the reference pictures together and seeing the end-results only after the implementation. These interior design software aim to give tools to the interior designers to visualize their ideas, thus I would expect the interior designers to be actively participating in the piloting of these tools instead of being skeptically resistant. In a way, I question, whether the interior designers are too attached to the hand drawing, as it used to be the sign of a good interior designer. Technology would allow skipping the hand drawing and thus even the enthusiasts without the arts education could visualize their ideas concerning the interior design solutions. The technology would diminish the requirements to enter the interior design market, as it would be based on the ideas rather than the technical hand drawing skills. Technology will change the industry anyhow, and I would expect the interior designers to embrace the opportunities it brings along. Once the technology develops further, this could also result into faster and more efficient interior design processes, leading to an increased amount of active clients per designer. However, it might be that the industry will see a division into two as there will be a group that will implement the new technologies and a group that will stick to the old habits and old software. However, the empirical findings show that the processes themselves will not change even due to consumerization. The interviewees point out that only the means and the tools will change. Maybe interior design software should be considered as a *relieving* service. (See Vargo & Lusch, 2008). If the interior designers would see the potential of the new interior design software, they could use the software only in the phases of the processes where

the software would really bring extra value. As Michaela Von Wendt, CEO of Lundia says, those who join the first are also the ones who benefit the most.

Consumerization is still a world-wide phenomenon and even though it is not recognized at the moment, it does not mean that the situation would not be different even by the end of this year, as the software develop at a fast pace. Furthermore, as the definition of an interior design professional is challenging, we may question whether some interior design enthusiasts are already testing the software, and maybe even for their somewhat professional projects. Even if consumerization is not recognized in the interior design sphere by the empirical findings, it does not mean that there are no marks of it coming soon.

6.3 The Future of the Interior Design Industry

Technology is becoming increasingly intelligent

The obvious continuation of digitalization is to implement more technology into our daily routines. Internet of Things and Smart Homes have been fancy terms that are nowadays far beyond the initial piloting and soon to be just another regular thing or application in our lives. Smart lighting, for example, is one of the technological elements concerning interior design and is also one of the key trends when put in the Internet of Things context. For now it is developed mainly for the commercial purposes yet there are claims that within a decade it could be a regular lighting system in every home, recognizing the movements and activities of its users. (Pye, 2014). As people implement more technology into their homes and business life, they are more open and have better ability to learn the new interior design software, as well. At the moment the software require that extra ten minutes from the consumer to learn them, yet as Mikko Martikainen from Sayduck says, consumers simply do not have that attention span to use. As soon as this time span is diminished, the software have better possibilities to acquire that critical mass of the users to survive. However, as the technology evolves, so do the software.

The digital natives have grown with the touchscreens and tablets, and what I wonder is whether in 10 to 15 years the nation will be overall more tech-savvy so that there will be much less resistance towards the technology also in the sphere of interior design. Does it really mean that the nation will simply have better skills concerning the technology? That is a simplified situation, yet for sure as we face increasingly more technology, we learn the necessary skills that are required to use tablets and the technologies they support. However, as the amount of the new applications and software rises everyday, the important challenge for the software providers to tackle is to make sure their software is needed, easy to learn, easy to use, and easy to find.

People have problems with the ten-minute span today, but it will probably be even worse in the future as we are bombarded with information, content and software everywhere we go.

Smart Homes are not a trend yet, but they are becoming one as the technology develops further and the software become better and easier to use. It might be that the interior design industry will be the late laggard in the technology adoption curve, implementing it only when all the others have done it already. It might also be that the Smart Homes will ameliorate the general perception of people having increasingly more technology in their homes, which could result into more adaptive attitude from the interior designers, which would then be *forced* to learn how to bring technology into the design.

It might be that the 3D goggles, AR and VR will actually become something of a defacto to us and the professional market in only few years. According to the Hype Curve (Gartner Hype Cycle for Emerging Technologies, 2014), the AR and VR were already on the rise and especially VR was reaching the point of becoming a viable technology. With promises from the companies such as Microsoft and their new HoloLens product, it is highly possible that our routines will see the new technological solutions. Yet the question remains: how fast will the interior design industry be able to see and implement those new technologies?

Based on the empirical findings I created a summary of the interior design industry of today in the chapter 5.5. I want to analyze what will happen next, as the elements in the framework are changing and the industry becomes blurrier than before due to several factors.
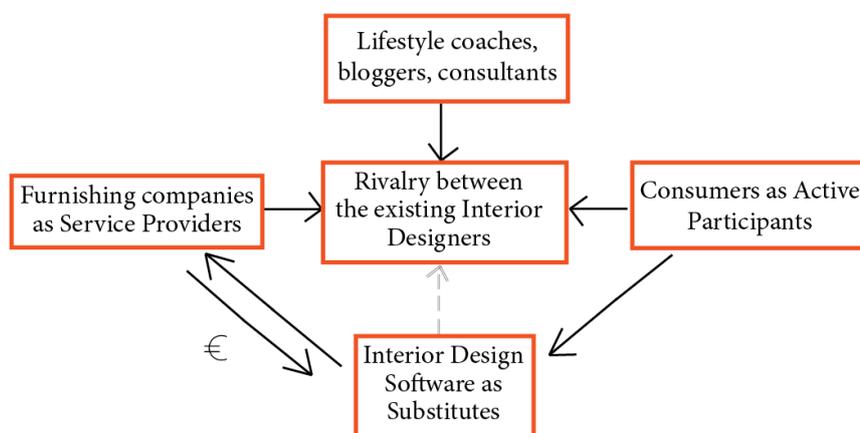

Figure 9 – Interior design industry in the near future

Lifestyle coaches, bloggers and consultants are entering the market

First of all, with blogging becoming increasingly popular, the new entrants might be also somebody completely out of the traditional interior design industry. As Lundia's CEO, Michaela

Von Wendt, pointed out that according to their studies nowadays lifestyle matters and even bookshelves are becoming popular, as they send a message of certain lifestyle. With lifestyle and life coaching becoming trendy, it might mean that interior design will see entrants with roles as consultants, strategists, or coaches. (See figure 10). These roles might not include arts education at all. Also as several of my interviewees pointed out, the industry is welcoming a mass of the interior designers that are not professionals; they might be somebody that just decided to pursue their hobby. This makes the current interior designers' mass and the new entrants' mass very different from the way it used to be.

Furnishing companies are becoming service providers

There is also a possibility that soon the cooperation between the suppliers and the designers will become more seamless, as some furniture companies already offer design services and some designers work as affiliated partners with certain furniture suppliers. Päivihelena Hallanoro from Isku Interior sees that especially in the public projects there will be a mess, as the furniture suppliers become more conceptual and independent architects, and the interior design agencies become furniture retailers on top of their regular jobs. For the interior designers this means that their consumers will be able to get the interior design service also from the furnishing companies. This would make the competition harder, and it would highlight the empowerement of the consumers even further.

Consumers as active participants

Talking about the consumers of the future. The service-dominant logic by Vargo and Lusch (2004) is just one example of the articles that discuss how participants have turned from passive recipients into active participants. In the future, the consumers will have even more options to choose from and as the new interior design software open the market to the consumers, they will have options starting from the Ikea 3D planning tools to tools that resemble the professional, yet are the light version of them. For example Autodesk, a professional CAD program, has already published their Homestyler, which is available for the interior design enthusiasts as well as the professionals.

Interior design software as substitutes

Basically, the consumers have always had the opportunity to design on their own, and DIY publications, blogs and magazines have been available for decades. This is also a solid reason why many of the interior designers, including few of my interviewees, are so skeptical about the new interior design software. They believe that the consumers have always been able to find software and do it themselves instead of hiring an interior designer to do the job. Some interior designers believe that those consumers who are willing to design on their own and play with these

software are not the actual customer segment for the professional interior designers. However, the new interior design software, especially as they develop further, will allow such an easy user interface and so intuitive platform to drag and drop the elements, and they will become so realistic concerning the quality, material, price and availability of the products, that it can seriously be considered as a substituting product for the interior designers. Nevertheless, as these tools have indeed been available for the consumers and the professionals already for years, the question is: what makes *these* software so special that they will succeed? It is also a question of how large libraries can these software acquire so that both consumer *and* professionals keep the interest up. Business-wise, interior design software providers still have the easiest business models directly in the B2B partnerships.

Even though I am calling these software interior design software, it might be that it is not the right time for them to be called so yet. In a way, it could be seen that in order for these software to be widely used in the interior design sphere, they need to work on the development processes with the furnishing companies, which are much more dependable on this technology compared to the interior designers. I am saying this because the furniture companies need to provide proper tools for the consumers, who expect to be able to play with 3D models, as nowadays so many companies offer that already. Thus, the furniture companies would probably be more eager to try pilots with the software companies, whereas the interior designers have other tools that they have been using for decades and which they are not eager to change. However, as the software providers claim, they do have a lot of interest from the interior designers and maybe soon the software companies will be able to truly claim the term interior design software.

In general, the interior design interviewees are not afraid of losing their job to the software. As Vertti Kivi puts it, if the program would give you ready solutions and you would click through the 1000 options and it would give directly the prices, would get the furnishing and materials and workers then maybe but still there would be need for more customer service. Thus, at the moment the interior design software should be seen as a *supplementing* product, as they are not directly competing with the interior designers. For now the interior design software are mainly targeted to the furnishing companies. The business model for the software providers has been for a while now B2B2C, and lately the companies have been trying to find a business model that would work with the interior design professionals. This would a mean separate set of tools based on the needs of the designers. Several software providers have already been testing and piloting the tool sets and it is probably a question of time when one of them breaks through with their tools. For now, the software are in direct contact with the furnishing companies rather than the interior designers. Nevertheless, it is a question of time when they will link directly to the interior designers.

Interior design software might be the next industry disruptors

Going back to the literature review, I discussed that Christensen's Innovator's Dilemma presents the idea of the disruptive innovations. Those are the innovations that can seriously shake an industry. They are usually first considered as a joke, then only they become a threat and only later they are considered as obvious. If the technology evolves at a faster pace than the previous technologies, it will eventually exceed the capabilities of the older technologies, and even if it would take years, the companies who adjust from early on tend to go through the change successfully. (Moschella et al., 2004). It seems that the interior design software are still in the early phases of the Christensen's Innovator's Dilemma, as mostly none of the interior designers in my empirical findings are taking the software as serious threat to their business.

However, it is too early to state whether these software providers will become industry disruptors or not. The Christensen's Innovator's Dilemma identifies the reasons why the leading companies fail to capitalize the disruptive technologies, whereas the Burgelman & Grove's (2007) cross-boundary disruptor (XBD) model identifies the disruption opportunities in the first place. Burgelman & Grove's (2007) same article talks also about Schumpeterian disruptors, which on contrary from the cross-boundary disruptors, disrupts on *intra*-level one industry instead of *inter*-level several industries. The question is, will these interior design software providers manage to create the positive loop that I described while speaking about Schumpeterian entrepreneurial case in the chapter 4.4. If they manage to affect positively the incumbents of the interior design, which are not large companies, but either small sized companies or freelancers. If they fail, then there is an opportunity to other companies to enter the market and try to become successful in the XBD case.

Burgelman & Grove (2007) also present the *marketing myopia* from Theodore Levitt (1960) by giving an example of the US railway companies that failed in the trucking and airline market because they failed to understand that they were supposed to re-define their business from the railway to transportation. This leads to the question whether the interior design software should stay in the B2B business with furnishing, construction and other companies, or should they totally readjust into the interior design sphere. Those are their own strategic decisions, yet it is important to state explicitly that the success of these software within certain industry might also depend on how they present and sell themselves.

As the society evolves, people have become wealthier and the consumers become more empowered than ever before. Consumers are aware of the different possibilities and they have become active participants in the services rather than being passive recipients. The gap between the professionals and the regular non-professional consumers is also becoming smaller as the

digital natives are in the age of entering the business market and raising the tech-savvyness in general. Also the software themselves do not seem to be divided strictly into two categories – professional and non-professional – anymore. An example of this is the software provided by the professional CAD company Autodesk, which provides a software called Homestyler that is suitable also for the non-professional enthuasiast users. This combined with the fact that the technologies are becoming more intelligent, as Smart Houses and IoT become further developed, the interior design software companies are in the midst of a momentum where they can become the disruptive technology that will change the industry. The future looks tech-oriented and it might also be a question of the perfect timing of these new software and their strategic choices concerning interior design. However, interior design will have to adjust to the technology at some point, especially as their key partner, the furnishing business, is moving towards 3D at a very fast pace.

7. Conclusion

The final chapter of this thesis will summarize the most important conclusions and state explicitly the contributions that I have made in this research. I will also discuss the managerial implications concerning the consumerization phenomenon in the interior design context, and suggest what should be researched further. The core research question guiding this research was: "***How will consumerization change the interior design industry?***" Sub questions to approach this research, and which I already analyzed in the previous chapter, were:

1. *What is consumerization and how is it impacting business?*
2. *How does consumerization affect in the interior design context?*
3. *How will consumerization shape the future of the industry?*

As there is little research on the consumerization phenomenon in general, and seemingly none in the knowledge-intensive environment, choosing the Grounded Theory approach was very adequate decision. Grounded Theory allowed me to approach this topic based on the empirical findings, which I could then tie to the existing literature. I had extremely valuable sample of the top-tier interior designers and interior design software providers in Finland, thus the empirical findings have been very valuable to this research. The empiria sensitized with the literature review, and implemented into the Porter's (1980) theoretical framework, has allowed me to analyze the interior design industry from the consumerization perspective, and draw conclusions of what will happen next. Furthermore, even though Finland is a small player globally, my research findings can be generalized to other countries to function as a guideline.

7.1 Key Conclusions

I have approached the consumerization phenomenon in the context of interior design by first analyzing the overall phenomenon of consumerization, and then approaching the interior design as a separate industry. In order to clarify my key conclusions, I am dividing this sub chapter accordingly into consumerization conclusions and interior design conclusions. I will then summarize the consumerization phenomenon within the interior design context.

Summarizing the consumerization phenomenon

The phenomenon of consumerization has been studied only for a decade and the studies concerning this topic are mainly emphasizing the IT companies or companies with IT departments. Consumerization itself has been defined, yet there are so many different versions to approach this phenomenon that it makes me wonder whether anybody can give a clear

explanation of how consumerization should be seen. Often consumerization is considered as BYOD policy, which stands Bring Your Own Device to work. Harris et al., (2012) see consumerization from three perspectives. From the employee perspective it is the usefulness of the familiar devices at the work tasks. From the IT department's perspective it is about the BYOD policies, and from the market perspective consumerization is about companies implementing the consumer technologies that were originally not built for the corporate use. In the beginning of this thesis, I defined consumerization by the market perspective saying that consumerization can be understood as the phenomenon of the companies integrating the consumer-oriented technologies into their professional routines. Nevertheless, in the discussion chapter I wondered whether consumerization needs even more precise definition, as the definitions for now are either BYOD, which is too narrow, or the professionals implementing the consumer technology, which is too broad. I also suggested that consumerization is possibly just a phase in-between our current condition of the technology adoption and digitalization, and the next era, which could possibly be the digitalization era where digital tehnologies thrive in our everyday life and routines. For now, consumerization seems to be a sub-phenomenon under the umbrella of digitalization, which can be claimed to have started already in the 1970s when PCs replaced the analog tools and which has only fortified from there on, and especially in the past decade. (See e.g Trends e-magazine, 2012; Acker et al., 2012).

Consumer technologies are already used extensively in the companies and their importance is only growing. (Gens et al., 2011). Consumerization is seen as a result of few emerging trends. It was first noticed with the emergence of Web 2.0, which includes wikis, social networks, and blogs. (Weiß & Leimeister, 2012). Blount (2011) says that it was due to the massive use of social media as a communications platform, the major increase in the personal devices at the work environment, and the growth of cloud-based services. Part of consumerization, and generally digitalization, is the development of the technologies towards increasingly intelligent software. Internet of Things enables communication people-to-devices, and even device-to-device. Nowadays, the intelligence of the technology starts resembling the cognitive operations of a human brain. (Pye, 2014).

My empirical findings show that none of the interviewees could explain consumerization as it is defined in the academia. Not many were even familiar with this term, in the first place. When I explained consumerization with the fax machine example from the chapter 1.5, it did make sense in their opinion, and many of them were able to recognize the phenomenon in general. Nevertheless, I did notice the interviewees mixing the consumerization phenomenon with the digitalization shift. Also, several of the interviewees saw consumerization deriving from the word "consumer", and thus linking strongly with the consumer empowerement as a phenomenon.

As consumerization evolves, so do the consumer-oriented technologies. Different industries have started noticing that there is no clear distinction anymore between the professional and non-professional software. For example, photography has a set of cameras, which are not professional, but do still require enthusiast knowledge for the proper usage. Thus, there is seemingly becoming a blurrier line between the consumer versions and the professional versions, as the former start resembling the latter. This can be linked to the consumer empowerement that was brought up in the interviews, as consumers have started to demand for more services and products that they are willing to use.

As the the younger generations, which can be called either Digital Natives, the Generation Y, or the Connected Generation, start entering the work market, the demand for the newest technologies and software will only be increased. (See e.g Bless et al., 2010; Weiß & Leimeister, 2012). Furthermore, as there will be more tech-savvy employees, it might be that the Moore's technology adoption curve (presented in the chapter 3.4) will see a change as there will be more potential Early Adopters, which could cross the chasm much faster than previously making the new technologies to be implemented easier.

The companies that are interested in consumerization are always facing the challenges with the security. (See e.g Bless et al. 2010; D'Arcy, 2011; Blount, 2011; Harris et al., 2012). Nevertheless, consumerization is not seen to be ending, and thus companies simply have to adjust to this change, and find solutions to overcome the challenges that are along the way, even if they are seen to be extremely costly changes.

Summarizing the interior design context

Technology has had and will continue to have an impact on the interiors profession. (Lyon et al., 2009). It is somewhat safe to claim that the first revolutionizing technology in interior design was Computer Aided Design (CAD) software, which was first introduced already in the 1960s. (See Eastman, 1990; Zuo & Malonebeach, 2012). CAD made it possible to do the drawings digitally and send them electronically. This ameliorated the communication and the data flow between the clients, co-workers and other parties involved. (Lyon et al., 2009) CAD was, in a way, a changing point in the daily routines of the interior designers. However, CAD has always been a professional tool that is complex to learn if one does not have a background in that software. Now might be the second time when the interior design industry will face a revolutionizing technology, as the new interior design software have started entering the consumer market, while also targeting the professional interior designers.

As the empirical findings and the literature review have showed, the interior design processes are not strictly defined, and thus the new technologies and software will only make the industry blurrier since they will propose another tool to do the process. I discussed the process phases in the chapter 4.2 and mentioned that they can be seen from the general design project management perspective. Furthermore, the value creation within the interior design processes will most probably change, as the consumers have changed from the passive recipients into the active participators, creating the value together with the designer. (See Vargo & Lusch, 2004). This is especially possible in the virtual co-creation, where the interior designer designs in cooperation with the client, as the technology of today allows them to do it on the same device.

The need for interior design will still stay in the future as well. As one of my interviewees says: *"People have been designing for years and will continue to design"* Though, what this statement does not indicate is *how* will interior design be performed in the future: whether the consumers will still have similar service from the interior designers as it has been now for decades, or will the shift move more towards the furnishing companies and interior design software.

The academia shows that the interior designers are lacking software for specific purposes as there are mainly the general-purpose CAD software. Especially the presentational phase of the design process requires animations and visually stricking pictures. (See e.g Senyapili & Bozdag 2011). In this reseach I did not separate the interior design processes between the private and public projects. However, several interviewees pointed out that the importance of the technology is especially visible in the large public projects. For example, Vertti Kivi's agengy Dsign strongly believes in the power of visualizations as a sales tool. However, for now, there is still some resistance towards technology in the interior design sphere. Some believe that the technology and software would lead to generic work (Laiserin & Linn, 2000) and some claim it makes the designers focus on the technical skills rather than the core of the design (Lyon et al., 2009). Nevertheless, there is a gap between the old school and the new entrants in the industry (see e.g Laiserin & Linn 2000; Lyon et al., 2009). The new school designers are much more tech-savvy and could potentially bring more digital standards into the industry.

Currently, the interior design industry is welcoming the emerging technologies such as 3D, Augmented Reality, and Virtual Reality. Ikea recently published their 3D planning tools for the consumers, and they even took a step further by extending the customer experience with digital content, including features with AR, that can be unlocked and scanned with a smartphone. (Ikea Official Webpage). Techrunch (2014) announced that Facebook acquired Oculus Rift, 3D headset, and eBay bought Phisix, a virtual fitting room, showing that the movement towards 3D world is on a global scale. This was strongly emphasized also in the interviews with the interior design

software providers. Furthermore, in the beginning of 2015, Microsoft presented their newest product, HoloLens, which is another headset, with what they plan to change how people interact with the information that is built on our real reality. Gartner Hype Cycle for Emerging Technologies (2014) claims that AR will become implementable already in 2015, meaning that there will be many changes this year, and probably interior design will have to change its attitude towards technology, anyhow.

Summarizing consumerization within the interior design context

Consumerization within interior design can be seen as the interior designers implementing into their professional usage the consumer-oriented technologies. However, this is only one way to define consumerization and it is very often also defined through the BYOD policy, which is not very feasible in the interior design context, as especially the freelance designers work from their own devices, having as a defacto all the private and professional data mixed.

The basis for consumerization to happen in the interior design is extremely challenging, as the designers are not very willing to change their routines to include new software. So far, the designers have basically had the options to draw by hand or use the CAD software, which unfortunately is often too time-consuming. Nowadays there is another wave of technologies coming into the industry; 3D applications will allow even the non-educated consumers to become interior designers of their own. The emergence of these new interior design software would allow the designers to ameliorate especially the presentational phase of the design, resulting into better communication with the client, and even allowing the co-creation directly in the same software virtually with the client. These software allow experimenting with colours, lighting, textures, physical movements and so on.

In the future of interior design, the interior designers should see these software as a *relieving* tool in the design process. (See Vargo & Lusch, 2008). This is in line with my suggestions of seeing these software not as substituting products in the Porter's five forces framework, but rather as a *supplementing* tool. The interior design software today are doing business directly with the business clients, mostly in the furnishing and construction industries as they have clear business models with those clients. They have the technology what it takes to provide the tools for the interior desigers, and they have already started piloting to do that. Yet, it all comes to the challenge of finding the right business model. The tools are now free to the end-users. Furthermore, the interior designers of the future might be very different from the designers of today. As lifestyle blogging and coaching become increasingly popular, the industry's new entrants might have very different background from the ones in the market today. This is also verified with the empirical findings, stating that there is a new mass of the so-called interior

designers that practice interior design as a hobby with non-professional end-results. Also, the furnishing companies will provide increasingly more design services (think of Isku and Isku Interior) and the consumers themselves are becoming increasingly active participants concerning interior design. I presented interior design of today in the chapter 5.5 and the scenario of the future in the chapter 6.3 Especially the blurry component of the interior designers of the future makes the research concering consumerization even more challenging, as it becomes increasingly difficult to define who is a qualified professional, and whether consumerization can be claimed to have happened if some part of that interior designer mass starts using these software.

At the moment, consumerization cannot be claimed to be present in the interior design industry, as there seem to be no interior design professionals using these consumer-oriented technologies. The interior designers, however, claim that they would use these software if they provided photo-realistic quality of the items and would give them the precise measures. The software providers claim to have interest from the interior designers. In order for these software to survive, they need the critical mass of the users. The empirical findings at Slush showed that the consumers are interested in using these software, just as are the designers. Thus, is it for now about these software providers doing better marketing so that their brand is better known, and developing the software so that the users, either professionals or not, do not react to them as to "goofy" software. Maybe interior design should be seen as in a transition towards that point where the software become known. For now, there is not even a commonly used term for them, which makes it challenging, for example, for the potential users to search for these tools.

The interior design industry in the future will look different and there will be better basis for consumerization to take place in this industry. As Smart Homes, Internet of Thing, Artificial Intelligence, Augmented Reality and Virtual Reality develop further, the designers will have to face the technology as part of their ideation, as consumers will most probably require that knowledge. So far, neither Google Glasses, nor other headsets have been popular in Finland and it is highly possible that the regular consumers are still not ready for so high-tech solutions. The interior design industry might potentially need one or two tech-savvy designers to kickstart the digital movement and bring the much needed digital DNA into the industry. (See Westerman et al., 2012).

It was pointed out several times in the interviews, that Finland is a rather small market for the interior design and maybe that is why it is not further developed. Most interviewees would divide the interior design markets into European and the US markets, claiming that the latter is much further developed. The interior design software in the US are widely used already and, for example, Houzz has tens of millions of users monthly. (Techcrunch, 6/2014). The users of Houzz

are both professionals and non-professionals, which makes me question whether consumerization could be claimed to be happening in the US market but not yet in Finland.

7.2 Important Contributions

In the Introduction chapter I stated three main objectives for this study. First of all, I stated that I aim to contribute to the literature concerning consumerization in the knowledge-intensive environment. Second, I claimed I will explicitly state the interior design processes, value creation and the evolvement of the digital tools from the history to this day. My third objective was to show how exactly consumerization affects in the interior design context.

Contributions concerning consumerization

One of the most important contributions concerning consumerization within the interior design context was showing the gap concerning this phenomenon in the knowledge-intensive environment. This is also tightly linked to the wide range of the definitions that consumerization has. Some prefer stating that it is simply a BYOD policy, yet it does not function in the knowledge-intensive environment with freelancers that are expected to work from their own laptops, anyhow. This is also the dilemma why consumerization is much easier to understand within the IT company context, as it is more structured. Thus, I am claiming that consumerization cannot be understood as a BYOD policy in the knowledge-intensive industries.

On the other hand, having consumerization defined as the companies implementing the consumer technologies is too broad. Several of my interviewees saw consumerization through the "consumer" word, understanding it as a part of the consumer empowerment. I want to show that there is a research gap concerning the linking point between consumerization and consumer empowerment.

With my research, I have contributed to the literature about consumerization by giving an example of consumerization within a knowledge-intensive industry. I used interior design industry in Finland as a context and stated that there is no consumerization at the moment in this case. Nevertheless, I did explain that it is due to the resistant technology adoption, and the software not being known, nor developed enough. Consumerization could still be very likely in the interior design context, though it requires the first tech-oriented interior designers to start practicing their projects with the new interior design software.

I also emphasized that the literature and the practitioners should understand consumerization under the wider phenomenon of digitalization rather than as a fully separate entity. It might be

that consumerization is actually just a phase in-between now and times with the intelligent technology - the digitalization era with Internet of Things, Smart Homes and Artificial Intelligence.

Last, I am claiming that it becomes increasingly challenging to research consumerization as the consumer-oriented software start resembling the professional software, making the gap between these two extremes blurrier and filled with software that are neither fully for the basic, nor completely for the professional usage. The amount of these enthusiast lighter professional versions will probably increase, as the consumers are increasingly demanding. The blurrier line between the consumer-oriented and professional technologies will result into more challenges of defining consumerization.

Contributions concerning interior design industry

Interior design is barely touched in the academia and already by conducting a research on this subject I have contributed to the general literature concerning interior design as an industry. Furthermore, interior design seemed to be poorly defined and there is little research on the value creation within the interior design processes. With my empirical findings gathered from the Finnish interiors designers who have worked in the industry for decades, I was able to compare the empiria with the literature. I explicitly stated the phases of interior design, emphasizing that they should be understood as phases rather than linear steps. I also gathered the practical perspective on the actual value that the designers have created within their projects to their clients. Furthermore, I stated that the interior design processes are always different depending on the designer and their own preferences to conduct a project. Since the designers have learned the process by doing, it becomes challenging to unify any widely used process models. Yet, without any proper models the efficiency of the projects might suffer.

The empirical sample was rather limited, yet it included well-known and experienced interviewees, whose opinions are considered valuable within the interior design context. The full name list is in the Appendix. Conducting a study with these interviewees is a contribution to the Finnish interior design scene on a more general level, as it shows the dynamics we have in this country and in this specific industry. This is also linked to my contribution in stating the differences between the Finnish interior design market and the same market in the US. The latter is much further developed and emerged on continuous basis as an example in the empirical findings. The situation in the US, nonetheless, shows that the new interior design technologies and software can become successful and widely used both in the consumer market and in the processes of the professionals. It might be that Finland will catch up this situation in few years.

While showing a brief glance of the interior design and its digital tools, I also showed what is the current situation of the technology development within interior design context. I discussed the newest technological trends and explained how they could affect the industry. I especially explained how the interior designers could benefit from the new interior design software. This might have been the first study concerning these new interior design industries, and it for sure was the first one in Finland.

Most importantly, I visualized the interior design using the five forces framework from Porter (originally 1980). Based on the empirical findings, and sensitized by the contextual literature review on the interior design, I could discuss how does the industry look now, and how will it look in the future. On a macro-level, I showed that the industry is approaching a technological breaking point and as the industry is welcoming tech-savvy generation of the designers, as well as people, who are originally not even educated to be interior designers. On top of the changes in the other components within the five forces, the industry is becoming only blurrier and allowing an opportunity to Schumpeterian entrepreneurial agent to disrupt the industry and create fully new rules. In this current situation, if the interior design software providers fail then there is still an opportunity for a cross-boundary disruptor to enter the industry and shake it up.

7.3 Managerial Implications

Based on this research there are following managerial implications that can be concluded. First, my thesis should have helped to understand the complexity of the consumerization phenomenon and thus helped to understand the need for more precise definition. One option would be to create several definitions concerning consumerization within several contexts. This would solve the dilemma of having consumerization poorly defined. For example, several freelancers within a knowledge-intensive environment have both professional and private software on the same device, which makes consumerization difficult to be defined as a BYOD policy.

The strategies concerning implementation of the consumerized technologies do stay valid, yet they should be considered as only within the IT context. However, consumerization as a phenomenonon needs strategies not only from the companies who are implementing the consumerized technologies, but also for those who *provide* them, which in this case are the interior design software providers. This thesis focused to see the situation from the interior designers' perspectives, yet for consumerization to prosper in interior design, the software companies should be able to provide technologies and tools that benefit both parties. This would, though, require the interior design software fnding the best possible business models to do business with the interior design professionals.

Concerning interior design, as I already mentioned, the processes at the moment are not very efficient as every designer proceeds with an individual process. The processes are purely following the approach of *laissez-faire*. A solution to make the interior design processes more efficient would be defining the phases and stating explicitly the best tools for each of the phases. It does not mean that the designers cannot replace the tools by their own will, yet it would allow at least the new entrants to understand how to make the process efficient from day one. In order to do so, the education of interior design should be adjusted to be more experimental and adaptive towards the technology and new software. Possibly the resistance towards the technology is due to the insufficient skills concerning the technology. Companies have worked with the university students in common projects for years and this approach should be better incorporated between the new interior design software providers and the students of interior design. Piloting allows both parties to create unconventional tools from a very user-centered approach. This would push the industry to become more open towards not only the technology, but also towards totally new routines and habits.

On a macro-level the interior design industry needs that disruptive change in order to develop further. People are increasingly more wealthy meaning that they have more money to spend and on top of this, consumer empowerement prospers with the consumers acting the way they want while pushing the companies to adjust to their demands. The level of wealth and the further developing consumer empowerement, combined with the increasingly intelligent technology allow the consumerization phenomenon to prosper. This seems as a perfect opportunity for the Schumpeterian or cross-boundary dirsuptor company to determine the direction of the interior design industry. The software companies I interviewed have already started this process, yet it is still to see, who will succeed in this first.

7.4 Suggestions for Further Research

First and foremost, consumerization itself as a phenomenon should be further researched and developed into an understandable and coherent entity, which is easy to define. For now, consumerization is tied to IT, whereas it should be understood as a broader phenomenon that can affect also the industries within more knowledge-intensive environment. I have clarified consumerization within the interior design industry, yet there is a need for more research in consumerization within knowledge-intensive industries. Furthermore, there is an interesting connection between the consumer empowerement and consumerization that should be studied further.

This thesis has focused on the interior design industry, yet the furnishing industry is experiencing consumerization more visibly as the companies are forced to implement the newest 3D technologies to keep up with the competition, and because consumers simply demand that service from them. Even though the furniture companies were part of my study, I did not focus on consumerization and business models concerning the interior design software in that particular context. However, both my interviewees and the literature have showed that furnishing is going through a big change, and it seems to be more welcoming towards the technology. The increase of the virtual showrooms is telling a tendency that the retail world is moving towards more digitalized and tech-savvy solutions. For more details on how will this change affect the retailing, stock optimization, and other elements of the furnishing business, a further study is required. 3D will affect the furniture companies as more and more of the products will be visualized in the 3D libraries. The interior design technologies should also be studied in this context as they are so tightly linked together.

Overall, the interior design market in the US is much further developed and it would be beneficial for Finland to benchmark the industry in the US to develop the industry further in Finland as well. Also, the interior design software are widely used the US, whereas in Finland they are still taking baby steps. With all the available technology the interior design industry still prefers to stick with the old habits. It seems that the processes of interior design at the moment are not as efficient as they could be. As Smart Homes and IoT become available for the regular consumers, the question of implementing the technology is a matter of time. Another crucial element in interior design and furnishing sphere is the growth of e-commerce. I have purposefully only scratched the surface concerning this topic, yet as e-commerce expands and the technology pushes us towards the 3D Internet, it means that the companies should be ready for the changes. There is a possibility of a more seamless integration between the interior designers and the furniture companies, as both offer similar services but with different emphasis. This might be too early to study now, yet it is something that will need immediate attention in few years time.

I have approached this research from the eyes of the interior designers, which means that I have not analyzed what would be the best option for the interior design software providers to do. They all claimed to have pilot projects with the interior designers, showing their interest to provide the best tools for that sphere, yet they also all stated having challenges concerning the business model with the interior designers as professional users of these tools. More studies should be done from the perspective of the software providers to understand how to commercialize the software, how to develop it into the right set of tools, and how to create a business model that allows both non-professional and professional users to benefit from the usage.

There have already been discussions about the growing gap between the old school and new school interior designers as the new generation has clearly better technological skills, whereas the old school designers are superior in the hand drawing. As the new generation of the tech-savvy consumers enters the work life, there is a need for more research concerning the new technology adoption curves, and the general attitude towards digital tools. The literature shows that the interior design education has invested into the teaching of the digital technologies, yet mostly that means the CAD courses. Digital sketching can be seen as a tool to diminish the gap between the hand drawers and the digital natives, yet it has been also somewhat niche area in the academia. In a big picture the discussion leads to the dilemma about the technology limiting the creativity, and there should be more experimental studies between the software providers and the graduates in interior design to test, how could technology be utilized to the benefit of the industry.

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Appendix

Interviewee list

Interior design *software* producers
- *Jarkko Hämäläinen, CEO of Intelle Innovations*
- *Mikko Martikainen, CEO of Sayduck Ltd.*
- *Jorma Palo, COO of VividWorks*

Interior design *professionals*
- *Marko Paananen*
- *Kaisa Blomstedt, Studio Kaisa B*
- *Vertti Kivi, Dsign*

Furniture companies
- *Päivihelena Hallanoro, Interior Architect at Isku Interior*
- *Michaela Von Wendt, CEO of Lundia*
- *Beni Kjisijk, Export Manager at Lundia*

Software providers' descriptions

VividWorks was founded in 2006 in Oulu, Finland as the founders noticed a growing potential in the furniture industry. Company founders had already history with 3D visualizing tools so with little bit of development to the previous experience they managed to launch in the same year their own tool for 3D visualization and sales management called "VividPlatform". The platform offers 3D designing tool where one can directly purchase the interior items that he or she uses in the online space. VividWorks aims to bring more usability for the sales solutions by providing intuitive user experience that includes seamless integration between the Augmented Reality function, 3D and real-time back office, e-commerce and Enterprise Resource Planning programs (ERP) of the client companies. At the moment they have internationally offices in Finland, Denmark, Japan, USA and Singapore. (VividWorks Official Webpage). Just recently VividWorks closed a funding round of 1,3million euros led by Helsinki based Vendep, Finnvera, and a group of private investors. (ArcticStartup, 9/2014). This year VividWorks was also the only company listed in Gartner's report concerning Augmented Reality vendor market guide as a company that provides globally home furniture manufacturing and retail solutions with Augmented Reality technology. (VividWorks Official Webpage).

Figure 10 – VividWorks software

Intelle Innovations is another Finnish company that provides Virtual Reality (VR) solutions for businesses. Intelle's virtualization software allows businesses to create and design solutions within 3D space directly with customers. The space is modifiable and allows free movement of both interior items and the persona within the space. Intelle utilizes strongly the 3D from gaming industry and develops solutions that fit other industries such as interior design and construction. Through the newest co-operation with Nitor Creations, a business-driven agile software producer, Intelle is aiming to combine their own experience in 3D game technology with profound knowledge of Nitor in integration architectures of software and e-commerce solutions. Intelle has also been partnering with one of the leading construction companies, YIT Corporation, since 2013. Together they have been working on developing virtualization software for office premises. This year YIT and Intelle have expanded their collaboration to include also virtualization for shopping centers and logistics premises. Intelle's software allows to visualize the sizes of spaces, the access points, functionality of certain elements and see the building before it is even built. Currently, Intelle is offering several products. *Office modeller* is to define floor plans, walls and door. It allows to measure the space and simulate the people flow. *Residential modeller* allows to add furniture, fireplaces and colours. It also allows to control the lighting. *Plant modeller* is for more industrial use and allows to embed tools and machines, and simulate material flow. The last product is *Custom modeller* that is totally customizable Virtual Reality environment for example for shopping center design. (Intelle Official Webpage).

Figure 11 – Intelle software

Sayduck as the two previously mentioned companies, is a Helsinki-based software producer that specializes in photorealistic 3D models. The purpose of their software is to strengthen the decision of the customers to buy the product that is virtually presented in their software, thus helping their own clients, usually furnishing businesses, to increase sales and reduce returns. Sayduck also provides analytics of the customer decisions for their clients. The products can be directly displayed at customers' home in real size with the options of materials and colours. The furniture in the virtual space can be bought online directly. Sayduck actually recently won the award of best use of 3D Augmented Reality at the Marketing on Mobile Awards (MOMA). Previously this year they also received the Retail Innovation Award. (Sayduck Official Webpage). In the beginning of this year Sayduck raised 350 000€ as seed investment from IncubAsia Ventures, Arteel Ventures and several angel investors from the Nordic counties, USA and Slovenia. Sayduck focuses not only on furniture and interior but they also collaborate with fashion brands such as Adidas and Onitsuka Tiger. In interiors, for example a chair comes alive in a real living room by pointing a phone's camera at a piece of paper which is placed where the object would really be. The paper works as a marker allowing the chair to come alive and the users to observe it in the real-life environment. With fashion brands, augmented reality allows virtually showcasing how, for example, accessories would go with the chosen outfit. With Onitsuka Tiger, the software is used to create hype before the actual product is even on the shelves of the shops. Sayduck is also exploring architecture as one branch in their business. It is a big "wow factor" for the architects when presenting their work for the potential clients as the not-yet-built building rises in augmented reality in 3D by pointing a phone to a marker. (ArcticStartup, 1/2014).
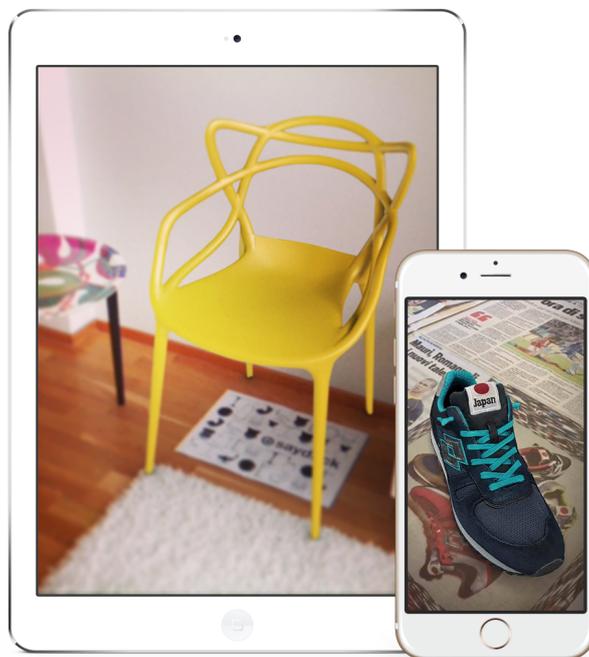
Figure 12 – Intelle software