Furniture Retailing in the Times of Augmented Reality


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Preface

This study was written as part of the course Industrial and Financial Management at the Business School in the University of Gothenburg. It was conducted during the fall semester 2014.

We would like to thank our supervisor Ziaeddin Mansouri for his inputs and all the participants of our study. It has given both authors new insights and perspectives and hopefully will enlighten the reader in an interesting subject.

Enjoy!

Daniel Platisa och Saman Heidari, 2015-01-15
Abstract

Title: Furniture Retailing in the Times of Augmented Reality; How to prepare for Disruptive Innovation? A Study in Visioning & Adopting Augmented Reality within the Swedish Furniture Industry.

Authors: Daniel Platisea & Saman Heidari Supervisor: Ziaeddin Mansouri

Background: This study will focus on the furniture industry and their innovational approach in preparing for possible future market changes due to technological innovations. E-commerce and the increasingly advancing technology of Augmented Reality (AR) are two trends that could have a large impact on the furniture industry, how should the furniture industry prepare for this possible disruptive change? To prepare for future innovations is a hard process for most firms that include multiple factors like assessing how a new innovation could affect ones firm.

Purpose: The purpose will be to gain a better insight into the processes of vision and adoption for the Swedish furniture industry in their innovational approach. To link this process and suggest how the furniture industry can prepare by better estimating the impact that new innovations like AR could have on their business and adapting their strategic approach.

Method: The chosen method was to conduct a qualitative study with interviews of people within different furniture firms in Sweden. The research approach of this study will be at the borderline between the Abductive- and Inductive and the main tool of interpretation of the empirical material this study will be Hermeneutics.

Results & Conclusion: A high awareness of AR was present with a willingness and vision of present or future adoption. Most of the participants believed that AR is not a threat to the physical store, but a possible enhancement of it. Matureness and quality of the technology was the most important factor when deciding for a future adoption. A lack of knowledge in the speed of development of AR was discovered, which is due to the high development speed in the IT-sector. This could leave some of the firms ill prepared if AR is embraced by the customers as a shopping tool.
Key Words

Innovation Management, Furniture Retailing, Augmented Reality, Vision, Disruptive Innovation, Adoption, E-Commerce, Technological Innovation

Abbreviations

AR – Augmented Reality
CIO – Chief Intelligence Officer

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“Generally, disruptive innovations offered less of what customers in established markets wanted and so could rarely be initially employed there. They offered a different package of attributes valued only in emerging markets remote from, and unimportant to, the mainstream” Clayton M. Christensen (1997)

1. Introduction

The introduction provides a background description of the subject. A problem discussion is then presented with an explanation of the uniqueness and importance of the subject. The introduction ends with the purpose, research questions & limitations of this study.

1.1 Background

To prepare for future innovations is a hard process for most firms that include multiple factors. Innovations are novelties that require a cognitive effort to be noticed. The process also includes assessing how a new innovation could affect one’s firm and often times there are multiple choices and scenarios (Morrison & Potts, 2008). When underestimating and failing to assess the impact an new and emerging innovation can have on a firm or a whole industry, the result can be falling profit or even bankruptcy. Kodak is a perfect example of failing to read the emerging market of digital cameras correctly. Once it was one of the world’s most valuable brands, but as digital photography replaced film and smartphones replaced cameras its share price fell over a long period (Economist, 2012).

This study will focus on the furniture industry and their innovational approach in assessing and preparing for future market changes due to technological innovations. E-commerce and the increasingly advancing technology of Augmented Reality (AR) are two trends that could have a large impact on the industry, mainly in the way furniture’s are sold. AR is a new and rapidly advancing technology that will give enormous possibilities to improve the experience through online shopping (Siltanen, 2012). The idea is that consumers can easily and cheaply film or photograph their homes and use the pictures to furnish it with virtual copies of real furniture on sale. The fact that the use of smartphones and tablets has exploded the last couple of years is crucial and makes AR more practical as a potential shopping tool. Ikea have already started to test the technology and once downloading their catalogue app it enables you to see how particular furniture looks in a chosen room (Ikea, 2013).
1.2 Problem Discussion

Schumpeter (1943) has famously written that “creative destruction is the essential fact about capitalism”. When a radical new innovation gets introduced, the old ways of working gets washed out. When consumers switch products or services based on new technology, the current market has to deal with declining demand. A wave of destruction occurs, but this essential destruction is a fundamental fact that drives society. There have further been suggestions that these kinds of destructive waves will be more common in industries previously thought as secure, due to the accelerating speed of technological innovation (Brynjolfsson & McAfee, 2014).

There is a unique situation for the furniture industry. According to Högberg (2007), it is a traditional industry marked by small incremental change that is building on previous knowledge. In other words ‘Doing what we do, but better’. How can such an industry prepare for potential disruptive innovations like AR?\(^1\) Do they see AR as a transformative innovation and do they have strategies and motivation to adapt to this possible change. In adopting a new

\(^1\) Disruptive Innovation is based on performance and market-related parameters while Radical Innovation is based on the magnitude of improvement in performance. However, we will treat these terms as more or less the same in this study. (Markides, 2006)
innovation the firms need to deal with both organizational innovation and technical innovation (Van de Ven, 1986).

E-Commerce has exploded the last ten years. This is a trend in almost every business and is also a fact for the furniture industry. The problem with the furniture industry is that this trend lags behind other products like books, electronics and clothes (E-Barometer, 2014). The online trend has not substantially changed the in-store shopping culture. One of the reasons has been that customers really can’t evaluate furniture’s by looking at pictures (GS1 Sweden, 2013). The business model of further expansion of malls and stores has thus continued. It used to be that customers wanted to feel and hold the products they purchase. Looking at pictures of products online and getting product information wasn’t enough to convince customers to purchase. This is still the fact in the furniture industry were people still have the need to feel the product prior to purchase.

Research has showed that AR increases online purchase intent significantly. It can be viewed as an extension to the online shopping experience and is sometimes referred to as a link between reality and virtual reality (Schwartz, 2011; Trubow, 2011). According to the McKinsey quarterly (2013), it is a technology that is predicted to be changing the retailing landscape within the next decade. It is a technology that enables the digital world to meet the physical world and further improve customer interaction within a totally new domain. Meanwhile, processing power for smartphones and tablets is exponentially increasing which suggests the future holds significant potential for AR with applications in a wide range of segments (Pradeep, Mittal, & Chandrasekaran, 2013). The retailing companies that successfully adopt the technology will potentially get a greater competitive advantage.

Nobody really knows whether AR will become a disruptive innovation for the furniture industry, but the mix of the trends in AR and e-commerce has the ingredients of disruption. What is the innovational approach in the different furniture firms and is it adequate in the unique case of AR? The opportunities of successfully adopting a new innovation are to gain a bigger market share or simply to survive. The threats of missing an innovation are to lose market shares or go bankrupt. This is the case for both individual firms, but also whole industries that are based on similar business models (Markides, 2006).

Previous research shows that incumbent firms generally have difficulties in adapting to disruptive innovation due to incumbent inertia (Hannan & Freeman, 1984; Christensen, 1997;
Cohen & Levinthal, 1990; Cyert & March, 1963). When linking the theory of incumbent inertia to the furniture industry it is clear that the industry has been very stable for decades, only fostering incremental innovation (Högberg, 2007). That means only innovating within the current knowledge base like more efficient production, logistics and design of the furniture. But the fundamental way in how furniture’s are sold has been the same for a century. The customer goes to the furniture store, looks and tests different options and then buys the favourite option. The idea of being able to make such a decision online with the help of AR would indeed change the whole structure of the industry, if adopted by the customers, and open up opportunities to new entrants that don’t have physical malls.

The central word in this study is preparation which will be deeper explained with the subcategories of vision & adoption. Vision can be seen as a very diffuse term when dealing with innovation, but it is a strategic approach that should guide the individual firms when deciding to adopt a new innovation. The threats could come from inside the industry due to a narrow vision and lack of an innovative culture. In order to adopt an innovation one need to vision the possibility (Tushman & O'Reilly, 2002). The study will further examine if there is a possible gap in sensing technological change in the industry.

1.3 Purpose and Research Questions
The purpose will be to gain a better insight into the processes of vision and adoption for the Swedish furniture industry in their innovational approach. To link this process and suggest how the furniture industry can prepare by better estimating the impact that new innovations like AR could have on their business and adapting their strategic approach.

<table>
<thead>
<tr>
<th>The main question</th>
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<tr>
<td>1. How can the different firms within the furniture industry prepare for the opportunities and threats that disruptive innovations like AR might give?</td>
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<th>Subqueries</th>
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<tr>
<td>2. How does the different furniture firms vision the future of furniture retailing and does this vision have realistic assessment on new advancing innovation like AR?</td>
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<tr>
<td>3. What factors are seen as important when a decision for adoption is to be taken?</td>
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</table>
1.4 Limitations

(1) All the contacted companies are located in Sweden and Scandinavia. With the exception of IKEA which is global, this study is limited by the fact that it can’t necessarily give a global answer on how different furniture firms work with new and emerging innovations. (2) This study will mainly look at the effects on how furniture’s are sold which means that purely producing companies will not be included. (3) Some will argue that the study takes on a too big question with too many variables involved. Even if this is the case, that doesn’t mean that no good summarized conclusion can come.
2. Method

In this chapter the choice of the general scientific bases are described and justified. It starts with the Scientific Approach, continuous with Research Method and Approach, Empirical Material Collection and lastly explains the Interviews & Questionnaires.

2.1 Scientific Approach

The research methods we have chosen are a result of reading basic method literature and finding the most appropriate alternatives. As Holme & Solvang (1997) states, a research method is a tool that helps an individual to achieve the goal of the study. To achieve that goal, a person must collect information. Even if the right method is used it is not guaranteed that the study has a good quality. A research method is necessary, but not enough. Furthermore, the validity should be judged on the relevance of collected data for this study or the measurements ability to measure what is intended to be measured. To do that we will explain how the research process was conducted and what effect it had on the information validity.

Hermeneutics and Positivism are the two main approaches in reaching for answers in a scientific problem. It is, however, impossible to strictly follow only one of the approaches. There can mostly be a leaning at one of them as a main chosen guideline for reaching the goal of understanding (ibid.). The main approach of this study will be Hermeneutics which is described as the science of interpretation. It revolves around the researcher's understanding of a phenomenon where the overall context is more important than its individual parts. When understanding the overall context one uses the individual parts as reference to expand the contextual understanding. Interpretation is central in this research method and the question that the researcher tries to answer with this method is "What are it that turns out and what the meaning of this is?".

It is important to note, however, that according to the hermeneutic epistemology there is no such thing as absolute truth and therefore, the attempt should be to reach greater understanding. When interpreting a phenomenon that is created by humans, i.e. texts, documents and opinions, the interpreter should try to reach further understanding without preconditions and try to put himself in the author's situation. The hermeneutic circle or the hermeneutic spiral is an important part of hermeneutic approach. It states that greater understanding is generated in a circular motion when new experiences and ideas emerge during the process of research. (Ibid.) This explains how this study was conducted. The
formulation of a problem, research questions and the rest of the study occurred in a circular motion. Even if we had a clear idea on what to study, this circular process generated further and deeper understanding. One problem was that we didn't know who would be able to participate in the study. The furniture industry in Sweden consists of a few large firms. If just a few of them would have refused to participate we would have to redesign this study. Luckily, we were overwhelmed by the response we got.

There is a huge amount of literature within the field of innovation and how firms adopt new innovation. Theories like incumbent inertia might give some prior ideas about how the furniture industry might behave and prepare for potential new innovation, but to our knowledge, there have been very few studies that have linked the different innovation theories and the furniture industry. This has prevented us from having a more advanced hypothesis on the subject.

### 2.2 Research Method

#### 2.2.1 Qualitative Method

The two main scientific methods are qualitative and quantitative. The chosen method will be the qualitative one which has a lot in common with the hermeneutic approach and is the basic method of research within hermeneutics. A qualitative research is not formal and it provides a deep understanding of the research. This is because it attempts to find the essence, a deeper understanding of the intention to investigate. This is done by using techniques as case studies and in-depth interviews. We live in a constantly changing world where information is readily available and where we have some knowledge about many different things. But those types of superficial information and knowledge are often characterized with oversimplifications, distortions and omissions. (Holme & Solvang, 1997) For us to be able to understand the situation a furniture firm is in, we needed to be able to get qualitative information and this was provided by interviewing people with deep knowledge and power to certain decision-making within the participant firms.

#### 2.2.2 Justification for chosen Research Method

The choice of research method that is being embraced is justified by the problem. The problems in this essay are complicated and they crave an understanding of different perspectives of the firms to comprehend. For us to make conclusions it is necessary to make an investigating research in the subject. We do not see a quantitative method as the right method to approach the problem because there is a risk that we will miss valuable data and
just touch the surface of the problem. In the research area of social sciences it is difficult to create an understanding without the researcher trying to see the situation from the perspective of the respondent. (Holme & Solvang, 1997) That is why we tried to gain knowledge by reading about AR and its potential, which became the base for the content and process. We have conducted interviews with people responsible for the different adoption strategies and how they regard AR affecting their firm and the overall furniture industry.

2.3 Research approach
The research approach of this study will be at the borderline between the Abductive- and Inductive Approaches. According to Jacobsen (2007) there are two main different approaches. The deductive approach is when you begin by looking at a theory, make a hypothesis which is related to the theory, and then continue to test it. To do the opposite is called the inductive approach, where you begin by studying for example a business or an organization problem, and then trough different research methods create a theory. With induction you don’t generally test theories but work side by side with them which means that you draw general conclusions based on empirical observations. One can of course not be absolutely sure that inductive inferences are true for two reasons: (1) Induction is based on empirical observations and our senses can deceive us and (2) The investigated empirical data are limited and in many cases not even representative or in other words valid. The Abductive method is a systematic combination of different parts of the research (theory, empiric, method) to develop new theories. It recognizes the importance of the former theories and the new empirical findings as a guideline for the research. (Bryman & Bell, 2007)

2.4 Empirical Material Collection
2.4.1 Primary- & Secondary Sources
The difference between a primary and secondary source can be explained as followed: When the information is from source A which you learned about from source B, it makes B a secondary source. In such case, you refer to the secondary source (source B) because it is the source you received the information from. Source A can then be seen as a primary source (Holme & Solvang, 1997). This study has used both. The primary sources will be presented in the chapter Interviews & Questionnaires.

The secondary data used in this study is dominated by sources of government statistics and market statistics of different trends. A study was done on e-commerce future growth made by
HUI Research AB on behalf of GS1 Sweden. GS1 Sweden is part of an industry-neutral standards body, according to the run as not-for-profit. The study is limited by studying sales to consumers. HUI is a consumer company that specializes in investigations, consulting and research with respect to consumption and economy. GS1 is an organization whose states their vision as to create a world where goods and information flows effectively and safely for all.

It is important to study how credible the source is. According to Holme & Solvang (1997), the analysis of the credibility has two sides, an inner and outer analysis. The internal analysis is done by studying the source itself and concentrates on the following points: inner conformance, the general security of the source's content, the ability to properly understand and reproduce the events that describe the source and the author's subjective perspective. It is also worth noting that our secondary data will not generate any conclusions but will help to make the conclusion more likely.

### 2.4.2 Categorization of different Furniture Firms

The furniture industry in Sweden is much differentiated and this makes it hard to define. Innovations like AR are clearly going to affect the different parts of this industry very differently. This study will mainly look at the effects on how furniture’s are sold which means that purely producing companies will not be included. The main question in this study is “how can the different firms within the furniture industry in Sweden prepare for the opportunities and threats that disruptive innovations like AR might give?” This question might give answers on whether physical malls are over-expanded, which might make some retailers less prepared for AR.

Brege, Milewski, & Berglund (2001) put the Swedish furniture industry producers within different strategic groups. A strategic group is then a group of firms within the same industry that have a similar strategic approach. We have only included and contacted furniture retailers with physical stores or malls in one strategic group and also added a purely internet based furniture retailers. Internet based retailers can be seen both as incumbents and new entrants according to some innovation theories. We will brand them as possible new entrants since there business model differs radically from the traditional furniture retailers. Furthermore, we have not made a big distinction between interior design and furniture and will treat it as basically the same industry. Most of the firms offer a mix of furniture and interior design. We have identified four groups of furniture retailers in Sweden and we will explain which groups are included in this study.
The first types are retailers with many malls or stores around the country. Most of these retailers offer their products online but the physical malls are their core offering. The second group is retailers that only or mostly sell their products online. In this group there are some that have a couple of stores or showrooms around the country, but their core business model is based online. The third group is producers that actually manufacture the furniture and mostly sell through middlemen. Some of these producers offer their products directly for costumers and can therefore be classified both as producers and retailers. The fourth group can be described as selling an overall design solution which means a package of specialized furniture’s. The third and fourth group of companies will not be included in our study.

Some of these firms are vertically integrated where they own large parts of the value chain. This means everything from production, logistics and stores. Ikea is a clear example of this type of integration. Others are just middle men and only a small part of the actual value chain. There are some online retailers that don’t even have a distribution center. They basically pick up orders and send them to the producers and the logistics gets handled by a third party. The five biggest furniture retailers in Sweden are Ikea, Jysk, Mio, EM and Svenska hem which have 86, 4 % of the total sales. Ikea is very dominant with 59, 6 % of the total market (Industry Organization FMI, 2011). None of the biggest retailers are purely internet based, but we will still put these companies within the same strategic group. The assumption is that a future with more advanced AR-technology and expanding e-commerce, this online group might very well be able to compete with the biggest players.

2.5 Interviews & Questionnaires
We have interviewed two people working in the furniture industry and received extensive answers from three other firms on our questionnaire. Thommy Grape was interviewed and is the CIO of EM Home AB (See table 1). EM is a franchise chain of forty stores throughout Sweden and Åland. Their headquarters is located in Linköping and it has various sections. There's Market, Purchasing-, Accounting-, IT- and Logistics Management and Business Support. The IT manager is a well-qualified person to talk to when it comes to issues of innovation and adoption of AR. Thommy is also a member of the board and is part of the overall decision-making in the firm. The second person we interviewed was Robin Ålander. He is the marketing director of Designonline. Designonline is an interior design and furniture shop who operates exclusively online. They have costumers from over 70 countries. He is involved in the decision-making process in the firm and is very suitable to answer our questions. Fredrik Jerneke, IT-manager in Rusta AB and Sofie Strömberg, marketing director
in Mio AB encountered some problems and couldn’t participate in a telephone interview but agreed on answering a questionnaire with extensive answers. We also got very extensive written answers from Jens Ganslandt (Product Manager) at Inter Ikea Systems B.V. In 2013, Ikea had a total of 349 stores in 43 countries and is the largest actor in the furniture industry. They are very decentralized and as Jens stated, different companies in one.

In this study the primarily research question was how the different furniture firms can better prepare for possible disruptive innovation. Therefore it was important that the right people were interviewed which required a primary investigation of the industry. When the correct respondents were identified the next step was to design the right kind of questions to reach the goal. The qualitative interviews were flexible but with clear guidelines to ensure to get the questions answered.

In the beginning, the idea was that the number of respondents would be at least six individuals for the study in order to get as valid information as possible. But due to some obstacles, it had to be adjusted to five individuals. It was compensated with secondary data and by interviewing individuals with very high competence in the subject. Therefor the respondents needed to meet three criteria. The following criteria have to be met:

- The respondent needed to work in the furniture industry.
- The candidates need to have a management position in the IT-, innovation- or marketing division and if possible, some decision-making authority in the overall firm.
- The respondent needed to work in a midsize or large furniture company.

Table 2: Compilation of respondents

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Title</th>
<th>Data collection method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thommy Grape</td>
<td>EM Home Interior AB</td>
<td>CIO/Marketing</td>
<td>Telephone interview</td>
</tr>
<tr>
<td>Robin Ålander</td>
<td>Design Online AB</td>
<td>Marketing Manager</td>
<td>Telephone interview</td>
</tr>
<tr>
<td>Jens Ganslandt</td>
<td>Inter Ikea Systems B.V.</td>
<td>Product Manager</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>Fredrik Jerneke</td>
<td>Rusta AB</td>
<td>IT Manager</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>Sofie Strömberg</td>
<td>Mio AB</td>
<td>Marketing Director</td>
<td>Questionnaire</td>
</tr>
</tbody>
</table>

The idea was to conduct telephone interviews with all respondents but due to the fact that most respondents did not have the opportunity to participate in a telephone interview a flexible questionnaire was designed. Two respondents, however, had time to participate in
telephone interviews that lasted for over an hour (see Table 1). This can be perceived to be wrong when conducting a qualitative study but the respondents were well informed and had a free hand to develop their responses. They also received a revised PDF attachment in the e-mails so that they become aware of the theme and what the study is about. The questionnaire is available in the appendix.
3. Theory

This chapter describes studies and theories collected from previous works which will form the theoretical framework for this study. It starts with exploring AR and related trends, continuous with explaining innovation, resistance to innovation and lastly dealing with innovation. It ends with a summary of the theories that will form the overall framework of this study.

3.1 AR and Related Trends

As previously explained, this study assumes AR as a potential disruptive innovation. But in order to clarify why this is a legitimate assumption not taken from thin air, further explanations on AR and related trends are needed.

3.1.1 AR Technology

AR has gone from being pure science fiction to reality. In a time were rapid adoption of smartphones have occurred, it has also enabled growth and advancement for AR-technology. It is therefore no longer enough for retailers to simply stock their outlets with the latest products when the popularity of smartphones has fuelled a new growing mobile shopping culture (Pradeep, Mittal, & Chandrasekaran, 2013). AR uses inputs such as video and graphics to overlay the digital world onto the real world and give consumers better chance to evaluate physical products online. It has the potential to create a shop without a shop and this will enable a more personalized shopping experience.

One problem is 3d-modeling which is costly and a question is who is going to pay for it and if it will make economic sense at all. But the development is going fast and 3d-scanning cameras are already being sold and they are getting better. There are realistic possibilities of cheap 3d-modeling with good quality in the near future. This could be done with any type of product and will ultimately be cheap, reliable and easy to upload on a website or app. Another problem when using a smartphone to furnish a room with virtual furniture is distance. The camera on the phone can’t count the distance in a room and the user needs to adapt the size of the furniture to fit a chosen room which can be tricky and time-consuming. Many smartphone producers have already patented technologies with the purpose of making 3d-cameras with automatic counting of distance a standard feature of their future phones (Mac Daily News, 2014). These cameras can use laser or be based on other technologies. The important part is that they can instantly measure the distance in an image and when uploading a virtual sofa it will automatically adopt its size to the environment.
The last problem is the computing power of computers, smartphones and tablets. Our natural intuition assumes that technical advancements are linear. This is absolutely not true for computing power and data storage in IT-products. Moore’s Law, named after Gordon Moore, tells us that the number of transistors in a minimum-cost integrated circuit are doubling every 12 months. This observation was done in the 60s and it still holds (Schaller, 1997). The meaning of Moore’s law can vary a bit, but generally, it means that computers and smartphones just 3-4 years old are outdated because of this very fact. The advancement of computing power is therefore exponential, not linear like our human intuition tells us. If the AR-applications work slowly and with bad resolutions one might make the conclusion that it’s not a threat. Moore’s law tells us that such conclusions could be very misleading.

Studies have further showed that the consumer purchase intent increases significantly when using AR as a tool in online shopping. Product knowledge has no significant effect while results have uncovered a strong relationship with AR. While the impact of telepresence does positively impact both attitude and product knowledge it is the attitude that most significantly impacts purchase intent and the conclusion is that affecting attitude should be the primary concern for stimulating purchase intent (Schwarz, 2011).

3.1.2 Gartner’s Hype Cycle
Gartner, Inc. is an information technology research and advisory company that publish yearly reports on new technologies and their predicted economic impacts. The reports are called the Gartner Hype Cycle. These reports are trying to look deeper and beyond the hype and evaluate the economic effects of new evolving technology. Timing in investment is crucial for a successful investment and tools like this is trying to find the right timing. According to them, each new technology goes through five phases in its lifecycle. These phases are technology trigger, peak of inflated expectation, trough of disillusionment, slope of enlightenment and plateau of productivity. The trigger could be some early breakthrough that shows proof-of-concept and trigger further media interest. Then it comes to the inflated expectations that turn to disillusionment. Their assessment for 2014 is that AR is going through the phase of disillusionment. By being able to identify these phases it becomes easier to identify the best time for investment. The enlightenment- and productivity phases are the best for successful investments. (Gartner Inc, 2014)
### 3.1.3 E-Commerce

The online furniture market in Sweden grew by 16% in the third quarter of 2014. 10 percent of the e-commerce consumers say that they shopped online for home furnishings (E-Barometer, 2014). In the years 2011-2012 the growth of e-commerce and physical in-store shopping separately for furniture’s was 15% for e-commerce and 0.1% for in-store shopping. According to a scenario report conducted by GS1 Sweden in cooperation with HUI Research, e-commerce is still in its infancy but progress is good and is driven primarily by three factors: A growing maturity of the consumers, an increased maturation of retailers and a technical maturity. Initially it was books, electronics and clothing that were driving online consumption, but these products have now laid the foundation for a range of other products and industries. The goods that are expected to grow the most in the coming years are food, decor and building products. According to prognoses the structure of trade will change and the need for retail space is expected to be reduced, or at least not increased. The home furnishings industry is predicted to catch up (GS1 Sweden, 2013).

For now, the E-commerce market share is relatively low for furniture with only 2 percent of sales that are made online. Efforts to change this are not yet fully prioritized in the same way as in the traditional retailing. There are very few purely e-commerce oriented furniture retailers; some examples are Furniturebox and Designonline. These players are still relatively
small and often belong to niche market. Furniture dealers biggest challenges is that the range is largely made up of bulky goods and with the feel factor, the products are often not comparable and therefore consumers often want to feel them before purchase. New logistics solutions with a focus on heavy consumer deliveries will develop and promote this industry in the long term. (GS1 Sweden, 2013)

To separate e-commerce- and retail trade will become increasingly difficult. Firms and consumers will use more channels to do business with each other. Just as social media blurs the boundaries between our regular and digital identity, e-commerce will blur the line between our real and virtual marketplaces. The consequence of increased e-commerce will also reduce the need for retail space. This will have several consequences. The assessment is that large shopping centers will remain but the growth will not continue and that smaller shopping centers in the country will decline (Ibid.).

2.1.4 Generation C
The demographic changes that are coming might further push for dramatic changes in how consumers buy furniture’s. According to Friedrich et al. (2011), the coming generation are defined by the internet and mobile devices. They call them the “Generation C”. They use handheld devices daily for as much as six hours and bricks-and-mortar outlets will not have the same importance. Many sectors will be affected and retail is going to be one of them. A trend of a connected online and offline world is going to be clear with the help of augmented reality that allows a more elaborate presentation of retail goods. Electronics retailing has already lost ground as an in-store experience where people purchase electronics and software online. According to the authors, few businesspeople are aware the impact this generation will have. This will happen quicker than most of them think. How can firms prepare for the coming demographic change that is coming? One answer is to be open-minded in adoption of new technology when trying to reach this growing group.

3.2 Innovation

3.2.1 Definitions of Innovation
There are different interpretations on what innovation actually means. Freeman & Soete (1997) makes a clear difference between innovation and invention. Innovation is when somebody tries to commercialize an invention to a profitable product or service. It is when this invention becomes commercially available that it becomes an innovation and if in the long run profitable that the market structure changes. An innovation doesn’t have to be totally
new. It can also be to put together with different ideas and technologies already in existence. This definition of innovation can be summed up as “recombination of old ideas that challenges the present order or a unique approach which is perceived as new by the individuals involved” (Zaltman, Duncan, & Holbek, 1973). There is also a clear difference between technical innovation and administrative innovation. Technical innovation includes developing and implementing new technologies, products and services while administrative innovation includes developing and implementing new procedures, policies, and organizational forms (Phillips, Noke, Bessant, & Lamming, 2004). Therefore, vision and adoption of AR within the furniture industry can be classified as an innovational process that has both a technical and administrate component within it.

### 3.2.2 Categorizing different Innovations

Different types of innovative activity can be categorized in different ways. Words like disruptive-, radical-, incremental-, tactical- and progressive innovations are frequently used to differentiate different innovations into categories that make sense. These categories are made by assessing the change an innovation makes and the motives behind the development of them. For a private firm, the main force for adopting and developing new innovations is to gain a profit and a competitive advantage (Cooper, 2013).

Hill & Rothaermel (2003) makes a clear difference between radical innovation and incremental innovation. Incremental innovation builds upon established knowledge base used by incumbents. It improves the existing products and processes or in other words ‘doing what we do, but better’. A radical innovation involves products and processes that are novel to the incumbent. To be able to successfully adopt a radical innovation there needs to be an absorptive capacity (Cohen & Levinthal, 1990). This includes the capacity to extend the current knowledge base into areas previously unknown which also implies greater risk. Risk that established companies prefer not to take. The reasons for this can partly be explained by different incentives and financial realities. Even if radical innovation can be fairly easy to identify, it is not easy to predict if or when this innovation will have a commercial success (Morrison & Potts, 2008).

There is also an investment and portfolio categorization of different innovations. These categories are made to identify the motives of the investments. Cooper (2013) puts these innovation investments into four groups. The first group is tactical and includes small product changes like graphics. The second is continuous range extension or upgrades. The third is
progressive and addresses a consumer need better than the competition. The fourth is disruptive and this addresses unmet consumer need and requires large investments. He shows how most investments are tactical and low-risk. AR can probably be seen as something between progressive and disruptive.

Lastly, it is important to clarify the concept of disruptive innovation. Initially these innovations give a lower performance and are usually rejected by bigger firms. On the other hand they bring some new attributes to the market and enable a new niche market to grow. This is the main reason why established firms reject the innovation in the beginning and this can then give new entrants an opportunity. Previous studies have shown that incumbent often get outcompeted by entrants when a disruptive innovation are introduced. (Christiansen, 1997; Sandström, 2010)

### 3.3 Resistance to Innovation

#### 3.3.1 Incumbent Inertia

One of the main forces of resistance to innovation and change can be summed up as inertia, or incumbent inertia. There are different types of explanations to why incumbent inertia occurs, especially in large and established organizations. Many academic fields have tried to create models that explain this phenomenon. Research in economics, political science, sociology, psychology and even biology has been conducted in order to understand its nature. (Hannan & Freeman, 1984; Hill & Rothaermel, 2003; Christiansen, 1997; Cohen & Levinthal, 1990; Cyert & March, 1963)

According to Hannan & Freeman (1984), the study of population ecology and organizational theory shows that in a stable environment, predictability and bureaucratic systems have an advantage and even an active attempt to change organizations tends to fail, at least in the short run. This is why changing large organizations and even reforming dysfunctional society’s is so hard, if not impossible. Population ecology, organizational theory and implementation of new radical innovation seem to point in the same direction in predicting failure as a result of incumbent inertia.

Hill & Rothaermel (2003) use three main explanations to incumbent inflexibility which is economic, organizational theory and strategy. Because of this inflexibility, they risk losing their previous market position and eventually decline. The reasons for inertia are different, but failure to embrace new technology, different economic incentives between incumbent and
new entrants and embeddedness of incumbents within an established network all add to the problematics. They call this a standard model, but don’t entirely agree. They agree on the fact that this is often the case but that there are outliers. These outliers do adapt and survive in the face of challenging innovation. Some pioneer radical innovation and dominates the very same market these innovations create, even if this is not true for the average incumbent. When incumbents pioneer a new technology this can open a Pandora’s Box and create uncertainty and therefore low incentive to invest. New entrants, however, have every reason to challenge the status quo. As a clear example, Ikea has been the first furniture firm to adopt an AR-service, even if it is a clear incumbent.

According to Christiansen (1997) new entrants don’t have to deal with internal forces of inertia as incumbents. Neither do they have the same commitments to established value networks which give them far more room for manoeuvre. These value networks are customers, suppliers and investors which usually constrain incumbents due to their embeddedness in them. This view concludes that the incumbents are too resource dependent on external factors. The incentives to invest in unproven technology are higher for new entrants even if, as it turns out, most of these investments actually fail. But the fact is that all it takes for the market to change is one successful new entrant. The reason that big and successful companies have historically rejected to adopt new technologies is because riding on a wave of success is seen as more secure. They assume that their traditional customer base will be loyal and they put too much emphasis on the current needs of their customers.

Other explanations for inertia look at the political aspect of an organization and power struggles from within. Cyert & March (1963) argues that in time of stability organizations settle from within in what they call a “truce”. This truce means that the distribution of power and resources within an organization is stable. But when an organization changes because it chooses to or because of outside forces, this truce falls a politics occurs were everybody wants to protect their position. The fundamental fact is that changes due to innovation do create different distributions of power which is unavoidable. But a power struggle can halt effective change and hurt the organization which is a result of organizational inertia. The risk is even greater with the absence of strong leadership.

### 3.3.2 Cognitive Dissonance & Sunk Costs

What happens when two conflicting ideas enter the mind? A predicted reaction would be mental defence mechanisms that choses the less harmful idea. Akerlof & Dickens (1982) tries
to incorporate cognitive dissonance into an economic model. In its most abstract level it states that a person is uncomfortable with maintaining two contradictory beliefs. When we use this theory on firms and innovation, they mostly tend to see themselves as innovative and identify themselves with a certain business model. What happens when an innovation starts to threaten the very same old business model? One of the economic applications of the theory is “sources of innovation” which argue that innovation is harder to manage while holding deep old beliefs. Cognitive dissonance as a theory would then predict that sources of innovation will come from the outside as new entrants. The reason is that these outside firms or individuals don’t have as persistently held beliefs about how things should work.

The theory doesn’t put much emphasis on available market information, but on how firms and people choose to analyse and interpret that information. Firstly, persons don’t only have preferences over states of the world, but also over their beliefs about the state of the world. Secondly, persons have some control of their beliefs and not only by analysing available information, but by choosing to analyse information that will most likely confirm their desired beliefs. Thirdly, the assumption is that a belief will persist once chosen. This is mainly for practical reasons for their theory. The ability to choose your beliefs means that the chosen beliefs results in different actions. If somebody choses to believe their firm is not under threat due to new innovation it means they would be able to sleep at night. But this type of mental self-convincing also generates inaction towards potential new threats (ibid.).

Morrison & Potts (2008) also tries to explain innovation management with a behavioral approach in explaining the difficulties of choice under novelty. Some of the difficulties are awareness of novelty, creating space for innovation and coping with failure. Cognitive distance, which is different from cognitive dissonance, may occur under big change that is unfamiliar. This means that a bigger effort is required to cope with the change. Disruptive innovation is clearly such a novelty that can pass by invisibly and become systematically underestimated if not given proper attention. The innovation might be noticed but this is not enough for a proper response. This is not only a practical problem but an overall identity problem. New ideas need commitment which can be related to the issue of sunk cost. Commitment is a scarce resource and by committing to something new creates tradeoffs from previous investments.
3.4 Dealing with Innovation

3.4.1 Overcoming forces of Resistance

Van de Ven (1986) focuses on four main problems when dealing with innovation for managers. These factors are firstly a human problem of managing attention, secondly a process problem in managing new ideas into good currency, thirdly a structural problem of managing part-whole relationships and lastly a strategic problem of institutional leadership. In order to successfully deal with innovation one needs to make these factors and problems fit together in an overall framework.

Most of the different theories above suggest different methods of overcoming forces of resistance. According to Hill & Rothaermel (2003), one way in limiting incumbent inertia is to structurally isolate units responsible for commercialization of radical innovation and legitimize autonomous action within the organization. This means to let managers have freedom to take certain decisions that is not in line with the overall strategy of the firm and create a culture that foster this kind of behaviour. Further, to allow managers to question the overall strategy of the firm. The very fact that most managers have been promoted for successfully implementing the firm’s strategy means that they might be emotionally committed to the same which can blind them to change and further structuralize the inertia. Prior storms and how a company has dealt with these storms might help to predict whether a company might succeed even if a radical innovation changes the market.

Cohen & Levinthal (1990) emphasizes the lack of valuing new information and the application of it to commercial ends by incumbents which creates a low absorptive capacity. Incumbents may be good at absorbing information that adds to their present knowledge and may result in good incremental innovation. But this, however, is not the case with radical innovation that in most cases introduces totally new knowledge. One clear advice is for incumbents to invest in basic know-how related to emerging technologies. This increases the absorptive capacity.

According to Dixit & Pindyck (1994), using the NPV calculation when deciding whether to invest in a radically new technology can be misleading. The NPV on investing in established technology is higher than in a radically new one and therefore the incentives are lower. This is due to the higher discount rate. Using the traditional NPV model is therefore not helpful when dealing with investments under this type of uncertainty. Tang & Yates (1995) also deals with return estimates but includes the problems when sunk costs are involved in the decision
making which can be reduced under certain conditions. Namely when explicitly estimate the
given options based on possible future return yields. Managers should always consider these
projections, but research suggests that emotional commitment to a project can affect the
decision making.

3.4.2 First-Mover (Dis) Advantage
According to Lieberman & Montgomery (1988), there has to be some initial asymmetry in
order for first-mover opportunities to occur. This asymmetry can be everything from
information advantage, absorbability advantage and so on. It is the firms that successfully
exploit this asymmetry that gets the biggest advantage. They define first-mover advantage as
the ability for a pioneering company to earn positive economic profit comparatively to its
competitors. This advantage may be because of the firm’s unique resources or simple luck.
They identify the three primary sources of first-mover advantage as technological leadership,
pre-emption of assets and buyer switching cost. The two basic mechanisms that enable
advantages are the learning curve and successful R&D investments. Advantages occur
endogenously from a firm gaining opportunities from either proficiency, luck or both.
Proficiency may involve some degree of foresight, market research or skilful product or
process development. It is not always a question whether a firm chooses to be the first mover,
because in some cases that is not an option.

By successful R&D investments a firm can get an advantage by patenting the new technology.
In this way it gets harder for competitors to leapfrog the patent-holding firm. The problem is
that it is hard to get protection from patents since the competition can invent around the
patent. Pre-emption of assets is the more primitive form of first-mover advantage. By
controlling a scarce asset as some natural resource or strategic geographical store location a
firm can then create barriers for entry. A first mover-advantage can also occur when
customers get used on a particular firm’s product. This can create a buyer switching cost,
since there is a cost for a customer for switching to a new product (ibid.). One of the biggest
advantages by being the first-mover is the learning curve which makes every extra unit
produced to fall in cost. By being the first-mover this can create a substantial competitive
advantage when you can offer your product or service for a lower price or/and higher quality.
Spence (1981) argues that this can create a substantial barrier to entry depending on the
innovation.
According Lieberman & Montgomery (1988) there are, however, clear disadvantages of being the first mover. The benefits of the late movers can be summarized as the ability to free ride on the first movers investments, resolution of technological and market uncertainty, technological discontinuities and incumbent inertia. These factors can destroy all the positive effects of being the first-mover. The free rider effect occurs when a late mover can easily and cheaply imitate an innovation. It is easier to imitate than to develop new products or processes. This can create an incentive to wait and let others take the lead. Even if the first-mover advantage might get some clear advantages it takes time and effort to educate the costumers on the innovation and by being a late mover this effort can be surpassed. The late movers can wait out the resolution of technological- and market uncertainties.

Wernerfelt & Karnani (1987) argues that a first-moving option is more attractive when a firm has influence over how that uncertainty is resolved. Some companies with a large market share can have the power to set new standards for a whole industry. In this case the only reasonable option for smaller firms is to follow these standards. Shifts in technology and customers’ needs are one of the events where usually new entrants find opportunities to exploit. There are numerous examples of new entrants that more or less replaced the incumbent firms by exploiting this factor. The fact that the replacing technology often appears while the old technology is still growing is a big reason why incumbents fail to see the threats and possibility of the new technology. This factor is also related to cognitive dissonance where the incumbents see what they want to see while having some data that support their view. Lilien & Yoon (1990) argues that when dealing with a strategic decision of entry, the timing of entering a market should balance the risks of premature entry against the missed opportunity of late entry. When the expected returns are higher, enter early.

**3.4.3 Alternative Methods**

The idea of leapfrogging is a strategy which implies that firms or countries can leapfrog over its richer and technologically advanced competitors (Sudharshan, Liub, & Ratchford, 2005). Originally it was used to show and why poorer countries can grow faster and converge with richer countries. Due to globalization poorer countries don’t have to go through the same phases as rich countries by importing the newest technology directly. The rich countries, however, are more locked in existing technology and in order to use the new one they would have to switch which can be expensive. Sudharshan, et al. (2005) examines the ways a firm can deal with a new generation of innovations. It can either imitate or leapfrog it. The choice
should be made depending specifically to the market conditions with emphasis on consumer preference and the speed of consumer adoption.

3.5 Theoretical Summary
The furniture industry has clearly been shaped by incremental change rather than radical (Högberg, 2007). One assumption would then be that a substantial incumbent inertia must have developed over the years and possibly cognitive dissonance towards innovations that challenge the fundamental business models of in-store retail. There are also suggested methods of overcoming resistance towards new innovations. In the analysis section some suggested theoretical gap will also be presented.
4. Empirical Result

This chapter covers the compilation of all the answered questionnaires and interviews held with different companies within the Swedish furniture industry. The headlines Vision & Adoption are summarized answers from all the different firms. It will end with the two interviews in more detail.

As a reminder, the main question in the introduction was “how can the different firms within the traditional furniture industry prepare for the opportunities and threats that disruptive innovations like AR might give?” and the two subqueries were “how do the different furniture firms in Sweden vision the future of furniture retailing and does this vision have realistic assessment on new advancing innovation like AR?” and “what factors are seen as important when an adoption-decision is to be taken?” The main question will be categorized within the categories of Vision and Adoption.

4.1 Preparing for Change

4.1.1 Vision (Summary from Questionnaires)

The first question we asked was if the participants had ever heard of Augmented Reality. All five of them said yes. The question may be simple, but since AR is such a new and unestablished technology, the assumption was that some of the participants would be unaware of it. Such an app has already been developed in Ikea. A question on whether the participants who hadn’t adopted AR yet had any visions or concrete plans for using AR as a tool for enhancing its e-commerce was asked. In this case the answers started to get more interesting. EM AB said that they had plans for different developments of the technology like providing an app-service. They were working on a project a few years back and now during the fall which they have doubled its presence in. They have already partnered with a company called Will Work Inc., a leader in AR in this industry. They have about 10 models that are buildable via their 3d tools and via their AR tool where you can take a picture of your room and basically furnish it.

Ikea stated that the solutions that they are working with at Inter IKEA Systems (Which is in charge of catalogue production, store establishment and transferring know-how to Ikea retailers) are a digital catalogue and digital publications\(^2\). They have already implemented AR

\(^2\) Inter IKEA Systems, which is one of IKEA: s three branches, owns the intangible rights to the "Ikea concept" as trademarks and product design, and is franchising donor to the Ikea store located in the IKEA Group and operated by Ikea external franchisees.
and have had a working app for three years. Designonline which is a furniture retailer based online answered not at the moment, as the technology works today. It all depends on how the technology develops, how it is received by their target audience and what costs it would entail. An industry standard has not been created yet and for a small company it would be too risky to adopt at the moment. Mio simply said not in the near future and Rusta answered with a clear no. Therefore, three of the total five participants had no plan for using AR at the moment so a follow-up question were asked on whether they did see AR as a possibility in their future sales strategy? Designonline answered maybe, but not in the way it works with today's technology, but in a time of rapid technological development it cannot be ruled out. Mio simply said probably and Rusta with a clear no.

4.1.2 Adoption (Summary from Questionnaires)
What would was the reason for adopting AR? Ikea is the only company that have adopted it on a larger scale. They stated that when it comes to digital catalogue and publications, they are a good way to offer additional digital service to their customers. This allows them to further enhance their products and explain its functions. When it comes to the ability to deploy virtual furniture in the user's home using 3d and AR, this is obviously very close to the buying decision and hopefully a good way to allow the user to find out if a piece of furniture fits with what they already have in the home and if the furniture fits in size. From a marketing perspective, this hopefully reduces returns and provides clarity about a product prior to purchase.

Are the competitor’s strategies important when considering an adoption of AR? EM said no and that they work very little to check on the competition. Their strategy is to go on with what they feel is the right path. Ikea stated that they look at what other players are doing based on an idea- and creative perspective. They are always interested in improving their solutions and would like to be updated with the latest opportunities available. When it comes to newly developed technology as AR it is important that everyone involved will find application areas that are recognized for the users and that together we ensure that the technology becomes a natural part of the user's behaviour. So, they see at other players solutions as a good inspiration for what they do. Mio said no, what matters is what customers want and Rusta simply said yes.

When asked whether they think the furniture retailing will change through AR, EM said, yes they think so. One should not think about it as having two different platforms, a physical store
and e-commerce, but you actually have one platform where you have both a physical and virtual presence, so that you do not work with e-commerce as a separate concept. Designonline said maybe, it depends a lot on how accessible it is for ordinary people and how cheap the technology becomes for the retailers. Mio commented to some extent. However, they believe that customers always have a need to experience the furniture live. Rusta simply said maybe.

Ikea said that technology and new innovation will always create new ways for consumers and retailers. That AR could change the way we buy and consume information is not entirely impossible. But more likely perhaps, it will reinforce what is already there and working in symbiosis with other solutions and technologies. The hope is that AR is a technology that their users and consumers feel adds something to their decision-making process regarding the offered products or increase the understanding of the products. However, that AR alone would change various retail areas might not seem very likely. Rather, as they pointed out, to work as a natural support and reinforcement to other solutions.

4.1.3 Preparation (Summary from Questionnaires)
EM said when you try to do something different it is always someone who contradict it and want to work in the traditional way. If they invite the customer through a virtual reality, the customers can help them implement their strategy. In that way you can clearly see what the customer wants. Designonline said an obstacle in their case is that the furniture industry is an industry where you rarely adopt new technology which can have an effect on an industry standard being delayed. To create 3d-models of products is a costly job and the big question is who should pay for it. In the best of worlds all the product suppliers would provide them with 3d-models of their products, but then many suppliers in the current situation cannot even get the satisfaction of product images. It is highly unlikely that they could cope with the demand for 3d-models. They as a distributor of other brands cannot pay for this when the margin would probably not cover the cost of development.

4.2 Telephone Interviews

4.2.1 EM Home Interior AB (Grape, 2014)
EM Home Interior AB is as earlier mentioned a franchise chain in the furniture market. It has over forty stores in Sweden and 2012 it had a sale between 500 million and 1 billion SEK. EM is a major actor on the Swedish market and there main office is located in Linköping. The interview is with Thommy Grape, CIO at EM.
The central operation has been divided into three bubbles. These are marketing, catalogue and IT. They work a lot with AR and we think it is exciting to follow the development. Grape goes on to say that AR is part of EM’s business plan and strategy. He says that they have developed a multi-channel strategy, which they then have revised on a channel strategy in which he points out is very important when the goal is that all contact surfaces towards the client is on the same platform but it is different channels to reach the customer on. The goal is to be able to get the same feeling and experience regardless of which channel the customer comes in. According Grape, they have an AR-project and they have partnered with a company called WillWork Inc., which according to him is the leader in AR in the industry.

Furthermore, he points out that the technology is not mature yet and has not reached its full potential. They have recently released an AR-application on the Appstore but have not announced it on the website because they are developing the website so that the customer can reach the AR application on the Appstore with a single click. He believes that AR has the potential to open up the market for the e-business. EM has a vision to have a platform where the customer can have both a physical and virtual presence. As a result they do not work with e-business as a separate concept. It does not matter where the customer look or where the customer order as long as it is within their "bubble". In their perspective it doesn’t matter whether the customer buys in the stores and then order through the website or vice versa.

Grape does not believe that e-commerce will completely take over the physical trade in the future because most customers demand an experience and a feeling of the product. Grape has good contact with VividWorks Ltd which is the company that offers innovative online 3d design-to-purchase solutions. VividWorks talks a lot about AR and they have many projects going on right now. One example is that the customer can build their own sofa online that is placed on the floor and can bring up the couch in the virtual camera position. That is what EM will be able to have in two years. Grape has tested the product and it is not perfect, but he is impressed. Another interesting project they are doing is that the customer should be able to photograph its own room and then be able to virtually uncover, i.e. unfurnish, the room by pressing a button.

Grape does not think that AR is going to cannibalize sales in the physical stores. He sees AR as a channel that will increase sales in the stores. After all, the stores offer a try-out of the products. Although he did not believe that AR will cannibalize sales in physical stores, he believes they will get by with less retail space than they previously had. He thinks that the
stores don’t need to be 4000 square meters, but maybe be on 1000 Square metres. According to him, there are two very strong currents going in the opposite direction at the moment. Many customers moved to e-commerce, i.e. they look in the shop showrooms and then order the product through the internet. Simultaneously, it is a very strong current in the opposite direction where customer’s search after furniture online and then go to the store to complete the purchase. By focusing on the virtual presence, it will increase the rate of establishment of the physical arena.

According to Grape, the implementation process of new technological innovations can go slow sometimes which needs to be considered when or if to adopt new innovation. When trying to do something different there is always someone who contradicts it and want to work in the traditional way. If EM invites the customer through a virtual reality, the customers can help EM to create and implement strategies with their feedbacks. This would help EM to clearly see what the customers want. There are always people who are susceptible to change and people who are less susceptible to change. Despite that, the overall furniture business goes against a change perspective. The only thing that worries policymakers is that many may feel that you are in deep water because many do not know what it will mean to work with e-commerce. There is a door that was previously not been opened. Furthermore, EM does not use any type of general innovation strategy, but they have a very short decision path and they have a mentality that says that no idea is too crazy. They have a low threshold for taking in a whole new innovation and ways of thinking. The managers have very good contact and talk to each other almost every day. They are just three people each responsible for one bubble and Grape also serves on the Board of Directors. He feels deeply rooted in the decision making process.

The strategy of EM is not affected by what competitors choose to do. They do not check on the competition, but their strategy is to go on what they feel is the right path. If they look too much on the competitors and their technical solutions they would lock themselves in. They decide how they want it, and then they see to that it becomes a reality. The range of furniture’s in their stores is quite unique and it's only EM that sells them.

4.2.2 Designonline.se (Ålander, 2015)
The company was founded in 2002; it sells furniture’s and design & interior decoration online. Today, customers in more than seventy countries have opportunity to buy
Scandinavian design and decor on their site. They are located in Kalmar. The interview was with Robin Ålander, Marketing manager at Designonline.se.

Designonline is a small online based company that follows the developments in AR. They can absolutely see the future potential of the technology, but right at the moment, the technology is not mature enough for them to take the decision to adopt it. Ålander generally sees the trends in E-commerce alone as a threat for traditional furniture retailing, where AR can only advance the development.

Due to their small size it’s hard to take the lead in AR. They can see the possibility of future adoption. Ålander points out that the speed of technological development in general can’t rule that possibility out. The most important thing for Designonline is that the customers adopt the technology. There is not a point in adopting an even functioning technology if the customer doesn’t do the same. The main motive of adopting AR would be to help the costumers in choosing the right furniture for their particular home. They would achieve this by putting the furniture on the right environment and by this way ease the decision making for the customers.

As long as the technology works well, gets cheaper and adopted by the customers there will be no formal problem for future implementation. On the other hand, Ålander talks about the industry as a whole and thinks it’s very conservative. The traditional furniture retailers want customers to visit their stores. Innovation is certainly not a word that defines the overall business. When it comes to the industry as a whole, Ålander thinks that the problems for implementing AR will be both technical and administrative. The administrative part is not only within the different firms but in the relationship between producers and retailers etc. This is a clear psychological barrier that will need to be passed in order for successful adoption.

One very important thing to consider for Designonline is if a new technology standard can grow from AR. They alone will not be able to lead the adoption process because of their small size, but if some standard was developed over the whole industry the risk would be smaller. Ålander doesn’t fear being left behind by the competition because of a too late adoption since AR is not too complicated to implement. If the technology is adopted by the customers, Designonline will probably follow.
4.3 Empirical Summary
As the empirical results show, there is certainly a vision for some of the firms in seeing AR as a natural part of the future. Three of the companies saw it as a realistic possibility with mixed enthusiasm. The others were rather sceptical. The adoption decisions were already taken by EM and Ikea. EM is in the middle of an implementation process while Ikea already has provided an AR-service for three years. Designonline were basically in a monitoring position. Neither could there be found any clear leapfrogging ambitions from the smaller firms. When using Ikea as a benchmark as the biggest and successful furniture firm, most of the other participants claimed that they weren’t really competitors since they operate within a different niche-market.
5. Analysis

This chapter provides an analysis of the empiricism and relating it to the developed theoretical framework. This framework will be categorized under the headlines Vision & Adoption which should suggest how the furniture firms could prepare for change.

Once again, as a reminder, the main question in the introduction was “how can the different firms within the furniture industry prepare for the opportunities and threats that disruptive innovations like AR might give?” and the two Subqueries were “how does the different furniture firms vision the future of furniture retailing and does this vision have realistic assessment on new advancing innovation like AR?” and “what factors are seen as important when a decision for adoption is to be taken?”. These questions are not going to be answered by only analyzing the empirical results of this study but to try to put these results within the developed theoretical framework, studies on AR and E-commerce. To seek answers on how the furniture industry could prepare for coming innovations, with emphasize on AR, is a complex question with many variables to consider. It requires a lot of theory on innovation and how it affects firms in general. Even if some of the theories and studies seem outdated, we have only chosen the ones that still hold for this study. Furthermore, it is neither possible to give exactly the same advice to every firm on how to prepare. They are in different positions of power with different interest, but some guidelines might be possible.

Schumpeter has famously written that “creative destruction is the essential fact about capitalism”. In the long run, destruction always occurs in some way or another. But what does this mean for a particular market as furniture. One might take a look at simple population ecology like Hannan & Freeman (1984) does. When one organism or organization dies there are always others that will fill the void. In a stable environment, as mentioned, predictability and bureaucratic systems have an advantage. But when big changes forces organization to change, the previous predictability can become a huge problem. This is something that should concern the furniture industry.

When linking the theory of incumbent inertia to the furniture industry it is clear from some of the answers, that the industry has been very stable for decades. That means only innovating within the current knowledge base like more efficient production, logistics and design of the furniture. But the fundamental way in how furniture’s are sold has been the same for a century. The customer goes to the furniture store, looks and tests different option and then buys the favourite option.
5.1 Furniture Retailing and AR

The amount of retail floorspace that is required for selling furniture is large and any technology that can surpass the mall will be able to lower the price of the furniture. There have been various projections on what the future holds for retail in general with many overestimations of the effects of e-commerce for physical retail (Burt & Sparks, 2003). This is the classical wave of hype with unrealistic expectations on the short term. The effects of e-commerce on the on-store shopping of furniture have been small so far, but this is not a guarantee that it will continue. One problem with, especially big malls like Ikea, is that when investing in their expansion it is a long-term bet that should consider how the market will develop for 10-20 years ahead or even more. The risk is that firms become path dependent and only looks at current sale as a guide for the future and this should clearly be avoided (Sydow, Scheyögg, & Koch, 2009).

One of the main benefits of e-commerce for the consumers is price and convenience. E-commerce provides a new form of communication that is not restricted to geography, at any time and at very low cost. According to Grover & James (2001), retailers can be seen either as infomediaries that offers different products online or intermediaries in the physical world that offers there products in stores or malls. Intermediaries provide physical infrastructure and human interaction. Infomediaries provide informational services to their clients with services including matching client needs with supplier offerings and providing dynamic pricing that is difficult to replicate in the physical world. Can the future furniture retailers see themselves more as infomediaries than intermediaries? This would require new business models. Ikea: s official business model (Ikea, 2015) statement includes “bringing suppliers and customers closer” and a large part emphasizes low prices and big volumes. This model probably doesn’t mean infomediary but this could change.

Kodak is a perfect example of how a big and dominant company can miss trends and go bankrupt. In the 1990s it was rated as one of the world's most valuable brands and employed over 145,000 workers worldwide. In 1975, they built one of the first digital cameras which were the very same technology that destroyed them. As digital photography replaced film and smartphones replaced cameras its share price fell over a long period. Kodak failed to read the emerging market correctly. It hoped that the new Chinese middle class would buy lots of film but most of them leapfrogged from having no camera straight to digital. This example shows that “capitalists quite often invent the technology that destroys their own business”. (Economist, 2012)
5.2 Vision

The idea of visioning change is ultimately a psychological obstacle (Akerlof & Dickens, 1982). Incumbent inertia has both elements of a psychological obstacle and practical, so it will be used both in vision and adoption. In order to be able to vision a new innovation within the firm one needs to at least know about its existence. The first and easiest question in our questionnaire was “have you ever heard of Augmented Reality?” All of them simply said yes. The thought of this emerging technology as an unknown novelty was simply not true. However, it wasn’t clear on how well informed some of them were since some of the answers came from questionnaires. One might suspect that a simple googling would give enough information, but overall, the participants seemed rather informed. There were also some confusion on who should bear the cost for the 3d-modeling of the furniture, the producers or the retailers? This is also one of the reasons that one of the firms didn’t want to risk a too early adoption. There has been no clear industry standard created and a small firm can’t do it by themselves. With the exception of Ikea and EM there is simply a standby for adoption by the rest who simply wait until some standard is developed.

We wanted to examine if there is a possible gap in sensing technological change in the industry and there is some indications that such a small gap exist. When it comes to 3d-modeling, some seemed not to be aware of the emerging development of cheap 3d-scanning were even smartphones are predicted to have these kind of features in the near future (Gizmag, 2013). Therefore, the cost of actually scanning and creating 3d-models should not be a big problem for any firm in the near future, even if there were some expressed concern about it. Recent research has also showed that AR increases purchase intent significantly (Schwartz, 2011; Trubow, 2011), the participants seemed to be unaware of this too. To some degree this seems to confirm Cohen & Levinthal (1990) notion that the lack of valuing new information and the application of new innovation to commercial ends creates a low absorptive capacity for incumbents. They may be good at absorbing information that adds to their present knowledge and this usually only result in incremental innovation.

The overall strategy for AR and indeed all types of innovation is a little bit unclear. Most of the participants saw a potential future were AR would possibly change the furniture industry, while some were more skeptical. When summing up the answers one might see that this industry certainly isn’t famous for its big innovations. It’s used to incremental innovation or “doing what we do but better”. Some of the participants clearly agreed that it is a traditional
industry marked by small incremental change that is building on previous knowledge. Previous research shows that incumbent firms have a very hard time in adapting to disruptive innovation. Neither did most of the participants see AR as a threat for their business model.

Do they think that the furniture retail will change through Augmented Reality? Most of the participants said yes or maybe. But they all seemed to believe that AR is not a threat of the physical store, but rather a possible enhancement of it. This might very well be true. However, it is important to note that most of the participants have a clear interest in the success of their stores and malls since the investments are huge. This is one area where the idea of cognitive dissonance might be important. As mentioned previously, in its most abstract level it states that a person is uncomfortable with maintaining two contradictory beliefs. And there seem to be a deeply held belief that the physical store is safe from any innovation that might come. In the theory of cognitive dissonance a person don’t only have preferences over states of the world, but also over their beliefs about the state of the world. They also have some control of their beliefs and not only by analyzing available information, but by choosing to analyze information that will most likely confirm their desired beliefs. Is this a possible explanation to some of the answers? Maybe or maybe not, what is important is to be honest and cold when calculating the impact of new innovation. Only in that way, proper actions will come.

In order to put cognitive dissonance further into context, let’s start with an anecdote. Imagine if a consultant approached a young and talented football player and said, “according to my predictions football will lose 80% of its popularity in 10 years. Therefore, if you want to make money as a professional athlete I would suggest basketball. It’s a sport that is predicted to grow enormously”. Imagine what would go through the mind of the footballer. Looking at his abilities one might conclude that he’s athletic and maybe even tall which would maybe make him quite adaptable to basketball. After all, football and basketball are both related enough that they are sports. The problem is that the talented football player didn’t start playing football in order to make money. The prospect of making money came later as big clubs wanted to sign him. In his mind football might very well be part of his identity, it’s who he is. For the consultant it is just a waste of time with small rewards. The footballer wants to keep playing football, but also being able to make money and be famous while doing it. According to the consultant this is not possible. Let’s say in-store shopping is football and e-commerce with AR is basketball and the anecdote can possibly explain a lot in how resistance to innovation might work.
When studying the airline industry, Viellechner & Wulf (2010) concluded that one of the reasons for incumbent inertia and routine rigidity was inadequate self-concept. One's self-concept is a collection of beliefs about oneself that includes areas such as performance, roles and identity. Generally, self-concept tries to explain "who am I?". Self-concept is distinguishable from self-awareness and might explain the previous anecdote further. In order to radically change one need to change the self-concept and this might be an area some of the furniture firms will have to work with in order to prepare for possible change.

5.3 Adoption
The adoption decision is ultimately a practical decision that includes what kind of strategies and goals a firm has when adopting a new innovation. The main theories to be used here is first-mover advantage, incumbent inertia, leapfrogging and the sunk cost fallacy.

The special case of AR and the furniture industry has some similarities to Christiansen’s (1997) notion on how disruptive innovation appears. Initially these innovations give a lower performance and are usually rejected by bigger firms. On the other hand they bring some new attributes to the market and enable a new niche market to grow. This is the main reason why established firms reject the innovation in the beginning and this can then give new entrants an opportunity. This is not entirely true in the furniture industry since Ikea is the first to adopt AR, but still on a low level basis. In this case there are some conflicting theoretical explanations with Wernerfelt & Karnani (1987) arguing that a first moving option is more attractive when a firm has influence over how that uncertainty is resolved while Christiansen arguing that this option is more attractive to new entrants. Ikea certainly has a large market share and have the power to set new standards for a whole industry. In this case the only reasonable option for smaller firms like Designonline is to follow this standard which seems to be exactly what they are doing.

The findings from the interviews and questionnaires show that the motives for rejecting or adopting AR for the furniture industry are different. Most of the participants stated the reason for adoption would be to provide an extra service to the customers which don’t necessarily substitute the in-store shopping but works in a symbiosis. The reasons for present rejection were that the technology isn’t mature enough. At the moment it is expensive and impractical. Because of this, plans for using AR in e-commerce were very different.
There were some rather predictable responses on how to take action on the competitor’s moves. For most of the participants, the competitor’s decisions weren’t of crucial importance. Most of them weren’t worried about getting left behind. The first-mover advantage arguments where not that important and neither was the timing of entry. Lieberman & Montgomery (1988) argues that there are clear disadvantages of being the first-mover. The benefits of the late-movers can be summarized as the ability to free ride on the first-movers investments, resolution of technological and market uncertainty, technological discontinuities and incumbent inertia. This seemed to be particularly true for the smaller furniture firms that participated. Wernerfelt & Karnani (1987) argues that a first moving option is more attractive when a firm has influence over how that uncertainty is resolved.

To further examine incumbent inertia, Sydow, Scheyögg, & Koch (2009) explains how organizations become path dependent. These paths can become enourmously hard to change and there is an ongoing debate on wether active management acually works. One of the arguments is that an external chock like a radical new innovation can change this path dependence. The problem is, by that time it might be to late to change a firm. This is mainly because of self-enforcing mechanisms that are related to incumbent inertia and leads to a lock-in. Succesful management also means to have some good foresight and prepare in time. One of the clear ways of dealing with path dependence is to understand the social mechanisms that gradually builds them up. There are different solutions to this problem. One of them is an inside change of the organization like allowing new employes that are not as indoctrinated by internal forces to take some charge. This is a part of the insidious change that deals with organizational demography and incomlete socialization. This can also be seen as an active attitude or “second-order observation” that can potentially stear the firm out of path dependence and opens new perspectives.

According to (Phillips, Noke, Bessant, & Lamming, 2004), one of the main challenges for managers in dealing with innovation is the rapidly accelerating pace of technological change. ‘Doing what we do, but better’ is the tradisional way of competing and in times of icremental- or ‘steady state’ innovation this usually works well. But in a situation like today, the old ways of dealing with change becomes inadecuate. The furniture industry clearly needs to adapt new approaches in order to efficiently manage their firms into the future.
6. Conclusions

This section provides a reflective conclusion that will give answers to the research questions in relation to the analysis and end with suggestions on future research.

What makes a good study is that it leaves a perspective, however small it might be. That is, leave new knowledge to science. We have discovered that a high awareness of AR was present and an overall vision of present or future adoption. Most of the participants took AR seriously, not as a threat but rather an enhancement of their current business. Matureness and quality of the technology was seen as the most important factor when deciding for an adoption. We have also discovered a lack of knowledge in the speed of quality improvements of AR which is due to the high development speed in the IT-sector as a whole. This could leave some of the firms ill prepared if AR is embraced by the customers as a shopping tool.

When reading previous theories and studies about innovation and applying it to the case of AR and the furniture industry, the conclusion is that the important thing is to have a long-term vision that includes honest calculation and observation. An ignoring of new emerging innovations has the risk to produce inadequate action. This study can’t predict if AR will be a game-changer or not, but it is important to not easily dismiss it and carefully follow the trends. Other retailing has been largely affected by e-commerce, like books, electronics and clothes. So clearly the trends have showed that it can affect any industry.

6.1 Suggested Future Research

Some people have suggested that there is a coming wave of creative destruction that will hit firms previously thought to be secure due to the accelerating rate of technological change (Brynjolfsson & McAfee, 2014). But to our knowledge, there aren’t enough studies that explain how firms could prepare for this exponential change that is coming.
References


Freeman , C., & Soete, L. (1997). *The Economics of Industrial Innovation*. MIT Press.


Appendix

Interview Question Guide

This is just a guide. More and complex questions were asked during the interviews.

1. Have you ever heard of Augmented Reality?
2. Do you have a strategy for implementing Augmented Reality?
3. Do you consider it to be a threat or possibility?
4. What limitations do you believe your firm has in adopting AR?
5. Are you afraid of competitors gaining a competitive advantage?
6. Do you believe AR can add value to customers?

Short Questionnaire with 6 Questions

Enter the answer for the questions in the Word document. Then send back the form with the answers.
Sincerely, Daniel and Saman

1. Have you ever heard of Augmented Reality (Augmented Reality)?
2. Does the company have any plans to use Augmented Reality in its online sales?
3. Do you Augmented Reality as a possibility in your future sales strategy?
4. Is competitors’ strategy important in your decision making?
5. Do you think that the furniture trade will change through Augmented Reality?
6. Other Comments...