A SCENARIO ANALYSIS OF AUGMENTED REALITY IN RETAIL

Master Thesis, Graduate school
ABSTRACT

The retail industry is undergoing one of the biggest transformation processes through history. In 2017, 8,053 stores were closed in the United States. This in comparison to 2008, during one of the worst financial crises for decades, when 6,613 stores were closed. Several disruptive technologies and competitive forces redraw the competitive landscape within the retail industry. One of the emerging technologies is Augmented Reality, which has gained attention from consultancies and academics all over the world. Augmented Reality is a technology that blends physical and digital by adding a virtual layer on top of the physical world through the use of, for example, a smartphone. The technology is expected to have a fast market penetration with 800 million AR ready devices on the market by the end of 2018.

This study aims to investigate the role of mobile Augmented Reality (MAR) within retail in a five-year time-horizon. This by using scenario planning methodology, which is a long-term forecasting method, especially suitable when uncertainty is high and when the industry is expected to experience a significant change. The outcome of the analysis is not one probable future, but four plausible scenarios. The report covers the future development of retail as well as MAR which is based on an empirical investigation through consultancy reports and interviews. By combining the two fields into one analysis, a retailer can understand the role and functionalities of MAR, given the industry development. The analysis shows that the most critical uncertainties that will shape the future of retail are 1) the consumer’s fundamental view of shopping (experiential or fast and frictionless) and 2) how central digital tools are in the service process (tech-driven or tech-supported). By combining the outcomes of the two uncertainties, four future scenarios are built which are called Show me to my room, Giants lead my way, Locally produced service and Convenience knocking on my door. Mathwick’s framework on consumer value is used to assign a role of MAR in each retail scenario. The study’s findings show that MAR could be effective and have a dedicated role in the first three scenarios. However, previous research shows that a majority of investments are made in functionality suitable for the fourth scenario where a low adoption is expected. This study can, therefore, contribute to an understanding how MAR can be used to leverage a competitive position within retail.

KEYWORDS Mobile Augmented Reality, MAR, Augmented Reality, AR, Retail, Scenario planning.
MAR in retail, AR in retail
DEFINITIONS AND ABBREVIATIONS

**MAR** An abbreviation of mobile Augmented Reality, a technology used to bind physical and digital together by adding a virtual layer on top of the physical world through a smartphone device.

**Retail** An industry providing and selling products that are used by the end-consumer, including fast moving consumer goods.

**Scenario planning** A long-term forecasting method which is suitable when uncertainty is high and when the industry is expected to experience a significant change.

**Trend** A development factor, used in scenario planning, where the outcome is known.

**Uncertainty** A development factor, used in scenario planning, where the outcome is unknown.
THANKS TO...

...Carl-Philip Ahlbom, Erik Arvedson, Niklas Bakos, Oliver Edsberger, Cecilia Fagerlund, Michael Grimborg, Patrik Hansson, John Karsberg, Johan Lidenmark, Mario Romero Vega, Malin Sundström and Björn Thuresson for participating in interviews. Without your knowledge and expertise, this thesis wouldn’t exist. A special thanks to Alex Baker and Anna Johnsson at our partner company, Clicksys, who has guided us through an industry in disruption with valuable insights. Last, but not least - Rick Middel, our supervisor, thank you for continuously supporting us with academic know-how and fika.
If you are a manager in retail or business development who are curious about future application of MAR in retail, you can probably skip some parts of this long read. We recommend you to go directly to the scenarios in 5.6 and the conclusion in 6.1. If you are curious about the development of retail and MAR in a five-year time-horizon, don’t miss out the empirical investigation and scenario planning in chapter 4 and 5. If you are a reader with academic interest, please pay some extra attention to the overview of the disposition in 1.6 and to the methodology in chapter 2. This to get a deeper understanding of how scenario planning could be used in an academic context.
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1. INTRODUCTION

1.1 BACKGROUND
The retail industry is undergoing one of its biggest transformation processes in history. Media reports about the retail death with a decrease in footfall, in which physical stores are closing at a rapid pace (Peterson, 2017; Thompson, 2017). In 2017, 8,053 closures of physical retail stores were announced in the US. As a comparison, in 2008, during the escalation of the worst financial crisis for decades, 6,163 stores were closed. (Green & Nudelman, 2017) The situation puts pressure on retailers to innovate their retail model to survive and stay relevant.

Warren Buffett says that in 10 years, the retail industry will look nothing like it does now (Peterson, 2017). Traditional brick-and-mortar retailers are facing tough times and are being challenged by agile and fast-moving e-commerce retailers. However, physical retail is far from dead and primarily digital brands, such Amazon and Alibaba are now putting greater emphasis on physical presence (KPMG, 2018; Fjord, 2017). By merging "bricks and clicks", successful retailers invest in multi-channel systems to offer an array of shopping experiences, and by that, not only deliver more value but a different kind of value (Dacko, 2017).

Several different forces affect the competitive dynamics in the industry, and several researchers and consultancies derive this disruption to digitalisation. The sense-of-urgency within the industry makes retailers desperate to reinvent their business models and by investing and experimenting with new technologies. KPMG (2018) describes retail as a disrupted industry where technologies already are available, but there is a lack of understanding of how the technology could be used to support a competitive edge. One of these emerging technologies, that acts as an enabler in the digital shift, is Augmented Reality (AR) (Arthur, 2017). AR is a technology that binds physical and digital together by adding a virtual layer on top of the physical world through a digital device. IKEA Place is one example where the consumer could experience IKEA products by adding furniture to any space at home through a smartphone camera. Augmented Reality has captured attention from companies, academics and consultants all over the world (Fjord, 2017; Arthur, 2017; McKone, Haslehurst, & Steingoltz, 2016). What makes this technology interesting, besides its potential to bring value to both consumers and retailers, is the installed base. As a newer smartphone could enable AR, no additional hardware is needed. Therefore, a fast market penetration is assumed with 800 million mobile Augmented Reality devices (hereby referred to as MAR) by the end of 2018 (Deloitte, 2018).

1.2 PROBLEM SETTING
The potential of using mobile Augmented Reality in a retail context has been recognised (Fjord, 2017; Arthur, 2017; McKone et al., 2016). Parallel to this, the retail industry is facing one of their most disrupting times with an increased rate of closures of physical stores (Green & Nudelman, 2017). To understand how MAR can be used to leverage a retailer’s competitive position, it is impossible to disconnect the two research areas. The purpose of this paper is therefore to investigate the role of MAR within a retail context in a 5 year-horizon. This by analysing trends and uncertainties that will shape the future of retail as well as the development and application of MAR.

The analysis will be conducted by using scenario planning methodology, which is a long-term forecasting method, suitable when uncertainty is high and when the industry is expected to experience significant change (Schoemaker, 1995). The technique originates from the military in World War II and is used to align strategy to possible big changes (Ramirez, Churchhouse, Hoffman
By recognising unpredictable uncertainties, the purpose is to prepare for the future by generating new knowledge and insights to favour competitive decision making. The advantage of this approach is to challenge the prevailing mindset and to look beyond the current circumstances (Ramirez et al., 2017). The outcome of the analysis is four plausible, but radically different future scenarios. The role of MAR will further be analysed in each scenario. Scenario planning assumes that trends and uncertainties interact in a system, why it allows analysis of MAR's potential impact on the industry and vice versa. Actors within retail can by being aware of different scenarios prepare for potential adoption and understand how MAR can be used, given the industry's development. It is to assume that MAR will affect some retailers more than others. This since the usage and value of MAR varies from product to product and fulfils different needs in a physical store versus an online store. As the retail environment is being transformed with the introduction of multi-channel experience (Mathwick, Malhotra & Rigdon, 2001), both traditional brick-and-mortar retail and digital retail will be considered in this research.

1.3 CONTRIBUTION
The purpose of this paper is to investigate the role of MAR within a retail context in a 5 year-horizon. The theory about scenario planning will be used to analyse the development of MAR and retail in combination. The role of MAR in retail will be investigated with an established framework from Dacko (2017) which is based on Mathwick et al.‘s. (2001) original framework of consumer value in a shopping process. Dacko recognised MAR as a tool for providing value for both consumers and retailers throughout the shopping process. In his quantitative study, he categorised 272 existing MAR applications based on the degree of interaction in the shopping process (active or reactive) and for what purpose they were used (intrinsic or extrinsic). The contribution of this thesis, however, lies in the application of the framework into a future retail setting. While his work is built upon categorisation of existing MAR applications, the purpose of this study is rather to understand the role of MAR, given the development of retail. This will be made by elaborating and questioning the application of the established framework in each scenario.

To ensure the contribution of this thesis, not only academically, but also from a business perspective, a partner company has been assigned. Clicksys is a Stockholm based company that works with digitalisation of physical stores and therefore possesses competence in both retail and digitalisation. Clicksys is curious about the MAR technology, but no incentives have been received that could have shaped or affected the outcome of the study. The company has assisted in the definition of the scope (step #1 in scenario analysis), in finding respondents and was subject for a pilot interview. They were also used for mentoring continuously through the research process to ensure plausibility and relevance of the scenarios.

1.4 RESEARCH QUESTIONS
This study investigates the future role of mobile Augmented Reality in a retail context in a five-year time horizon. Hence, the research question is:

What is the role of mobile Augmented Reality in the future of retail?

This implies that two areas need to be considered when answering the research question, namely the retail industry and mobile Augmented Reality. Scenario planning methodology (Schoemaker, 1995; Schwenker & Wulf, 2013; Shell International, 2003; Van der Heijden, 2005) is used to forecast the
future of retail and the development of MAR. The role of MAR defines the degree of interaction and for what purpose the application could be used in a shopping experience. This is analysed by using Dacko’s (2016) conceptual model of the role of MAR apps in smart retailing, a model that is based on Mathwick et al.’s. (2001) original framework on consumer value.

1.5 DELIMITATIONS
To ensure a focus of the study, some delimitations have been made. Several different competitive forces and technologies will shape the future of retail. Scenario planning allows us to investigate the interaction among these and their joint impact. The purpose of this study, however, does not include to investigate each competitive force or technology in detail. Rather, the focus will be to understand their interaction. The scenario planning approach makes a difference in plausible futures, as opposed to probable futures (Ramirez et al., 2017). Probability is hard to predict in turbulent and fast-moving markets, why assigning probabilities to scenarios are excluded. The purpose of this study is therefore not to identify the most probable future, but rather identify plausible scenarios that could help retailers to understand different paths of how the future of the industry and MAR technology will unfold.

The foundation of this study is based on MAR and its role within retail, hence this study should be considered as a thesis about MAR rather than a thesis about retail, why no further delimitations of the retail industry have been made. The concept of retail covers all consumer goods, including fast moving consumer goods. Pure consumer services and B2B goods are excluded from this research. Given the scope of the thesis, some delimitation of the technology has been made. AR can be experienced by using a few different devices such as screens, smartphones or glasses (Azuma, Baillot, Behringer, Feiner, Julier, & MacIntyre, 2001). To provide suitable delimitations and increase the precision of this study, a delimitation has been made to smartphone-enabled AR. When a smartphone is the device supporting AR the literature labels it as mobile Augmented Reality. This delimitation has been done due to that MAR is considered to have a strong potential in retail, both to retailers and consumers (Dacko, 2017). Furthermore, MAR is predicted to grow substantially due to that more smartphones will be AR supported (Deloitte, 2018). Furthermore, the smartphone is not predicted to drastically change in terms of external appearance between 2018 - 2023 (Deloitte, 2018). This supports another delimitation of the analysis' time-horizon of five years. The five-year time frame is suitable for a scenario analysis and was also chosen since it provides a fairly narrow timeline, which decreases the subjectivity of the analysis.

The study will not provide a deep investigation of the technological aspects of MAR but will focus on the role and potential of generating value from consumer's and retailer's perspective. The multifaceted view of benefits, including both consumers and retailers, is motivated by the chosen framework for the analysis of the role of MAR. The relationship between customer benefits and organisational benefits are obvious as the MAR apps often are used for purposes to achieve organisational benefits through increasing customer value (Dacko, 2017). The implication of this multifaceted view results in another delimitation, which is that the MAR application must be used by or with a consumer. All other functionalities in other areas within retail, such as supply chain, design process and operations, will be excluded from analysis.
1.6 DISPOSITION

Scenario planning is not only a part of the study’s literature review. It is also a forecasting method and will, therefore, influence the structure of the report, this is why some chapter names might differ from a traditional qualitative master thesis. Figure 1.1 aims to visualise the structure of the report, as well as the relationship between literature review, empirical investigation and the scenario planning steps.

Figure 1.1 - Disposition of study
2. METHODOLOGY

2.1 RESEARCH STRATEGY
The complexity of the interaction among development factors in retail and the novelty of AR technology has guided the research strategy. A qualitative strategy was chosen for this exploratory study, indicating an inductive approach. In order to answer the research question properly, flexibility and an openness to the respondents' answers are needed which further motivates the qualitative strategy. In contrast to a quantitative approach, which emphasises explaining a phenomenon in numbers or measurements, a qualitative strategy is suitable to capture the perspectives of participants and their knowledge to examine an unexplored concept (Bryman & Bell, 2011), such as AR's potential role in the retail industry. Given the qualitative strategy, blind spots and gaps within the academy will facilitate the construction of new insights, rather than testing existing ones.

2.2 RESEARCH DESIGN
The research design could be described as the framework that leads the collection and analysis of data. Some dimensions, such as casual connections, generalisation, social context and time considerations, could be given different priority within the process of the research. (Bryman & Bell, 2011). The aim of this study is to investigate the role of MAR in the future of retail, but traditional research designs lack the possibility to assess the future development. Hence, the research design for this study is built around the scenario planning methodology which is extensively elaborated in chapter 3. The scenario planning methodology provides the framework needed for the collection and the analysis of data. Schoemaker (1995) outlines a few conditions of when scenario planning is useful. One condition is when there is a high uncertainty, relative to the ability to predict. Another condition is when the industry is likely to experience a significant change. Lastly, one condition mentioned is that many costly surprises have occurred in the past. (Schoemaker, 1995) These conditions are considered to be the case of MAR in retail which further supports an explorative and qualitative study, using scenario planning.

One important element of the research design in this study is the use of multiple sources, which in this research is represented through the use of respondents from different areas of expertise. However, the respondents share a connection given the research topic of this paper. This means that the respondents differ in some variables, but share one common variable through that they all have knowledge within different areas within the research topic. This facilitates a variation in the data, which in turn is important in the scenario analysis as a foundation to the construction of the scenarios. Some traditional research designs, such as a cross-sectional design, use data from a single point in time. (Bryman & Bell, 2011) This has also been done in this research, with the interviews being held during a narrow time frame. One difference is however that the traditional way of interpreting this data is to give a picture of i.e. a situation or context at that specific time. In this research, the aim is rather to address the uncertainties and trends at a specific time, and to build future scenarios on these. Hence, an additional layer is added, giving more than a single snapshot of data at a specific time. The method of data analysis was conducted through thematic coding, where concepts and themes were built as the analysis proceeded (Bryman & Bell, 2011). The themes were then used in the scenario analysis and analysed further with the tools provided by the scenario analysis literature. The thematic coding is further elaborated under 2.4, and the scenario analysis tools is elaborated in chapter 3.
During the research, an iterative approach has been used in different phases. The data collection, further described in 2.3, comprise of an iterative process. Besides using an iterative approach in the empirical investigation, iteration has also been applied between the analysis and the theoretical framework. As the analysis progressed, the theoretical framework was extended and revised. Hence, theories that turned out to be of less importance, given the result of the analysis, were replaced with theories that better support the analysis.

2.3 DATA COLLECTION

The collection and interpretation of data have been supported by an iterative approach. First, an empirical investigation of MAR and the retail industry was made through a collection of secondary data, the main source of secondary data being consultancy reports. This is to guide the research and to facilitate the creation of the pilot interview guide. When new themes were identified in interviews, new secondary data was collected to interpret the respondent's answer. This iterative method of moving back and forth between primary and secondary data collection was made until a saturation of new insights was reached (Bryman & Bell, 2011).

2.3.1 PRIMARY DATA COLLECTION

Semi-structured interviews

The primary source of data was collected through semi-structured interviews. Semi-structured interviewing is a method of data collection that is suitable for exploratory and qualitative research. It is also a favoured interview method when the research area has a clearly defined area of interest, which is the case for the objective of this paper. In addition, semi-structured interviewing is a method of interviewing deemed appropriate due to that it facilitates comparability across respondents while keeping the questions open enough to gain a deeper understanding of the topics. Furthermore, the structure is flexible enough to open for follow-up questions and thus further explore topics emphasised by the respondent. (Bryman & Bell, 2011) An impact/uncertainty grid was used in the interviews where the respondent were asked to come up with factors that will affect either the development of MAR or the retail industry. This provided structure to the interviews, without limiting or steering the respondent's thinking. Using the visual matrix also facilitated the elaboration of the relations among the different factors. Also, the matrix eased the use of follow up questions which facilitated elaboration by respondents, as suggested by Kvale (1996).

Sampling

Due to that this study and the primary data collection is dependent of the knowledge of the respondents, a judgemental sampling technique was applied, where respondents were chosen based on a set of criteria based on their knowledge and expertise (Marshall, 1996). Insights were gathered from experts in both academics and business in the field of AR, retail, and MAR in retail. By considering various views in both academic research and the perspective of a consultancy or business, an understanding of whether the theory will hold or not is favoured (Yin, 1984; Eisenhardt, 1989).

One of the main areas in this study is the technology of MAR which is a rapidly emerging and developing technology. In addition, this study aims to explore the opportunities of MAR in a retail environment, which implies that the respondents need to possess a specific set of skills in either one of the fields or a combination of them. The requirement of years of experience varies between the different fields. This is since the rapid development of MAR suggest that what has happened in the
last years could be more relevant to this research, rather than the historical development. The retail environment is however not as new as MAR, why the aim has been to find experienced respondents.

The following criteria was set to make sure that the respondents had the knowledge needed to be suitable as respondents:

<table>
<thead>
<tr>
<th>Purpose</th>
<th>MAR respondent</th>
<th>Retail respondent</th>
<th>MAR in Retail respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contribute with drivers and bottlenecks for the development of AR</td>
<td>Contribute with insights of development for the retail industry</td>
<td>Contribute with applications of MAR in retail as well as drivers and bottlenecks for these</td>
</tr>
<tr>
<td>Expertise</td>
<td>Technical know-how about development</td>
<td>Retail know-how</td>
<td>Application of MAR know-how</td>
</tr>
<tr>
<td>Experience</td>
<td>&gt;1 year</td>
<td>&gt;4 years</td>
<td>&gt;1 year</td>
</tr>
<tr>
<td>Position and job function</td>
<td>- Technological or development position</td>
<td>- Management position</td>
<td>- Managerial position</td>
</tr>
<tr>
<td></td>
<td>- Managerial position</td>
<td>- Strategy function</td>
<td>- Strategy position</td>
</tr>
<tr>
<td>Example of titles</td>
<td>- Team leader AR development</td>
<td>- Business developer</td>
<td>- CEO</td>
</tr>
<tr>
<td></td>
<td>- Head developer AR</td>
<td>- Project manager</td>
<td>- Sales</td>
</tr>
<tr>
<td></td>
<td>- Researcher</td>
<td>- Retail</td>
<td>- Business developer</td>
</tr>
</tbody>
</table>

Table 2.1 - Criteria for respondents

Three different types of development factors, also referred to as trends and uncertainties in scenario planning, were collected by interviewing the three different types of respondents. Their contribution to development factors was dependent on their expertise. The AR respondent contributed to the collection of AR and MAR in retail development factors, the retail respondent contributed to the collection of retail and MAR in retail development factors, while the MAR in retail respondent contributed with all three types of development factors.

Based on these specific criteria, 12 interviews were conducted until a saturation was reached for each data category. In addition, an interview with the partner company was conducted in order to define the scope of the study. However, to avoid bias, the partner company is excluded from the data collection.
Table 2.2 - Respondents

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Company/university</th>
<th>Position</th>
<th>Respondent type</th>
<th>Channel</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erik Arvedson</td>
<td>Digitas LBI</td>
<td>Head of Emerging Experiences</td>
<td>MAR in retail</td>
<td>Face-to-Face</td>
<td>2018-03-13</td>
</tr>
<tr>
<td>Patrik Hansson</td>
<td>Vobling</td>
<td>CEO</td>
<td>MAR in retail</td>
<td>Face-to-Face</td>
<td>2018-03-15</td>
</tr>
<tr>
<td>Carl-Philip Ahlborn</td>
<td>Stockholm School of Economics</td>
<td>PhD Candidate in retail</td>
<td>Retail</td>
<td>Face-to-Face</td>
<td>2018-03-15</td>
</tr>
<tr>
<td>Johan Lidenmark</td>
<td>Intersport</td>
<td>Chief Digital Officer</td>
<td>Retail</td>
<td>Skype</td>
<td>2018-03-23</td>
</tr>
<tr>
<td>Niklas Bakos</td>
<td>Adverty</td>
<td>CEO</td>
<td>MAR in retail</td>
<td>Face-to-Face</td>
<td>2018-03-26</td>
</tr>
<tr>
<td>John Karsberg</td>
<td>H&amp;M</td>
<td>Business Development</td>
<td>Retail</td>
<td>Face-to-Face</td>
<td>2018-03-27</td>
</tr>
<tr>
<td>Björn Thuresson</td>
<td>KTH Royal Institute of Technology</td>
<td>Project leader at Visualisation Studio VIC</td>
<td>MAR</td>
<td>Face-to-Face</td>
<td>2018-03-27</td>
</tr>
<tr>
<td>Oliver Edsberger</td>
<td>HiQ</td>
<td>Head of VR/AR visualisation</td>
<td>MAR</td>
<td>Face-to-Face</td>
<td>2018-04-04</td>
</tr>
<tr>
<td>Michael Grimborg</td>
<td>Synsam</td>
<td>CMO</td>
<td>MAR in retail</td>
<td>Telephone</td>
<td>2018-04-06</td>
</tr>
<tr>
<td>Malin Sundström</td>
<td>University of Borås,</td>
<td>PhD, Associate professor</td>
<td>Retail</td>
<td>Telephone</td>
<td>2018-04-13</td>
</tr>
<tr>
<td>Cecilia Fagerlund</td>
<td>Marvelous</td>
<td>Head of Marvelous Sweden</td>
<td>MAR in retail</td>
<td>Telephone</td>
<td>2018-04-12</td>
</tr>
<tr>
<td>Mario Romero Vega</td>
<td>KTH Royal Institute of Technology</td>
<td>PhD, Associate Professor and Docent in Human-Computer Interaction</td>
<td>MAR</td>
<td>Telephone</td>
<td>2018-04-13</td>
</tr>
</tbody>
</table>

Pilot interview

Pilot interviews were conducted with two respondents from the partner company before the primary data collection started. This was made to avoid confusion and potential bias in questions (Bryman & Bell, 2011). Based on the feedback from the respondents, novel issues were resolved and the interview guide was revised. Some of the adjustments included new labels on the impact/uncertainty grid to clarify the task. Also, the scope and number of questions were reduced. The data from the pilot interviews are, however, excluded from data collection and analysis.

Interview guide

The creation of the interview guide is crucial for the study, as a few important steps must be taken into consideration. First, the research question needs to be broken down into different topics, where the output of step #1 in scenario analysis (define the scope) was used as a guideline. The questions were formulated and revised to suit the areas of interest while leaving room for the respondent to reflect and elaborate on topics within the frames of the interview. This is important since the study is exploratory and qualitative and thus there is an aim to minimise the risks of leading the respondents...
towards one trajectory of answers (Kvale, 1996; Bryman & Bell, 2011). One way that this was mitigated was by using open-ended questions. The semi-structured approach allowed questions to complement the guide.

Three customised interview guides were created based on the three different respondents' expertise. The interview guide is presented in detail in Appendix #1. All three guides followed the same structure with three different stages of questions to ease data analysis. The first stage included general and open questions to test the respondent’s knowledge and perspective. The second stage included the impact/uncertainty grid where the respondent was asked to come up with either development factors of MAR, development factors for the retail industry or applications of MAR within the retail industry, depending on the type of respondent. Previously identified factors were either confirmed or rejected if not already mentioned by the respondent. Each factor was further elaborated with a number of follow-up questions about its potential impact and uncertainty. The third and last stage included questions to sum up the interview with concluding thoughts on the topic.

**Practicalities**

A few practicalities need to be considered in connection with the primary data collection. This was done to further ensure the quality of the data and thus the trustworthiness of the research. In addition, if the practicalities are planned thoroughly it will facilitate an easier and more reliable collection of data.

The majority of the interviews were conducted face-to-face. These interviews tend to be more fruitful since it allows interpretation of the social context (Bryman & Bell, 2011). Telephone and video interviews were only used as a last resort. Telephone interviews have the benefits of being cheaper and easier to administer when the distance is far (Bryman & Bell, 2011), which was suitable considering the limited resources of this study, and to fit the respondent’s busy schedules. Video calls (Skype or Google Hangout) was still to prefer over telephone since it allows capturing of facial expressions and connection to the respondent through eye contact. This was, however, not always possible due to technical limitations of our respondents. The respondent should feel comfortable in being interviewed, why a location was always decided by the respondent. Information about the background of the study and a few example questions was also handed out one week in advance to the interview to give an overview of the setup. This information is attached in Appendix #2.

The interviews have been recorded and transcribed to ensure that as much data as possible is collected and to ensure its quality. The respondents could choose if they were comfortable or not be recorded and cited, which is important to make sure the respondents would feel comfortable speaking freely. Transcribing and recording the interviews have several benefits, such as correcting the limitation of memory, more thorough examination of the interviews and opens the data for other researchers to evaluate. Heritage (1984) In addition, these methods facilitates a foundation for coding the material, which will be further discussed in section 2.4.

**2.3.2 SECONDARY DATA COLLECTION**

Secondary data collection is used in two important areas of this study. First, it is used to build the theoretical framework. The focus areas of the theoretical framework are Augmented Reality and scenario planning. Second, secondary data is collected and analysed in the empirical investigation of MAR, retail and application of MAR in retail which acts as a foundation for the scenario analysis. As discussed previously, an iterative approach to data collection has directed the data collection. One
example of this is that the theoretical framework on experiences, where Mathwick et al. (2001) and Dacko (2017) provide models to classify value to consumers in a shopping process, was added after shopping experiences emerged as a central topic in the empirical investigation.

The theoretical framework and the empirical investigation are key for the quality of the paper which is why all secondary data sources were evaluated against pre-set criteria. This keeps the area of research consistent and provides means of delimitation. However, the criteria for the secondary data differ between the two areas where secondary data is used. This is exhibited in Table 2.3. The reason to why it differs is the information need for the areas. The empirical investigation is based on trends in retail and MAR/AR in retail. Hence, more up to date sources are crucial to ensure the relevance of the trends within these areas. In addition, the novelty of MAR in retail as a concept, and the fast development of the technology implies that recent research is essential. Thus, the consultancy reports are used as a source of secondary data, in the empirical investigation, which is why the criteria for these reports differ. On the contrary, when using secondary data for the theoretical framework, academic papers have been used.

To ensure the quality of the secondary data, some inclusion and exclusion criteria were set. In addition, the consultancy reports for the empirical investigation have been systematically coded and compared to each other, to find trends and information that is consistent across different sources. Only one source of information, in the literature review, does not meet the criteria set below which is the Shell International (2003) article on scenario planning. However, this is a frequently mentioned source of information in academic papers regarding scenario planning and is thus accepted in this paper as a reliable source of information.

Regarding the use of different databases for the secondary data collection, trustworthy and reputable sources will be used to both ease the research process but also to access more reliable information. Databases such as Business Source Premier, Emerald and Google Scholar have been used. The different types of journals that have been used are well-known journals within their respective field. The following are some, but not all journals that have been used; MIT Technology Review, MIT Sloan Management Review, IEEE Computer Graphics and Applications, International Journal of Retail & Distribution Management and Journal of Retailing and Consumer Services.

<table>
<thead>
<tr>
<th>Theoretical framework</th>
<th>Empirical investigation</th>
</tr>
</thead>
</table>
| **Inclusion criteria** | - Peer-reviewed articles.  
- Articles discussing positively and negatively about AR, retail and scenario planning. Also, combinations of two or three of the fields are suitable.  
- Published in an acknowledged journal.  |
| **Exclusion criteria** | - Written by well-known consultancies or research institutes with a good reputation. In example Deloitte, EY, McKinsey, HUI research etc.  
- Written no later than 2014.  |
| **Inclusion criteria** | - Non-business journals.  
- Non-technology journals.  |
| **Exclusion criteria** | - Reports and/or consultancies with a strong connection to a specific company and/or product  
- Reports where an underlying agenda could be prevalent, such as marketing.  |

*Table 2.3 - Inclusion and exclusion criteria of secondary data*
2.4 DATA ANALYSIS

To better facilitate the creation of the scenarios, a breakdown of the empirical investigation of consultancy reports and the interviews were conducted. Collis and Hussey (2009) describe this process as three steps. First, a reduction of the data is done, which means that a systematic selection of relevant data is done. This could i.e. be done by coding the material, which will be further discussed below. Second, the data is restructured and put into contexts of a similar kind. Lastly, the detextualisation is conducted, where one example is to use diagrams to summarise the data. The detextualisation part is important for the scenario analysis. One example of detextualisation used in the scenario analysis is the impact/uncertainty grid developed by Schwenker and Wulf (2013). This grid is used in the data analysis to plot the themes, based on the empirical data derived from respondents. By doing so, critical trends and uncertainties could be identified.

The first step of the data analysis, called reduction of data, involves coding of the material (Collis & Hussey, 2009). The amount of data in this study is rather extensive, which implies that a structured coding process is relevant. Hence, a coding consisting of different levels makes the data more accessible (Collis & Hussey, 2009). This is similar to the method of coding where concepts are formed when similarities are found in the data. The concepts are later categorised into themes, which provides the framework for trends and uncertainties for further analysis in scenario planning. This method is called open coding as described by Strauss and Corbin (1990). Even though the scenario analysis already provides multiple tools for analysing the data, thematic coding was necessary to make the data more accessible and to build themes that were later categorised into trends or uncertainties. This was done continuously and systematically throughout the interviews and after the interviews were completed. As themes started to emerge during the first interviews, it was of importance to use a continuous coding, as the later respondents were used to both provide new ideas on themes, but also asked about their opinion on existing themes. However, the respondents were only asked about existing themes in the later stages of the interview if they did not speak about similar topics spontaneously. This to prevent leading questions.

As this continuous coding and systematic approach to gather insights on existing themes continued, a system of Mentions (M), Confirms (C) and Rejections (R) was developed. As respondents were asked about development factors, the three letters were used to indicate how a concept or theme was brought up by the respondent, and their perception of it. M indicates that the respondent mentioned a concept or theme spontaneously, but does not capture if they agree or not. C indicates that the respondent agrees and that the concept or theme was presented to him or her during the interview. R indicates that the respondent disagrees and that the concept or theme was presented to him or her during the interview. After conducting all the interviews, the concepts and themes were revised to build the final themes, before classifying them as either trends or uncertainties. A table of which concepts that are included in each theme is presented in Appendix #3.

2.5 RESEARCH QUALITY

The concepts of validity and reliability are considered to enhance objectivity and to ensure the quality of the study. Common criticisms of qualitative studies are subjectivity caused by the risk of the researcher’s interpretation. The nature of the research makes it hard to generalise its results (Bryman & Bell, 2011). However, the aim of this study is not to generalise results across industries or over time, other than the time-horizon included in the scenario planning. Furthermore, the delimitations presented in chapter 1 provides boundaries that limit subjective generalisation. In addition, this study aims to provide a set of future scenarios which is a challenging task. One pitfall
connected to this, and the scenario planning process is that the respondents might have a tough time imagining uncertain future development. Ramirez et al. (2017) describe this as the risk of getting stuck in a probability trap, not identifying crucial uncertainties. To mitigate this, it is useful to include different perspectives and positions in the process (Ramirez et al., 2017). This has been done, by interviewing the three different respondent types, which all come from different background and positions.

Regarding bias and subjectivity, some of the tools and methods used in scenario analysis provide delimitations for the analysis. With this, there is an inherent risk that the researchers are more prone to bias, i.e. to force examples and data within the delimitations. One example of a tool used is the impact/uncertainty grid (Schwenker & Wulf, 2013). This tool could be prone to bias and subjective methods, as trends are plotted. However, as the respondents plotted their answers, and the researchers simply compiled the result, subjectivity was mitigated in this case.

Acknowledging that delimitations, such as the examples above, could lead to bias and subjectivity is the first step to mitigate it. Furthermore, the academical structure and methods, i.e. coding of the data, supports the academic adaption of this study. For example, the respondents have provided iterative feedback on emerging themes, along with the data collection process, which leaves less room for the researchers to influence the outcomes of the themes. This has been elaborated on under 2.4, Data Analysis. Also, a high level of transparency of how the different steps have been conducted further supports the quality of this study. Lastly, the scenario analysis has been assessed by the partner company, Clicksys. This to provide feedback on the process continuously, which for example mitigates forced results as the connection between empirical findings and the analysis has been evaluated.

2.5.1 VALIDITY

Two central aspects of validity will be considered, namely internal validity and external validity. The internal validity justifies that there is a good match between researchers' observations and the theoretical ideas developed (Bryman & Bell, 2011). In qualitative studies, internal validity is often referred to as credibility, i.e. how believable the findings are. To ensure the credibility of the study, it is crucial that it is carried out according to standards and good practice, given a qualitative research setting. The risk of mistakes is minimised by constructing a well-defined research question with the ambition to give a clear answer to it. Also, with specific criteria as guidance, all the respondents should have knowledge and prominent positions in MAR or retail where the answers are validated by each other. External validity refers to the study's ability to be generalised and applied to other cases and social settings (Bryman & Bell, 2011). Generalisation of the results should be done with care due to the relatively small number of respondents and the research strategy, which is why a number of delimitations have been set. Another consideration is the geographical limitations as the respondents solely are from Sweden. The respondents' answers are therefore likely to have a perspective which may not be applicable worldwide. The technology of MAR and the challenges that the retail industry is facing are, however, not unique to Sweden, why it is expected that the study's result could be generalised to other similar and technological developed countries.

The interviews were held in the respondent's native language if Swedish, otherwise English. The reason for keeping the interviews in Swedish is to make the respondent comfortable and feel free to express their answers, which increases the quality of the answers. Swedish interviews were later transcribed into English to ease the analysis. The researchers' native language is Swedish which
results in a risk of misinterpretations. Xian (2008) states that translation of interviews is not only a technical process but rather an interpretative exercise. Further, it is argued that translation is a sense-making process which includes "the translator's knowledge, social background, and personal experience" (Xian, 2008). However, as the researchers’ native tongue is Swedish and all but one interview were conducted in Swedish, the knowledge and social background of the researchers' matches the respondents', which mitigates translation problems in the interview phase.

2.5.2 RELIABILITY

Reliability concerns whether the results are consistent and replicable (Bryman & Bell, 2011). Qualitative studies are problematic to replicate due to the complexity of the research setting. To reach a high level of reliability, a research methodology that is aligned with how a qualitative research strategy is conducted will be followed. To increase the trustworthiness of the study, high transparency is needed where the procedures will be described in detail. Furthermore, no respondent wished to be anonymous, and are thus presented with names in the analysis and empirical investigation. This leads to a higher transparency as the authors aim to keep the original statements of the respondents intact as the respondents can trace their quotations and data.

The timeframe is especially important to consider in this study as the industry is currently (2018) undergoing a transformation with emergent technologies. The novelty of the area and fast development inhibits the ability to replicate the study. The results are therefore only generalised within the limited timeframe and specific context in mind.
3. LITERATURE REVIEW

3.1 SCENARIO PLANNING

3.1.1 WHAT IS SCENARIO PLANNING?

The external environment for an organisation is full of unexpected changes and uncertainties. Yet, the traditional way of using forecasting in management and decision making is to assume that tomorrow will be similar to today. This method fails to capture ambiguous big leaps and disruptive innovations that impact the competitive landscape within an industry. Scenario planning, also referred to scenario analysis, is another type of forecasting method that effectively deals with unexpected and big radical changes (Postma & Liebl, 2005).

The technique originates from the military in World War II and is used to align strategy to possible big changes (Ramirez et al., 2017; Schoemaker, 1995). In short, scenario planning is suitable when a decision maker would like to imagine how the future might unfold in a long-term horizon. By recognising unpredictable uncertainties, the purpose is to prepare for the future by generating new knowledge and insights to favour competitive decision making. The advantage of this approach is to challenge the prevailing mindset and to look beyond the current circumstances (Ramirez et al., 2017). By identifying trends and uncertainties, different scenarios can be constructed to compensate for the usual errors in forecasting which usually are overconfidence, under prediction and tunnel vision where unexpected big changes are neglected or remain unidentified (Schoemaker, 1995). By expanding the imaginations to see a wider range of possible futures through different scenarios, organisations will be better positioned to take advantage of new opportunities (Schoemaker, 1995; Postma & Liebl, 2005).

Each developed scenario describes how various trends and uncertainties interact under certain conditions. Trends and uncertainties are not independent and often interacts in a system, which explains why the future is complex and hard to predict. The approach differs from sensitivity analysis that only examines the effect of a change in one variable, keeping all other constant. This might work under smaller changes and incremental development, but will not be sufficient when change is larger as other variables will be affected as well. Contingency planning is another planning method that evaluates only one uncertainty, for example, "what happens if X happens?", while scenario planning explores the joint impact of various uncertainties (Schoemaker, 1995). In comparison to a computer-generated simulation that creates millions of different outcomes, scenario planning aims to develop a limited number of scenarios that include elements that cannot (yet) be formally modelled by algorithms such as new regulations, value shifts or disruptive innovations. (Schoemaker, 1995) The reason behind using scenario analysis is not to predict one best way or one truth. Rather, it is a useful approach to identify a few likely scenarios, which give organisations the chance to prepare and adapt.

Figure 3.1 - Illustration of short term planning and scenario planning
The traditional planning methods could be used to predict small changes in a short term, but will not be sufficient in a long-term. Schoemaker (1995) outlines several conditions when scenario planning is superior to other methods:

- When uncertainty is high relative to the ability to predict or adjust.
- When many costly surprises have occurred in the past.
- When the company struggles to generate new opportunities.
- When strategic thinking is stuck and to routinised or bureaucratic.
- When the industry is likely to experience a significant change.
- When there is multiple options with strong differences in opinions.

Scenario planning allows a manager to chart a middle ground between under- and over prediction through a range of different possible outcomes. The approach makes a difference in plausible futures as opposed to probable futures (Ramirez et al., 2017). Probability is hard to predict in turbulent and fast-moving markets, why assigning probabilities to scenarios are excluded. Instead, scenario planning focuses on identifying and developing scenarios that are plausible, challenging and useful. The scenarios take a narrative stance were each scenario consists of a story that relates to possible changes in the environment in which an organisation operates (Ramirez et al., 2017). By using storytelling to describe the plausible scenarios, a detailed and realistic narrative can capture aspects that a manager otherwise might have overlooked (Schoemaker, 1995). Each scenario should provide enough details to predict the outcome of different strategic actions executed by the organisation. Although scenario planning has been widely used and examined by practitioners and academics, there is no obvious systematic methodology for the process of conducting a scenario analysis. The complexity demands a rationale that is customised to the specific situation (Schwenker & Wulf, 2013). This study uses a customised framework for scenario analysis that is based on well-cited and established frameworks from leading companies and academics such as Ramirez et al. (2017), Schoemaker (1995), Schwenker and Wulf (2013), Shell International (2003) and Van der Heijden (2005). A brief overview of the full approaches is given in 3.1.3 and each element that will be used in this study’s customised framework is presented in greater detail in 3.1.4.

### 3.1.2 PITFALLS AND QUALITY ASSESSMENT OF SCENARIO PLANNING

Conducting a scenario analysis is a complex process that requires investments in both time and resources. The major reason for this is the lack of standardised tools and planning approaches (Schwenker & Wulf, 2013). Since it is a complex process, it is important to evaluate the developed scenarios against a few criteria. Schoemaker (1995) describes a number of criteria that could be used to assess the quality of the developed scenarios:

- **Relevance** - The first criterion is relevance, meaning that it should concern and be relevant to the involved parties.
- **Internal consistency** - The second criterion is that the scenarios should be internally consistent to be effective.
- **Archetypal** - Third, the scenarios should be archetypal, meaning that they should describe different futures rather than variations on the same theme.
- **Equilibrium** - Fourth, the scenarios should describe an equilibrium where the competitive environment is stable for longer than a short period of time.
One key to reaching a high quality of the scenarios is to state the purpose of the analysis and have a clear and integrated framework for the approach (Schwenker & Wulf, 2013). It is critical to involve the right interviewees with a range of different perspectives and opinions (Schoemaker, 1995; Ramirez et al., 2017).

One purpose of scenario planning is to adjust for the bias and overconfidence in the prediction of the future (Schoemaker, 1995). Some biases that can affect the scenario analysis is the tendency to look for confirming evidence, under or overestimations of unconfirmed evidence and assuming correlation among trends or uncertainties that are inconsistent. A big pitfall in scenario planning is to get stuck in a probability trap where crucial uncertainties remain unidentified, why it is useful to include a range of different positions and perspectives in the process (Ramirez et al., 2017). It is also important to remember that scenario planning is an iterative process where scenarios are developed in several steps. There is always a balance between plausibility and familiarity, meaning that the scenarios should be challenging but not too far-fetched and at the same time likely of being adopted (Ramirez et al., 2017).

### 3.1.3 ESTABLISHED FRAMEWORKS FOR SCENARIO PLANNING

**Schoemaker’s 10 steps to develop scenarios**

By following Schoemaker’s (1995) 10 steps for developing scenarios, a manager can compensate for the usual errors in decision making, such as overconfidence and tunnel vision. The author highlights the advantages by capturing a range of possibilities in rich detail. The process is a comprehensive framework starting from defining the scope, to adjusting the current strategy to the future scenarios:

1. **Define the scope** - The first step is to set the purpose and scope of the study regarding time frame, products, markets, geographic areas and technologies. Consider the past ten years and anticipate a similar degree of change or even higher in the next ten year.

2. **Identify major stakeholders** - Identify all the stakeholders that will have an interest in the issue. These include customers, suppliers, employees, shareholders, competitors, governments and so forth.

3. **Identify basic trends** - Categorise political, economic, social, technological, industry and technological trends into positive and negative or uncertain impact on the current strategy.

4. **Identify key uncertainties** - Identify events or changes whose outcomes are uncertain. For each uncertainty, a few possible outcomes should be outlined.

5. **Construct initial scenario themes** - This step is to identify extreme worlds by all positive trends and uncertainties in one and all negative in one. Another way of doing it could be to cross the two most critical uncertainties or trends into a matrix.

6. **Check for consistency and plausibility** - The initial scenario themes from step 5 might not be plausible due to a lack of internal consistency. Remove trends that don't fit within the time frame or scope. Analyse if the trends and uncertainties fit together, otherwise remove or categorise them. Also, consider how the major stakeholders would react to each scenario.

7. **Develop learning scenarios** - Identify themes that are strategically relevant and organise the possible outcomes and trends around them. The learning scenarios act as a basis for further research, rather than for decision making.

8. **Identify research needs** - Investigate what further research is needed to understand the uncertainties and trends by identifying blind spots.
9. Develop quantitative models - Re-examine the internal consistencies of scenarios and formulate certain interactions in a quantitative model.

10. Evolve toward decision scenarios - Converge toward scenarios in an iterative process that will eventually be used to test strategies and generate new ideas.

In the customised framework that will be used in this study, some of the steps have been reframed, rearranged, bundled or excluded. Step 8 to 10, for example, are excluded from this research as they either are related to a specific company or includes actions that occur after the creation of the scenarios.

Scenario based strategic planning inspired by Royal Dutch Shell

The methodology was introduced by managers in Royal Dutch Shell in the 1970s to cope with uncertainties in the oil business (Shell International, 2003). Using this forecasting technique, they could respond more effectively to the 1973 oil crisis. This approach is replicated by many and has been one of the most influential approaches during the last 40 years (Schwenker & Wulf, 2013). Schwenker and Wulf (2013) have summarised the approach in a six-step process. The first step is to create the foundation of the analysis by defining the scope of the scenario planning project (Shell International, 2003; Van der Heijden, 2005). This is followed by the perception analysis, that share characteristics with Schoemaker's (1995) second step, identifying the major stakeholders. The purpose is to raise an understanding of both internal and external perspectives from a 360° stakeholder feedback framework (Shell International, 2003; Schwenker & Wulf, 2013). The third step is to analyse the key factors that will affect the company or industry in a trend and uncertainty analysis. The degree of uncertainty and impact are ranked in a grid (Shell International, 2003; Schwenker & Wulf, 2013). In the following step, the uncertainties are converted into scenarios that describe different futures with help from a scenario matrix. The fifth step includes the implications where possible decisions or strategic options are tested in relation to the generated scenarios (Van der Heijden, 2005; Schwenker & Wulf, 2013). The sixth and last step involves monitoring of the environment's development. This is done with a framework called scenario cockpit, where triggers for changes in the environment are identified and tracked (Schwenker & Wulf, 2013).

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Result</th>
<th>Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Define the scope</td>
<td>Identify problems and framing of analysis</td>
<td>Clear purpose of analysis</td>
<td>Framing checklist</td>
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<tr>
<td>2. Perception analysis</td>
<td>Identify assumptions and mental models</td>
<td>Understanding of internal and external perspectives</td>
<td>360° stakeholder feedback</td>
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<tr>
<td>3. Trend &amp; uncertainty</td>
<td>Identify, discuss and evaluate relevant trends</td>
<td>Key trends and critical uncertainties identified</td>
<td>Impact/uncertainty grid</td>
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<td>analysis</td>
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<tr>
<td>4. Scenario building</td>
<td>Develop scenarios based on key trends and uncertainties</td>
<td>Detailed description of four scenarios</td>
<td>Scenario matrix</td>
</tr>
<tr>
<td>5. Strategy definition</td>
<td>Create action plans for implementation</td>
<td>Comprehensive strategy alternatives for different outcomes</td>
<td>Strategy manual</td>
</tr>
<tr>
<td>6. Monitoring</td>
<td>Monitor developments</td>
<td>Precise tracking of scenarios</td>
<td>Scenario cockpit</td>
</tr>
</tbody>
</table>

Table 3.1 - Scenario based strategic planning inspired by Royal Dutch Shell (Shell International, 2003; Van der Heijden, 2005; Schwenker & Wulf, 2013)
Some of the steps, such as the perception analysis, are replaced by other similar frameworks that suit this specific case better. For example, the 360° stakeholder feedback framework consists of surveys that will be sent to all identified stakeholders, which would anticipate an extensive quantitative approach which is not aligned with the current qualitative strategy. Step 5, strategy definition, and step 6, monitoring, are excluded from this research as it lies beyond the scope of the study.

3.1.4 CUSTOMISED FRAMEWORK FOR SCENARIO PLANNING

In this study, a framework consisting of six different steps that are based on established models from authors including Schoemaker (1995), Schwenker and Wulf (2013), Shell International (2003), Van der Heijden (2005) is applied to suit the specific case for the role of MAR in retail.

![Customised framework for scenario analysis](image)

**Step #1: Define the scope**

The first step of the process is to define the scope of the analysis in terms of time horizon, technologies, products and markets. It is critical to define the purpose of the analysis to understand what knowledge that would be of value (Shell International, 2003). Interviewing managers about their concerns and anxieties is often a good starting point. It is vital to involve a range of different groups and positions to minimise the risk of missing important insights. The scope depends on a number of factors such as the rate of technology change, product life cycles and the industry’s planning horizon (Schoemaker, 1995).

![Factors affecting the scope](image)

**Figure 3.2 - Customised framework for scenario analysis**

**Figure 3.3 - Factors affecting the scope (Shoemaker, 1995)**
Step #2: Identify trends

The second step is to explain trends that are likely to influence the development of the industry and technology. These trends should be relevant to the scope of the study, decided in step #1, and change the nature and practices within the chosen industry (Schoemaker, 1995; Schwenker & Wulf, 2013). A trend is defined as a change that is known and will continue in the same direction (Schoemaker, 1995). If the change is more unpredictable, it will be classified as an uncertainty in next step. If dependencies or relationships among trends will exist, they could be bundled into themes. This correlation will further be analysed in depth in step #4.

The degree of impact and uncertainty is visualised with an impact/uncertainty grid that can help to decide what factors that are the most critical to consider in further steps of the scenario analysis. The impact/uncertainty grid positions influencing factors according to the impact on the industry’s current practices and their degree of uncertainty (Schwenker & Wulf, 2013). The upper-left corner in Figure 3.4 consists of trends that are relatively easy to predict and will have a high impact on the industry. The upper-right corner consists of uncertainties and will play a key role in scenario analysis. These are the factors with a high degree of uncertainty that will have a major impact on industry development. These will later form the basis for the scenario dimensions in step #5 when clustering closely related trends and uncertainties into scenario dimensions. In the bottom-half, all secondary trends and uncertainties will be placed.

![Impact/uncertainty grid](image.png)

Figure 3.4 - Impact/uncertainty grid (Schwenker & Wulf, 2013)

Step #3: Identify uncertainties

Based on the outcome of step #2, uncertainties will be identified. An uncertainty is defined as an industry or technology change with a significant impact where the respondents are unsure about the outcome and are placed on the upper-right side of the impact/uncertainty grid. The different outcomes of the uncertainty should be plausible and affect the nature and practices of the chosen industry (Schoemaker, 1995).

For each uncertainty, a limited number of outcomes should be determined. Dependencies or relationships among uncertainties might occur, meaning that some combinations of uncertainties could be implausible. (Schoemaker, 1995) As in step #2, the impact/uncertainty grid (Schwenker & Wulf, 2013), Figure 3.4, is used to visualise uncertainties’ impact on the industry.
Step #4: Correlation analysis

Trends and uncertainties may lack an internal consistency, meaning that some outcomes might be contradicting (Schwenker & Wulf, 2013). Some uncertainties might be mutually exclusive and some might support each other. This could be analysed through a correlation matrix where it is asked whether the occurrence of uncertainty X would increase the chances of occurrence for uncertainty Y (Schoemaker, 1995). If the chance goes up, the correlation is positive (+), if the chance goes down, the correlation is negative (-) and if it is neutral or impossible to determine, it is marked with a zero (0).

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Figure 3.5 - Correlation matrix (Schoenmaker, 1995)

Step #5: Construct scenario themes

When all trends and uncertainties are identified, initial scenario themes can be created, which will be based on the outcome of step #1-4. Uncertainties with outcomes with strong correlation will be bundled into scenario dimensions. Given the purpose of the analysis, the two uncertainties with the highest impact on the industry are selected. The interaction among the dimensions creates initial scenario themes when plotting them in a two-by-two matrix. The matrix consists of four quadrants reflecting four different future scenarios, each with a distinct name (Van der Heijden, 2005; Schwenker & Wulf, 2013). Four is set as a recommendation of a maximum number of scenarios that a decision maker can process (Van der Heijden, 2005).

Figure 3.6 - Scenario matrix (Van der Heijden, 2005; Schwenker & Wulf, 2013)
Step #6: Build scenario storylines

The last step of the scenario analysis is to create a compelling storyline for each scenario. The scenarios should describe different futures, rather than variations on the same theme (Schoemaker, 1995). Each scenario should, however, still be plausible and strategically relevant to the investigated case or industry. These scenarios are developed with a purpose of testing a current strategy or to gain a better understanding of how to prepare and plan ahead (Schwenker & Wulf, 2013).

The trends and uncertainties and their relationships are described, which eventually leads up to scenarios. This chain can be visualised through an influence diagram that describes the strategic levers behind each scenario (Van der Heijden, 2005). The diagram uses the most important trends and uncertainties that are evaluated in the previous steps and explains the path using arrows, showing the linkage and how they impact each other. The scenarios should take a narrative stance (Ramirez et al., 2017). By using storytelling to describe the plausible scenarios, a detailed and realistic narrative can capture aspects that a manager otherwise might have overlooked (Schoemaker, 1995).

![Influence diagram](Van der Heijden, 2005)

3.2 AUGMENTED REALITY

3.2.1 WHAT IS MAR?

Augmented Reality (AR) is a technology that allows the user to enhance their perception of reality by adding computer-generated information over the physical world (Azuma, 1997). The result is that virtual objects seem to coexist in the same space as the physical reality, creating a seamless experience between the two worlds. The basic purpose of using the technology is to enhance the user’s perception and interaction of an object or situation (Azuma et al., 2001). According to Azuma et al. (2001), three common characteristics that define the technology, regardless device, are:

1. It blends the real and virtual worlds
2. It is real-time interactive
3. It is registered and presented in 3D
AR is, however, not restricted to the sense of sight as it can include and be applied to other senses as well, such as hearing and touching (Azuma et al., 2001). It should not be mistaken with Virtual Reality (VR) that is another emerging technology. VR differs as the user is completely immersed in a digital environment (Bacca, Baldiris, Fabregat, Graf & Kinshuk, 2014), meaning that characteristic number one is not fulfilled. While VR completely replaces the reality, AR supplements the reality.

The technology could be experienced through a screen, smartphone or a separate device, such as glasses. (Azuma et al., 2001). However, as previously mentioned, the focus of this study is Mobile AR (MAR).

3.2.2 DEVELOPMENT OF MAR

The first known reference to what could be compared to the concept of AR was in 1901. Baum (1901) described the idea of overlaying metadata on top of people through glasses. Factors that affect the development are in constant movement and changes over time, as the technology is emerging. In 2001, limiting factors and enabling technologies were see-through displays, projection displays and the accuracy of tracking of the user’s viewing orientation and location (Azuma et al., 2001). One of the most recent academic articles, however, is from 2014 where Martínez, Skournetou, Hyppölä, Laukkanen and Heikkilä (2014) summarise drivers and bottlenecks, covering both technological aspects as well as obstacles and opportunities in the adoption process of consumers. The authors are using Rogers Innovation Diffusion theory as a foundation to explain why AR has not yet become a mainstream technology. According to Rogers Diffusion Theory, five different characteristics decide the adoption of an innovation (Rogers, 2010). By using the framework, Martínez et al. (2014) also provide a hint of the future development.

The first characteristic is the relative advantage of the innovation and to which extend it offers improvements over other available alternatives. Martínez et al. (2014) argue that AR offers new advantages compared to VR. This because of the mix of real environments and the virtual world, as well as its ease to use together with the fun side of it. The second characteristic in Rogers innovation diffusion theory is the compatibility, i.e. its consistency with social practices and norms (Rogers, 2010). In this context, Martínez et al. (2014) mention that some of the AR devices are not socially accepted due to privacy issues. This could be one obstacle for the early stages in the diffusion of the technology but may change as the consumer gets familiar with the use of it (Martínez et al., 2014; Hong, 2013). The third characteristic is the complexity and its ease of use or learning (Rogers, 2010). AR technology is considered to have a steep learning curve, meaning that the consumer is able to start using it with little prior information (Sumadio & Rambli, 2010; Martínez et al., 2014). The fourth characteristic is the trialability of the innovation, i.e. the opportunity to try the innovation before purchasing or committing to using it (Rogers, 2010). The AR technology is easy to try and use as many application is freely available on smartphones (Martínez et al., 2014). The fifth and last characteristic is the observability, i.e., to what degree the benefits of the innovation are clearly visible for the user. Martínez et al. (2014) argue that the awareness of the benefits of AR are still relatively low from a user perspective. From a retailer’s perspective, actors are doubting the return on the investment.

Out of the five characteristics in the Rogers framework, three are fulfilled. The two major obstacles for diffusion, are the compatibility and observability issues (Martínez et al., 2014). Besides above mentioned consideration, several other drivers and bottlenecks are identified that is not included in the framework. Among the drivers, it is the reduction of costs that could be achieved due to usage of
the technology (Martínez et al., 2014). In a retail setting, the technology could replace expensive service personnel or reduce the return rate of products (Dacko, 2017; Baier, Rese & Schreiber, 2015). Another driver that Martínez et al. (2014) mention is the curiosity aspect, meaning that AR content could, because of the novelty of the technology catch consumers attention and make them feel tempted to test the application. Among the bottlenecks, the lack of standards and flexibility is mentioned. For competitive reasons, network effects are crucial because of the interrelation among technologies (Hall & Kahn, 2002). Network effects arise as the user base increases and gather around a standard. Network effects are significantly apparent for user-generated content, but also due to a wider availability of complementary goods, such as smartphones and head-mounted AR-glasses. The larger user base creates stability for both users and developers which fosters further development of the technology. Another bottleneck is the limitations in computing power for handheld mobile devices. AR technology requires complex computer vision algorithms to work. Recognition of the environment and the rendering of virtual content could be heavy and time consuming for mobile devices. The inaccuracy is another obstacle for AR technology as some techniques are still not accurate or good enough to generate an enjoyable experience for the user. The last mentioned bottleneck is the risk of an information overload on the display. A problem that might become relevant when advertising through AR becomes popular. (Martínez et al., 2014)

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Bottlenecks</th>
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<tbody>
<tr>
<td>Reduction of costs</td>
<td>No standard for the use of the technology</td>
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<td>Fast learning curve</td>
<td>Limited hardware power</td>
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<td>Curiosity</td>
<td>Inaccuracy in AR performance</td>
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<td>Tangible 3D visualisation</td>
<td>Social acceptance</td>
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<tr>
<td>Fun</td>
<td>Overload of information</td>
</tr>
<tr>
<td>Costs can be reduced in processes and returns</td>
<td>There is no standard for AR yet which hinders the development and networks effect</td>
</tr>
<tr>
<td>The technology is intuitive and easy to use which fosters a fast adoption</td>
<td>Technology requires complex algorithms</td>
</tr>
<tr>
<td>Catches the attention of the user</td>
<td>Some techniques still not accurate enough to provide enjoyable localisation of the virtual layer</td>
</tr>
<tr>
<td>The visualisation and interaction of 3D content adds value and results in opportunities</td>
<td>Technology not fully social accepted due to privacy issues</td>
</tr>
<tr>
<td>Technology offers a component of fun</td>
<td>Information on screen exceeds the needs of the user</td>
</tr>
</tbody>
</table>

Table 3.2 - Summary of drivers and bottlenecks for the adoption of AR technology (Martínez et al., 2014)

3.2.3 MAR IN A RETAIL SETTING

Over the past decade, AR has been a technology that has received attention from both academics and business practitioners. Yet, the technology is emerging and has not reached its full potential (Martinez et al., 2014). Considering the value perspective, MAR's potential is multifaceted. The
consumer is provided with richer, more immersive shopping experiences, but the retailers could also benefit from the technology (Dacko, 2017). The relationship between customer benefits and organisational benefits are obvious as the MAR apps often are used for purposes to achieve organisational benefits through increasing customer value. For example, an increased customer satisfaction through an immersive experience could lead to increased sales volume (Kent, Dennis, Cano, Helberger & Brakus, 2015). Dacko (2017) identifies five potential benefits MAR from a retailer's perspective.

1. **Improving conversion rates** - MAR could be used as a tool in the customer decision-making process. By providing service or entertainment through MAR, the conversion rate could possibly be improved (Dacko, 2017).

2. **Reducing return rates** - Costs associated with the return of goods are a major issue in, especially e-commerce. MAR technology can reduce the return rate by giving the customer a more detailed and accurate presentation of a product before purchase. (Dacko, 2017; Baier et al., 2015)

3. **Enlivening static retail inventories** - A competitive disadvantage of brick-and-mortar retailers is the limitations and management of inventory. MAR shopping apps can be used to enhance interaction with products by bringing them to life and thereby reducing the cost and management of physical inventory. (Dacko, 2017)

4. **Driving store footfall** - MAR can create a stronger connection to products and by that create a demand before the consumer has even thought of visiting a retailer (Singh & Singh, 2013). By creating content, a retailer can engage consumers before they enter the store and drive store footfall (Dacko, 2017).

5. **Providing a means to offer personalised pre-purchase evaluations** - Augmented reality could serve more specific needs by letting the customer to virtually try the product before purchase. For example, the application could recommend personalised products based on skin tone or scan the body type for custom made-to-measure products. (Dacko, 2017)

Among these five areas, Dacko (2017) mentions other ways in which AR could bring value to the retailer. These include abilities to demonstrate offerings, marketing as the customers share their shopping experiences as a result of the novelty of MAR apps, gathering of data on customer preferences, supporting multi-channel shopping experience and providing a higher level of service. However, the author suggests that these areas need further investigation in literature and lacks documented industry studies.

Given that AR is developed by companies with the aim of diffusion to their potential and existing customers, the value for consumers is of importance. One way to classify the added value of MAR applications is as a supporting service for consumers (Dacko, 2017; Saarijärvi, Mitronen & Yrjölä, 2014). Due to the service aspect, the findings of Grönroos (2011) shows that the customer can be a part of the value creation and that companies move beyond standard exchanges. This is exemplified by food retailer cases, where the retailers can extend their roles beyond the in-store activities to a more meaningful role in customer's life, a stronger value proposition and supporting customer processes instead of focusing purely on selling goods. (Grönroos, 2011)

In a retail environment, prior research points out several ways that MAR can add value to consumers.
1. **Improved information** - Spreer and Kallweit, (2014) found that MAR supports customers with better information, and the right information at the point of sale.

2. **Increased speed of obtaining data and means to personalise** - MAR enables the retailers to quickly collect, organise and manage data derived from customers, and hence be quicker to adapt to the preferences of the customers, which increases the value. (Pantano & Naccaranto, 2010).

3. **Improvements of store experience** - By enhancing i.e. customisation of messages, new elements in the store or merchandise layout – the consumers interest and attention can be stimulated while improving expectations on search efficiency. (Pantano & Naccaranto, 2010).

4. **Positive influence on the shopping experience** - Pantano and Naccaranto (2010), suggests that the overall shopping experience could be positively influenced. This is supported by Mathwick et al. (2001) and Bagdare and Jain (2013) that suggest that retail shopping can be an experience which includes different types of values to consumers. Dacko (2017) argues that the literature suggest that MAR is a promising technology to facilitate a richer and more immersive experience for consumers.

The multifaceted view of benefits is in line with the purpose of this paper, as the aim is to consider both benefits to consumers and to retailers when describing the role of MAR in retail. Dacko’s (2017) MAR benefits could be summarised according to figure 3.8.

![Figure 3.8 - Consumer's benefits & Retailer's benefits of MAR, adapted from Dacko (2017)](image)

The paper discusses MAR’s influence on the shopping experience and how the shopping experience can provide the consumer with different values (Dacko, 2017). However, there are different types of consumer values derived from a shopping experience. Holbrook and Hirschman (1982) present experiential aspects of consumption. It is further described how a consumption experience can be rich in value. One type of value that is described is extrinsic value, which usually comes with utilitarian consumption experiences (Holbrook & Hirschman, 1982). Another type of value is intrinsic value, which comes with the “appreciation of an experience for its own sake, apart from any other consequence that may result” (Holbrook, 1994).

Further elaboration on the intrinsic and extrinsic conceptualisation has been made. Holbrook (1994) included an activity dimension to this value concept. The first type of activity being reactive value, also described as passive value that comes from how a consumer understands, appreciates or respond to a consumption experience. The second type of activity being active value, also described as participative value, this entails a more collaborative action. (Holbrook, 1994)
Building on Holbrook’s (1994) classification of intrinsic-extrinsic value and active-reactive value, Mathwick et al. (2001) classify consumer value, in a shopping process, by using four quadrants in a two by two matrix, which is shown in Figure 3.9. One axis contains extrinsic and intrinsic value, while the other axis contains active and reactive value. The intrinsic-active quadrant consists of “playfulness” which captures the intrinsic value of enjoyment of shopping and shopping as a form of escapism. The intrinsic-reactive side consists of “aesthetics” which incorporate the value of the visual allure and the entertainment that this includes. The extrinsic-active side describes "consumers return on investment" which consists of greater efficiency when shopping and economic value of the purchase. The last quadrant is the extrinsic-reactive one, where "service excellence" is described as the consumer's appreciation of a service provider to deliver on its promises. (Mathwick et al., 2001)

![Figure 3.9 - Typology of consumer value (Mathwick et al., 2001)](image)

The model captures both the appreciation of the experience itself (intrinsic value) and a more utilitarian value (extrinsic value). It also captures passive value (reactive value) and participative value (active value), when collaboration is needed. Hence the model does not limit the role of MAR in retail, in terms of which experiences that MAR can or cannot support. The model is used to describe how central and for what purpose MAR is used in a specific retail context. Dacko (2017) classifies 272 different MAR applications based on the value provided to consumers. To provide an example of how Dacko uses the model presented above, four of the MAR applications investigated, and their respective value to consumers is described below.

- **ARMUSE - Intrinsic and active value**, “Playfulness”. ARMUSE is an AR-based treasure hunt app with gamification elements. The application is tailored to deliver promotional messages to consumers. (Dacko, 2017)

- **Blinky - Intrinsic and reactive value**, “Aesthetics”. Blinky is an AR application with which products and posters can “come to life”. The application supports purchases. (Dacko, 2017)

- **TellMePlus - Extrinsic and active value**, “Consumer return on investment”. TellMePlus is an AR application that lets the consumer find offers and commercial promotions by using AR and geolocation. (Dacko, 2017)

- **Pacific Place Mall - Extrinsic and reactive value**, “Service excellence”. Pacific Place Mall is an AR application that guides the consumer in the mall, multiple services are included in the app, such as a concierge service. (Dacko, 2017)
4. EMPIRICAL INVESTIGATION

The empirical investigation was done to identify development factors that will shape the future of retail, the development of MAR and functionality of MAR in a retail context. A desktop research of secondary data was first undertaken, where a set of development factors are identified prior to the first interview. These are labelled “Start” in table 4.1. A rejection criterion was set, which reject a theme when only one source of information discuss a trend. During the interviews, the respondents will be asked to come up with new trends. These were further elaborated in an iterative approach by confirming or rejecting with new interviews and secondary data from consultancy reports. "M" indicates that the respondent has mentioned the factor without a specific question on the topic. However, "M" doesn’t capture whether the respondent agrees or not. "C" means that the respondent agrees, while "R" indicates a rejection of a suggested development factor.

4.1 RETAIL DEVELOPMENT

<table>
<thead>
<tr>
<th></th>
<th>Start</th>
<th>Erik A</th>
<th>Patrik H</th>
<th>Carl-Philip A</th>
<th>Johan L</th>
<th>Niklas B</th>
<th>John K</th>
<th>Michael G</th>
<th>Cecilia F</th>
<th>Malin S</th>
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<tr>
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<td>Price sensitivity</td>
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<td>Brand loyalty</td>
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Table 4.1 - Mentions, confirms and rejections of retail development

4.1.1 E-COMMERCE

A central topic that emerged during the interviews was e-commerce and its future importance in retail. The respondents that mention e-commerce indicated a growth development. However, the respondents were not certain how the development will unfold. John mentions that he believes that e-commerce will continue to grow, but he also indicates that the growth would not capture all the sales within retail. Cecilia also mentions the growth of e-commerce. Cecilia suggests that the ease of the buying process, with a simple click, was one factor behind the growth. When asked about the central topics of retail today, Carl-Philip instantly mentions the growth of alternative sales channels such as
e-commerce and m-commerce. The growth of e-commerce is thus a recurring topic, which is further supported by PostNord (2018) that estimates a growth of 15% in Sweden in 2018.

Apart from the growth, that emerged as the central topic, the results and effects of it were also discussed. Many respondents brought up that the growth would lead to a decrease of physical stores and a changed role of physical stores, due to the shift from physical to digital. However, the vast majority of respondents state that this would not mean the death of physical retail. Cecilia mentions a decrease in physical stores to be likely, and that physical retailers will move towards an inspirational role. Malin also mentions a decrease in physical stores, and that retailers will have to change the role of the physical stores, and at the same time adding experiential value to the products themselves. Johan mentions that the shift to digital will directly impact the role of the physical store and even the number of stores and their size. Further, John mentions the following:

“If you as a retailer have put all your eggs in one basket, and that basket is analogue, you will have a tough time.”
- John Karsberg

4.1.2 OMNI-CHANNEL
Several respondents describe how shopping in retail will move towards an Omni-channel experience. By combining mobile, bricks-and-mortars and e-commerce into one seamless experience for the consumer, Deloitte (2015a) reports that this will change the shopping scene as we know it. Johan and John support this and mean that digitalisation drives the development of different purchasing channels, which will also affect the consumer's demands. However, the cognitive purchasing process still looks the same and all steps must be completed, but the steps may occur at new places or in different channels. As digital and physical channels merge, John raises the question of redefining e-commerce and the complexity of measuring sales when the consumer may be inspired at home by the computer, but completes the purchase in a physical store. Johan further says that creating a seamless and frictionless Omni-experience is critical to generate sales and to stay ahead of the competition in the industry. Even primary digital brands could now see the advantage of having physical stores and are putting greater emphasis on physical presence (Fjord, 2017). Carl-Philip could, among other advantages, see how e-commerce and physical stores in combination could ease e-commerce returns and can inspire customers at different touchpoints.

4.1.3 SERVICE
Carl-Philip mentions service as an interesting area to look at in the coming years. The reasoning behind this was that the e-commerce will push physical retailers to find new ways to compete and develop their offering. Service would hence be one part of this new offer. By offering a better service in the physical stores, the retailers can compete and offer a value that keeps them in the race when digital retailers expand. This is further supported by EY, (2017) that suggest that this is a common strategy for physical retailers. Carl-Philip predicts that this eventually will lead to that digital retailers will have to up their service level as well. Hence, this would lead to better service in all channels, and that the divergence of service levels would decrease across channels. Johan also believes that service will change. He takes a perspective where a retailer leverages the connection between a customer's online and offline interactions with the retailer. For example, he believes that a more personalised service experience can be achieved where data on the customer can be utilised in both an offline and online context to improve the service experience.
John mentions a different type of service, a frictionless experience where the customer can pick the things they want in a physical store and simply walk out, being charged automatically for their purchase without any interaction with staff. However, he sees the interaction with retail staff as important in some cases and that the example given could have negative consequences since it could be harder to establish a personal relationship with the customers. Carl-Philip also mentions the personal meeting as an important aspect of physical retail since it provides a sense of safety in the purchase process, by decreasing the perceived risk for the customer. Malin mentions the knowledge of retail staff and that educated and well-trained staff will become more important in the coming years, this to provide a better service for the customers. The importance of the knowledge of sales associates is supported by KPMG (2017) that mentions that talented retail staff is crucial to match the needs of consumers. In a physical context, an extensive knowledge of the product range is valued highly by the consumers (PwC, 2017). From a service perspective, meeting knowledgeable retail staff could be an important part of the total experience in the coming years (EY, 2014).

Given the different points of view from the respondents, the role of service will be increasingly important in both an online and physical context. However, the meaning of service seems to be taking different forms under different circumstances, as long as it provides the type of value that consumers want in a certain context.

4.1.4 CONSUMER AWARENESS
Respondents refer to a more aware consumer due to digitalisation. E-commerce has allowed the consumer to compare and read about products before visiting a physical store. Malin says that the results of this are that a retailer needs to reconsider the purpose of their staff in store. As the power balance of knowledge shifts, staff need to be highly educated to be able to serve a customer. The source of information has also shifted and a big part of the information today comes from other consumers. 67% of industry experts believe that within five years, consumers and celebrities will be more important marketing channels than mass media. This also implies that consumers themselves contribute to marketing efforts, which is why consumers in this context have been called “Partsumers”, due to their indirect partnership with different companies. (EY, 2017) Due to the increased power of consumers, John means that the role of a retailer has shifted from creating a demand, to rather serve a demand.

4.1.5 PERSONALISATION
The personalisation topic was recurring in the majority of the interviews. A higher relevance to each and every consumer was a central message conveyed by the respondents. Johan also pointed out that consumers will not have to read messages or consider products that are not relevant to them. However, he saw a pitfall in this, which he describes as the risk of changing preferences from a consumer, that companies do not notice. Only the best companies will be able to understand these shifting preferences and be agiler in updating their personalisation to these consumers.

Many respondents spoke about the importance of personalisation in a digital context. KPMG (2017) points out that a personalised online user journey increases sales on average with 19%. To be able to personalise the digital experience, big data insights need to be leveraged. KPMG (2017) further suggests that many companies have a great amount of data to utilise, but need to invest more in insights, not just the collection of data. Furthermore, this kind of data can be used in more contexts than a personalised digital experience, where an example is to use the data in product development (EY, 2014). Regarding the insights in data, Carl-Philip believes that more companies need to invest in
the right data scientists and research people to be able to create the right kind of value to consumers. He also states that the companies that can handle the data in the right way will be the winners. Patrik suggested a scenario where the insights are even more complex. He spoke about eye-tracking and to utilise gaze data to achieve the next level of personalisation. By analysing data on what the recipient of a message pays attention to, messages can be personalised and even more interactive than what we see today. He exemplifies this by explaining that the camera in a smartphone can track what you pay attention to, and by the support of artificial intelligence, offers can be personalised in real time.

In addition to discussing personalisation in a digital context, many respondents pointed out the need and the possibility to leverage the data in physical stores, to create a more personalised experience. Both Cecilia and Erik mention that data could be used in a physical context, to personalise recommendations and to match relevant products with the preferences of the consumer. Erik further mentions that it could be used to match different segments as well, as some consumers value offers more and some do not. John argues that the data from online purchases should be possible to transfer to a physical store to personalise the experience. He gives the example of using online data such as what you have added to your cart, or what you have been browsing, and then enable a push notification on your phone when close to the relevant item in a physical store.

4.1.6 DELIVERIES
Some respondents refer to the impact of faster and more personalised deliveries in e-commerce. This is built on the assumption that one of the biggest advantages of a physical store is that the consumer can collect the good instantly. As the deliveries will be made faster and more personalised, this advantage will disappear. John even states that it will rather be a disadvantage to pick up a product in store as the consumers need to carry it by themselves. Johan says that impatience of the consumers will drive the retailers to deliver products even faster. Same-day deliveries are expected to be an important competitive advantage to win orders (KPMG, 2018a). Carl-Philip further says that the speed of deliveries will impact some products more than others. For some goods, the consumer has more patience and can wait for a couple of days for deliveries. These products could disappear from physical stores completely as it is more convenient for the consumer to have it delivered to the door through either subscriptions or on-demand purchases. However, some products will be exempted from this impact as the consumer want to browse products in-store or wants the product immediately.

4.1.7 CONSOLIDATION
Many respondents discuss consolidation as an emergent trend within retail today. Malin mentions that digitalisation has shifted the very definition of retail as consumers can buy anything, anywhere, at any time. She furthermore believes that we will most likely see a few big retail players in the future but mentions that there will be room for smaller ones as well. KPMG (2018b) expects a similar development, with mergers and acquisitions to enable this future. EY (2014) also mentions this future where corporate competition will further spread across countries and industries, supported by technological development.

Niklas is more extreme in his predictions, he believes that companies such as Amazon and Alibaba will conquer the world of retail in a few years and that consumers will purchase the majority of their goods from them. Johan also mentions the development of platforms such as Amazon and explains that global competition is the number one trend that he believes will have the biggest impact on retail in the coming years. He also mentions that we will see more cross-over companies, which he
exemplifies with traditional fashion companies that move into the sports clothing segment and vice versa. Furthermore, Johan believes that the anti-trend to the globalisation is more local, smaller stores. Carl-Philip also discusses how consolidation and global players will leave room for some smaller companies in some segments. He argues that it will be harder for smaller retailers to compete in segments where the products are comparable, such as electrical home appliances.

The respondents all agree that consolidation and global trade is growing and that it will reshape retail today, but to which extent is not clear. Also, the roles of big global players and the smaller local businesses are hard to predict according to the respondents. John provides another point of view while confirming that increased global trade will happen. He believes that big players will have a rough time being relevant to the consumers and that big digital players will have an advantage to physical retailers due to that they have the opportunity to be agiler. However, big players still will have a tough time being relevant and could have a struggle with a clear identity.

4.1.8 DIGITALISATION
The respondents agree that the retail industry is undergoing a transformation. Malin refers to it as the biggest transformation process in history, which is caused by digitalisation. KPMG (2018a) describes a disrupted industry where technologies already are available, but it is up to retailers to understand how the technology could be used to support a competitive edge. Cecilia sees how a current sense of urgency potentially could drive development as retailers become more desperate to innovate their business model. John says that this force many actors to question existing norms and procedures, but stresses the importance of understanding how digitalisation could be used strategically:

"Retail has become very feature driven. It is a lot of buzz and chatter about specific musts, instead of focusing on what is actually generating sales and what the customer value."
- John Karsberg

Malin states that many retailers will lose money investing in new technologies that don't generate any value. She describes how many actors have become lost, investing in emerging technologies without profitability. Together, the respondents have referred to technologies such as artificial intelligence, big-data analytics, voice assistance, tools for personalisation and AR. The return on investment is in many times doubted as the respondents’ number one concern for the future development and adoption of AR is its ability to generate value.

4.1.9 SHOPPING EXPERIENCE
Johan captured the ambiguity of the shopping experience that the respondents describe during the interviews:

"I see a shift where the physical store could become more experiential, similar to showrooms. But at the other end of the spectrum, there are customers who want’s a more effective process and simply want their products as fast as possible."
- Johan Lidenmark

At one hand is the experience and at the other is the fast and frictionless buying process. Erik describes that a comfortable and frictionless process suits some products, but that it is different depending on segments. Malin states that the future store will differ given different categories of products and segments.
The fast and frictionless end of the experience is mentioned by many respondents. Both Cecilia and Niklas mention effective online sites. Niklas believes that an effective browsing and simple check out are essential to be in the retail game. Carl-Philip extends the effectiveness of e-commerce to deliveries, he argues that in some cases consumers prefer quick deliveries while sometimes it is not necessary. This frictionless process is confirmed in a consumer study, in which 50% of consumers indicate that they want time-saving services and tools that optimise the time they spend shopping (EY, 2014). John talks about seamless payments as one enabler of a frictionless buying process, and that it could be used in a physical context. Furthermore, John describes that the demand of a fast a frictionless experience stems from an increased impatience. This impatience is according to him a result of the technical progress that enables new ways of doing things.

“When things can be done faster and when they are more personalised and relevant, an impatience is created.”
- John Karsberg

The other side of the spectrum has a larger focus on the experience of the buying process. John states that the store could be a place for inspiration, especially in a branding context. Carl-Philip believes that experiential stores create an understanding of the products and their value and that the service experience could be strong in a physical setting. An extension of the inspirational aspects of the store is brought up by many respondents, and they label it as a showroom. Niklas believes that showrooms will be important for physical retail in the coming years. Cecilia discusses that showrooms could be more inspirational as concepts. She connects this demand to the increased demand that consumers will have on the shopping experience. Furthermore, Cecilia believes that the physical stores need to become smarter and that an added value in the stores is crucial to drive footfall. John has a similar argument regarding inspiration in physical stores, he believes that it could become smarter in terms of amplifying the experience. Both the showroom discussion, as well as smarter stores are supported by PwC (2017), in which retailers claim to respond to the consumer need of digital in-store features such as being able to view an extended range of products.

The respondents mention the different sides of the spectrum of the shopping experience, but very few respondents give practical examples of when each type of experience will be favoured by consumers. EY provides one possible explanation, of what they label as a buying process polarisation. The polarisation can be connected to product categories where “unwanted purchases” are more favoured in the fast and frictionless setting, while “pleasure purchases” are more tightly connected to experience buying process (EY, 2017). Furthermore, the respondents are uncertain about which retailers that will move either direction or if a retailer could provide a shopping experience that delivers on both sides of the spectrum. John poses a question during the interview, of the uncertainty when it will be okay for a customer to wait, and what creates friction. In addition, Cecilia brings up that sometimes a fast and frictionless purchase could be a great experience in itself, which captures the complexity of the shopping experience.

4.1.10 PRICE SENSITIVITY

Respondents’ opinions about the consumers’ price sensitivity are divided. Carl-Philip states that the consumer will become less price sensitive and will be more willing to pay for convenience, such as better deliveries. Other respondents mention the opposite as a result of the growth of e-commerce retailers that pushes for lower prices. Malin and Niklas support this and say that all retailers need to reconsider its value offering. In the past when the store had a designated position, it was possible to compete with a low price. Today, when the consumer can order anything, at any time, anywhere it is
different. The result is that it is impossible for smaller businesses to compete with global e-commerce giants when it comes to price. John neither confirms or denies an increased price sensitivity. He rather refers to an increased price spread, meaning that the consumer will be willing to pay more for some personalised goods, while the ability to compare products and prices online will lead to increased price sensitivity on other goods. Johan can see long-term challenges as the consumer never needs to pay full price. He says that it is always some actor that is willing to lower the price which affects the competitive dynamics in the industry. KPMG (2018a) states the opposite and means that the arising conscious consumer will evaluate retailers on other factors beyond price, such as the overall customer experience.

4.1.11 PRIVACY

Digitalisation allows retailers to collect new types of behavioural data about consumers to personalise offerings and ads. Some respondents talk about a possible counter-reaction to this when retailers know too much about the consumer’s purchasing patterns. Johan mentions the possibility of consumers going back to local with global e-commerce companies. John believes that retailers need to be more transparent about data collection in the future and that privacy issues will have a moderate impact on the industry as whole. Niklas can see the risk of sharing personal data, but do not believe that consumers will care:

"We will probably see scandals about leaked data in the future. Then maybe 1% will go offline for a while, but after a while, they will not care."
- Niklas Bakos

New legislation and laws around data collection and data mining arise to catch up with digitalisation. This could possibly hinder retailers to both collect and analyse specific data sets. Lewis Silkin (2018) highlights five areas that could cause issues due to EU’s General Data Protection Regulation, effective from 25 May 2018. These areas are 1) content, 2) profiling, 3) security and breach notification, 4) data processing arrangement and 5) cross-border data flows.

4.1.12 BRAND LOYALTY

Brand loyalty was discussed during the interviews since it was recognised as an increasingly important area by some consultancies. The brand engagement and a meaningful brand experience are considered the next competitive battleground (KPMG, 2017). About 61% of consumers of today claim that they are brand loyal and prefer to buy the brands they know (PwC, 2017). One of the driving factors behind a brand’s success is the trust for the brand. General trust for brands is decreasing, and trust is often built based on the recommendations of other consumers. The attention span of consumers is decreasing, which is why it is important for brands not to push messages on consumers, rather create personalised digital engagement opportunities (EY, 2017).

During the interviews, it became clear that brand loyalty was not a central topic that the respondents emerged upon during the discussions. No respondent brought up brand loyalty spontaneously. When asked about the future of brands, John stated that the brand might be more important in platform setting, but that the importance of brands could differ given what type of product, segment and sales channel that would be used. Carl-Philip had a similar response, and says that brands have always been important, he also rejected the proposal that brand loyalty would become increasingly important.
4.1.13 SUSTAINABILITY

Sustainability was a topic brought up by John, an area he believed to have a fairly high impact on the future of retail. John mentions how it could lead to that retailers would revise their business models to become more sustainable. However, no other respondents spoke about sustainability. Sustainability is mentioned by some consultancies, as an area that will have an effect on the future of retail. EY (2017) mentions that consumers will be more cautious since they are more aware of the impact of their consumption. This, in turn, could lead to an increased resistance of non-sustainable products and companies. Furthermore, it is mentioned that by re-using, purchasing restrictively and sustainably, the consumer signals their values to other consumers. Apart from the sustainability trend that stems from consumer preferences, other forces play a part. McKinsey & Company (2016) describes how tighter regulation on sustainability issues from external forces such as governments, will impact retail companies in the years ahead.

John also mentions sharing economy as a trend that could impact retail and many other industries. He stated that consumers share products more with each other and rents items as well. The connection to sustainability is best explained by PwC (2015) in their consumer survey, 78% of consumers agree that a sharing economy reduces waste. However, the same study shows that only 2% of the respondents have used sharing economy services within retail.

4.2 MAR DEVELOPMENT

<table>
<thead>
<tr>
<th>Start</th>
<th>Erik A</th>
<th>Patrik H</th>
<th>Niklas B</th>
<th>Björn T</th>
<th>Oliver E</th>
<th>Michael G</th>
<th>Cecilia F</th>
<th>Mario R</th>
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Table 4.2 - Mentions, confirms and rejections of MAR development

4.2.1 MARKET PENETRATION

Several consultancies expect a fast market penetration of MAR. This because the technology already is supported by a smartphone and doesn’t require any additional hardware (Accenture; 2014; Reuters Institute, 2018; Schibsted, 2018). Deloitte (2018) expects 800 million AR ready devices by the end of 2018. Several respondents agree to this and Erik says that this is one of MAR’s big advantages in comparison to Virtual Reality:

“We will definitely see a breakthrough of AR. The advantage of mobile AR is the volume of devices. It will take several years until everyone has Virtual Reality-devices at home.”

- Erik Arvedson

However, many respondents make a difference between market penetration and market adoption. Just because there is a big installed base, it doesn’t mean that it will be used or adopted by the consumer. Erik, Patrik, Cecilia, Mario among others mean that the success of MAR is rather dependent on its ability to generate value. Niklas also highlights the risk of for MAR to always be associated with Snapchat filters and home-placement of furniture. Erik, Cecilia and Mario mention
Pokémon Go as one of the first big breakthroughs of MAR. The novelty of MAR generated a lot of buzz in media and among users which eased the adoption of the application.

### 4.2.2 SOFTWARE AND HARDWARE

The development of MAR technology is expected to pick up speed for a number of reasons. One key driver mentioned by Michael, Mario, Erik, Oliver, Patrik and Björn is the hardware development of smartphones. Cameras, processors and battery capacity will until 2023 be good enough to give a satisfying user experience. Björn and Oliver also describe how the development of the fifth and sixth generation of connectivity can enable calculation of heavy algorithms in the cloud instead of locally on the smartphone, which will save processing and battery power. Oliver sees software development as a bigger bottleneck than the hardware development. He especially mentions how the technology must be better at detecting other geometrical objects than flat surfaces like floors and walls. Oliver, Erik and Björn mention how the development platforms ARKit and ARCore from Apple and Google will ease and speed up the development process. The platforms are further expected to lower the investment cost for applications which will foster the development (Reuters Institute, 2018; Schibsted, 2018). When summarising drivers and bottlenecks for the development of AR, Oliver can divide them into two areas - one that is revolved around technology and the other one is more related to human factors. For the further development of MAR, he is less worried about the technology factors:

“The software will become better and will be able to recognise and track objects better. Today, we can see some problems when tracking is lost, but in 1-2 years, my guess is that it will be solved.”

- Oliver Edsberger

### 4.2.3 MARKET ADOPTION

The adoption of MAR is not only dependent on hardware and software development. Several respondents describe how a behavioural change in usage of smartphones is needed, referring to the uncomfortable position when holding a smartphone in the air in front of yourself. This position shares characteristics of filming others, which possibly can create awkward social situations. Björn describes the bottleneck accordingly:

“If you would walk around among others with the phone like that, people would start to wonder what the heck is wrong with him or her?”

- Björn Thuresson

Mario agrees with this but has a potential solution to the problem. He suggests AR dedicated areas where it would be socially acceptable to use and means that Pokémon Go is a successful example of this. In these specific areas, everyone will know that an AR application is in use. Björn also believes that usage MAR in public can be problematic and therefore has a better potential for adoption in specific, locked locations, like a retail store. Cecilia and Erik agree, but could also see how this resistance potentially could change over time.

Recording or not, the usage of a front-facing camera in public or in stores could potentially threaten integrity or be a violation against law, which is mentioned by Björn and Mario. While the technology is rapidly advancing, little thought have been given to privacy issues (Roesner, 2017). Companies will have access to a constant video and audio streams, which could be found creepy. The fact that MAR is immersive and interacts with the reality makes security issues potentially more pressing, compared to traditional devices like phones or laptops (Roesner, 2017).
4.2.4 AR HEADWEAR DEVELOPMENT

Many respondents believe that the main AR device will be some kind of head-worn device, like glasses. Niklas is one of those and is sure that AR glasses will be the next big thing:

“We don’t know exactly how they will look like or how long it will take, but we are in the middle of a technological revolution and it will cause disruption. It is the next screen.”
- Niklas Bakos

Oliver means that glasses are what the consumer really wants, why MAR will not last forever. The new type of device is dependent on technological development as the device’s components need to become smaller in comparison to a phone. Connectivity is also a critical driver as this would enable processing in the cloud. Erik mentions the failure of Google Glasses and thinks it is hard to predict the social acceptance and how glasses will be received by the market. Patrik believes that the adoption of AR glasses will take some time as it requires market penetration of a new device. Some consultancies expect that glasses will compete and replace smartphones as we are used to (Reuters Institute, 2018; Citi, 2016). Citi (2016) expects this shift in 2025-2030, which also is supported by many respondents.

4.3 MAR IN RETAIL DEVELOPMENT

<table>
<thead>
<tr>
<th>Start</th>
<th>Erik A</th>
<th>Patrik H</th>
<th>Carl-Philip A</th>
<th>Johan L</th>
<th>Niklas B</th>
<th>John K</th>
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Table 4.3 - Mentions, confirms and rejections of MAR in retail development

4.3.1 MARKETING

One of the use areas for MAR that emerged as a prominent theme was marketing functionalities. Many different topics were presented by the respondents and one of these were the effect of using MAR as a PR-tool. Erik mentions that a MAR app could make your business stand out of the crowd from other businesses. He also compares AR to showrooms in the sense that people talk about it, which creates a word-of-mouth effect, but he also mentions that it would be dependent on how cool the app would be. Niklas stated a similar stance, mentioning that MAR could be used to create buzz and PR value, but that it depends on how well the app is working. Michael spoke about the Synsam app that people talk about it even though they might not use it. Oliver provided his take on the benefit of IKEA’s MAR application:
Apart from the PR value that the respondents mention, many respondents stated that it could be used for to create experiences and engagement. Customer engagement is one area that consultancies see as promising for MAR (Accenture, 2014; LS Retail, 2018). Cecilia explained that there is a need to create new, stronger experiences for consumers to engage them and to attract them to different brands. This type of experience, both in terms of creating a stronger brand experience but also in terms of a better in-store experience is mentioned by other respondents as well. The brand experience is further supported by Accenture (2014). Erik explained the logic behind this, stating that buying decisions is an emotional action even though a consumer might think that she is acting rationally. He also thought that it would be possible that MAR could be a part of building that emotional experience.

Marketing was also discussed from an advertising perspective, where the respondents saw benefits in terms of effective, relevant and personalised advertising through MAR. Mario suggested that advertising will be one of the main use areas for MAR. Both Patrik and Niklas mention that MAR makes it possible to target consumers at the right time and place, one example of this was with push notifications while the consumers are in a store. Furthermore, Niklas and Patrik presented ideas of improving traditional marketing such as catalogues by complementing it with MAR functionalities. This way, the consumers that still use catalogues could be reached with MAR. With AR, retailers could overcome the drawbacks of printed media, for example, that it is static and hard to update, and invite interaction (Accenture, 2014).

### 4.3.2 PRODUCT INFORMATION

The product information theme was identified prior to the interviews. However, information solutions in MAR were frequently brought up spontaneously by the respondents. Findings in consultancy reports pointed out the use cases of AR such as guiding the consumer in store by giving directions in aisles, finding items on shelves and showing additional information and reviews about products (Accenture, 2014; Citi, 2016).

Erik stated that showing technical information on products is one use case for MAR in retail. He also mentions that the benefit of this for consumers is easier access to information. Niklas confirmed the use case, mentioning that it would make the life easier for consumers and that it is simple to implement with the technology today. Cecilia also talked about the easier access to information and that it would decrease the need for help from retail staff. One additional feature that was discussed in this context was presented by Patrik who said that the MAR application could be connected to a translation service, which could help to translate product information in real time.

Another use area that was discussed by many respondents, was to simplify the process of finding the products. Björn says that it is a common idea of retailers, to help the consumers by providing directions and contextual information in-store. Erik also spoke about this function, to help consumers find the right aisles, shelves and to highlight offers. However, he also presented a drawback in that some retailers want the consumers to spend more time in the store, looking for products since this might increase spontaneous purchases.
4.3.3 OMNI-TOOL

As MAR technology combines the digital and physical world, many respondents refer to the potential of using MAR as a tool for creating a seamless experience among different channels. Carl-Philip agrees and believes that AR can play a significant role when using technology to create an Omni-experience. Accenture (2014) supports this and means MAR, as a result, can potentially drive conversion in-store. Synsam’s MAR application is one example and Michael describes how it has helped to create more of a seamless experience by offering MAR functionality both at home and as a service in-store. Erik, however, can see the Omni-potential in MAR, but believes in moderate impact:

“AR will probably not be the thing that makes the difference, but the retailers that manage to connect physical stores and e-commerce by integrating AR will have a stronger overall customer experience.”
- Erik Arvedson

Niklas and Cecilia believe that MAR can be used to enhance the experience in-store and by that creating more of a showroom of products where the purpose of a store goes beyond selling goods. One bottleneck in the adoption of MAR is that the consumer needs to download an application. Patrik, Niklas and Erik mention that this barrier could potentially hinder the development of MAR, but believes that the obstacle can be eliminated by integrating other functionality in the application. Examples of this could be to integrate m-commerce, exclusive offerings and loyalty programs and by that create incentives to download the app.

4.3.4 SUPPORT AND EDUCATION

The support and education topic emerged in many different forms. Erik spoke about a common idea of information breakdown when looking at something complex. He exemplified this with an example of x-ray feature showing the breaks of a car and stated that such a feature would be doable in a five-year time frame. He also saw benefits in that it could provide a stronger experience than sound and movies while simplifying complex information. Patrik presented a similar use case in which cross-sectional features simplified complex information. Furthermore, this type of feature was exemplified by a conceptual MAR application that helps the consumer to assemble IKEA furniture by showing a step-by-step process. Carl-Philip also mentions another use case in which salespeople could use this type of educational tools as an information tool to help explain and sell complicated products.

4.3.5 STORAGE AND STORES

The storage and stores theme was discussed both in terms of the ability to show products that are not physically available in store and where entire stores could be visualised through the use of MAR. Carl-Philip mentions the value of being able to show more versions of a product in the store, which would decrease storage needs. Oliver mentions a similar solution but highlights that the retailer could complete sales of products that are not available in the store, by showing different sizes and colours in a MAR application. This is further supported by Accenture (2014). Patrik also mentions this, claiming that retailers could opt out of buying entire assortments to showcase in-store and use MAR applications to show products that are not available in store. Cecilia believes that this could lead to cost savings in the long run, by decreasing the number of stores a retailer needs. Accenture (2014) also mentions cost savings in terms of a decreased need for retail space.
Some respondents also present visions of how the development on this theme could unfold. Michael spoke about the MAR application of Synsam, mentioning that it would enable retail staff to bring the store out on the streets. He also mentions the following:

“Looking ahead, we could in example launch “the world’s smallest store” setting up an iPad at Arlanda with click and collect.”
- Michael Grimborg

Many respondents also present how MAR could build showrooms or inspirational stores, either as a support to an existing concept or in its entirety. Cecilia presented an idea, which was to use MAR applications to create entire stores in peculiar or odd locations. This would enable retailers to reach consumers at locations that they usually do not have a store at.

4.3.6 PERSONALISED RECOMMENDATIONS

The respondents spoke frequently about different possibilities for personalisation and personalised recommendations in MAR applications. Cecilia says that matching related products would become better than today and that you could save your profile to match products to your preferences. Erik mentions a similar solution and added that this would become more accurate, which could lead to upselling. He also says that by using supporting technologies, this function could be used in a physical store. Oliver states the following:

“Let’s say that you are at some location and get context sensitive information. For example, you could be looking at some sort of product, then AI could recognise this, and a pop-up with a personalised recommendation or offer is displayed.”
- Oliver Edsberger

This new type of personalisation is further explained by Mario. He sees possibilities in MAR when interacting with physical content, and by integrating data mining, information that matters to the user can be displayed. Apart from this, new types of behavioural data were discussed by the respondents, as an enabler for the personalisation. Björn stated that there is potential for more accurate positioning data when using triangulation of GPS and WIFI, in combination with MAR. He also explained that there is potential for more data and especially more detailed data. He also pointed out that this enables real-time personalisation, based on direct analysis of the behaviour. Patrik provided one example of this new type of data, which he called gaze data, which tracks what the user is looking at and thus can adapt content in real time, which would provide value for both the consumer and the retailer. Deloitte (2015b) discusses many of the topics brought up by the respondents, they exemplify the use of geolocation and geographical data with beacons, that can track consumers inside and outside stores, and adapt personalised offers and messages.

4.3.7 GAMIFICATION

Patrik spoke about gamification and possibilities to engage customers in different ways, one example being "treasure hunts". He further explains that different events and challenges could be incorporated into the MAR application and that this, in turn, could be connected to marketing efforts such as push-notifications or rewards. Niklas believes it can add entertainment aspects to the in-store experience and that this adds value to the existing apps of retailers. He presents one vision of including celebrities in games, such as playing basketball with an NBA-star in Nike’s app.
The gamification topic is supported by Accenture (2014), that presents the value of unlocking consumers playfulness in a gamification context. They present the case of Lego, that used an AR application to visualise products in boxes while in a physical store. This helped Lego to increase in-store conversions. Furthermore, Accenture (2014) presents that 61% of the surveyed consumers claim that a gamification feature in AR would increase their likelihood of purchasing a product.

4.3.8 3D VISUALISATION OF PRODUCTS

One of the most commonly mentioned functionalities of MAR is the ability to visualise products in a personalised and natural environment. IKEA’s application Place is one example of this. Even though the functionality is out in the market today, it is still not good enough to replace the experience to touch and feel a product in reality, which respondents refers to as one of the biggest advantages of physical stores. Products, such as clothes, requires more advanced image recognition and 3D-modelling to render products in a satisfying way. This puts pressure technology advancement for cameras, computing power, machine learning and battery performance. The functionality could, however, have a big impact on retail and especially e-commerce (Accenture, 2014). Shopping online involves a certain degree of guesswork from consumers, which lead to high return rates. If AR could give an accurate visualisation of a product, it could eliminate barriers to online purchases and significantly reduce the risk of returns (Accenture, 2014). Synsam, a Swedish optics store, has a 3D visualisation MAR application available for download. Michael Grimborg, CMO at the company describes the value of the application accordingly:

"The application is built on consumer insights. We have realised that many consumers think it is a burden to visit a store - it is almost like going to the dentist. Some also find it hard to find glasses that they like. This is a good way for the customer to get to know our products conveniently at home."
- Michael Grimborg

The customer could further decide to purchase glasses directly in the application or to book an appointment at closest physical Synsam store. Several respondents elaborate on the potential impact of 3D visualisation. Erik believes that 3D visualisation could revolutionise the purchasing process and that it would strengthen e-commerce even more. As a result, Patrik and Carl-Philip say that this will impact physical stores as well and the purpose of visiting a store needs to be re-evaluated. This under the circumstance when the consumer can get at least as good, or even better, experience of a product by home. Patrik and Niklas mean that it will be global e-commerce companies, such as Alibaba and Amazon, that will be able to scale and develop the best user experience. They believe that the effect of this would be that the global players would strengthen their position in retail even more.
5. SCENARIO PLANNING

5.1 DEFINE THE SCOPE

The first step is to define the scope of the analysis in terms of time-horizon, technologies, products and markets. This is done by interviewing two persons in the partner company about Shoemaker’s (1995) factors that will influence the scope. Both respondents have a holistic understanding of the industry with expertise in both digitalisation and retail. In this step, boundaries and delimitation are set, which also are elaborated in detail in chapter 1.

Shoemaker (1995) mentions several factors that can impact the scope and stresses the importance of setting the purpose of analysis to identify what knowledge that could be of value. The partner company is currently not working with mobile Augmented Reality but has recognized its potential due to a huge installed base. They wish to see concrete user cases of the technology in a retail context with the ambition to find what value it could bring from both a consumer and business perspective. However, as the respondents confirm that the retail industry is undergoing disruption, the role of MAR is dependent on how the industry will unfold in future. The MAR delimitation has guided the time-frame of the study. Respondents and consultancies (Citi, 2016; Deloitte, 2018) expect the smartphone to be the dominating device in at least the upcoming five years. Citi (2016) predicts that AR headsets will compete and grow on behalf of smartphones from 2025, why the time horizon has been set to 2023 which also is suitable with the scenario planning methodology.

- **Time horizon:** 5 years, 2018-2023
- **Technologies:** Mobile Augmented Reality
- **Products:** Consumer goods
- **Markets:** Retail

5.2 IDENTIFY TRENDS

This step identifies trends for retail, MAR and MAR in retail, which are based on the empirical investigation. A trend is defined as a change that is known and will continue in the same direction within the decided time frame (Shoemaker, 1995). A desktop research of secondary data is undertaken, where a set of trends are identified prior to the first interview. During the interviews, the respondents were asked to come up with new trends. These were further be elaborated in an iterative approach by confirming or rejecting with new interviews and secondary data from consultancy reports. Schwenker & Wulf’s (2013) impact/uncertainty grid is used to position influencing development factors’ impact on the industry and their degree of uncertainty.

To be classified as a trend in the further analysis, four criteria must be fulfilled. First, the trend must fit within the decided time-frame. Secondly, the trend should have been mentioned or confirmed by at least two respondents. Third, it should be relevant to the scope of the study and have a significant impact on the retail industry, MAR development or application of MAR in retail. Fourth, it should be no doubt that the change continues in the same direction. This means that the respondent’s average placement of a trend should be placed on the upper-left corner in the impact/uncertainty grid.
5.2.1 RETAIL TRENDS

Thirteen different retail development factors that will shape the future were identified in consultancy reports and by respondents. Six of them reached all criteria to be classified as a trend. All respondents agreed that e-commerce will continue to grow until 2023. Physical stores will, however, still exist but with a different purpose. The integration between physical and digital will be central as e-commerce becomes a natural part of retail shopping. This is confirmed by respondents as several of them were mentioning Omni-channel strategy as a development factor that will shape the industry. The level of service will increase in both digital and physical channels and the consumer is also expected to be better informed and more aware of purchases. Digitalisation results in opportunities for personalisation of products and in the purchasing process. Also, respondents agree that deliveries of e-commerce product will be faster and more personalised.

Five development factors were relevant to the scope of the study, mentioned or confirmed by at least two respondents and are within the time-frame of analysis, but did not reach the criteria of a certain outcome. These are consolidation, digitalisation, shopping experience, price sensitivity and privacy. These will further be classified as uncertainties and will be elaborated in step #3. Brand loyalty and the rise of sharing-economy due to sustainability issues did not reach the desired criteria of impact and will be excluded from further analysis.

<table>
<thead>
<tr>
<th>Trend</th>
<th>Time-frame</th>
<th>Mentioned or confirmed</th>
<th>Relevant to scope and impact</th>
<th>Certain outcome</th>
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<td>Brand loyalty</td>
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<tr>
<td>Sustainability and sharing-economy</td>
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*Table 5.1 - Trend analysis of retail development*
T1 - E-commerce: E-commerce will continue to grow
All respondents agree that e-commerce will continue to grow which significantly will impact the retail industry as a whole. The major driver of the development is the convenience aspect, mentioned by Cecilia among others. Carl-Philip elaborated the impact of the arising of alternative sales channels. He, among others, mentioned a decrease of physical stores, but none of the respondents believed that e-commerce will be the death of physical retail. The purpose and value of physical retailing, however, needs to be reconsidered and many believe that stores will be more of inspirational type. The competitive dynamics in the industry will further be impacted as e-commerce allows the consumer to compare prices and products without considering placement of a store. This is expected to lead to higher price competition.

T2 - Omni-channel: Boundaries between digital and physical will disappear
Retailers will recognise the advantages of with multi-channel presence as e-commerce grows and becomes an integrated part of a retailers offering. The seamless and frictionless experience among different channels, referred to as Omni-experience, is expected to change the shopping scene as we know it (Deloitte, 2015). The customer journey will look different as inspiration, decision and purchase may occur in new and different channels, which is something that a retailer needs to consider when designing a seamless shopping experience. Johan believes that this will be critical to stay ahead of the competition.

T3 - Service: Consumers will have higher service demands
A mentioned in T1, e-commerce allows comparison of products and prices, why an increased price competition is expected. A consequence of this is that retailers need to provide additional value,
besides products and price, to be able to compete (EY, 2017). Malin and Carl-Philip believe that this first will lead to higher service in physical stores, but e-commerce actors will eventually follow and push their service levels as well. The increased availability of data could be leveraged in both physical and online to provide better services.

T4 - Consumer awareness: Consumers will be better informed and more aware
The digitised customer journey will result in a power shift with increased information to the advantage of the consumer. Due to this increased power of the consumer, John argues that the role of a retailer has shifted from creating a demand, to rather serve a demand. Many respondents believe that peer-to-peer reviews and partsumers will be a big part of a retailer's marketing efforts in the future. When the consumer is better informed about products, competitors and reviews, the expectations and demands on staff knowledge will increase.

T5 - Personalisation: The shopping experience will become more personalised through the use of data
Many respondents argue that digitalisation drives personalisation. Digital tools allow collection of new types of data and opportunities to leverage data across channels and push customised offerings. Erik and Patrik among others could see a potential in using MAR to provide these messages. The effect of this is that the customer demands hyper-relevant messages. Carl-Philip stresses the importance of asking the right questions to be able to convert data into valuable insights. Better, new forms, but also huge volumes of data will be available to retailers, why there is a need to invest in data scientist to provide value based on the data.

T6 - Deliveries: Deliveries will be made faster and more personalised
Faster and more personalised deliveries will be one way for e-commerce retailers to compete with and grow on behalf of physical retailing. This since one of the biggest advantages of a physical store is that the consumer can pick up the good directly. John believes that this could be a disadvantage in the future as the consumer needs to carry the good. As the delivery window, from order to delivery, becomes smaller, the competitive advantage will start disappearing. Johan argues that digitalisation is a major driver for an impatient consumer that expect same-day delivery which also is supported by KPMG (2018). The speed of deliveries and subscription services will impact what products that will disappear from physical stores. Carl-Philip means that some product categories will be more impacted than others. Products that are more impulse-driven will still have a safe and strong presence in physical retail.

5.2.2 MAR TRENDS
Four factors that will impact the development of MAR were identified through consultancy reports and by respondents. Two of them reached all four criteria and is classified as trends. All respondents agree that MAR will have a fast market penetration with a big installed base as it is integrated into a smartphone device. Respondents also agree that the time-frame of five years is sufficient to be able to develop user experiences that will cover almost all potential functionality.

One development factor did not reach the criteria of a certain outcome. This was the adoption of the technology. It became clear during interviews that the success and adoption are rather driven by the value it can bring, than hardware or software development. Many of respondents agree that the technology has potential, but the usefulness will be critical for adoption. Development of AR headwear devices will impact MAR development as many respondents believe it will outcompete
smartphones. This shift is, however, expected to happen after the set time-frame (Citi, 2016), why it will be excluded from further analysis.

<table>
<thead>
<tr>
<th>Trend</th>
<th>Time-frame</th>
<th>Mentioned or confirmed</th>
<th>Relevant to scope and impact</th>
<th>Certain outcome</th>
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<tr>
<td>Headwear development</td>
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<td>X</td>
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</tbody>
</table>

*Table 5.2 - Trend analysis of MAR development*

**Figure 5.2 - Impact/uncertainty of MAR development**

1. Market penetration
2. Software and hardware
3. Adoption of AR
4. Headwear development

**T7 - Market penetration: MAR will have a fast market penetration**
The big installed base results in big opportunities for MAR. Deloitte (2018) expects 800 million AR ready devices by the end of 2018, where a majority will be smartphones. The big number of devices are, however, not a guarantee for the success of MAR. A clear majority of the respondents argue that the future of MAR is rather driven by the usefulness and value it can bring to consumers and retailers, which is further elaborated in U6. Some respondents warn about only being associated with Snapchat-filters and home-placements of furniture. The novelty of MAR could in an early stage generate buzz in media with can foster the adoption of the technology.

**T8 - Software and hardware: Companies will continue to invest in MAR which will enable better experiences**
One key driver for the success for MAR is the development of software and hardware. Potential bottlenecks such as battery power, processor power, camera, image recognition and calculations of algorithms are mentioned by Michael, Mario, Erik, Oliver and Björn. The respondents agree that
companies will continue to invest and experiment with AR and therefore a fast development of the technology is expected. The lack of standards for the use of AR was earlier reported as a bottleneck by Martínez et al. (2014). The arising of the development platforms from Apple and Google are brought up by several respondents and could potentially unify the 800 million potential users mentioned in T7. In a five-year time-horizon, the technology is expected to have reached such high standards that it can generate sufficient experience for the most desired usage.

5.2.3 MAR IN RETAIL TRENDS
MAR in retail trends covers the functionality of MAR in a retail context. The functionalities are ranged on an impact on retail axis, just like the retail trends. The degree of impact could, however, not be compared between the two different grids as the scales are not uniform. Eight different functionalities of MAR in retail where identified through consultancy reports and by respondents. Six of these are expected to be fully functional by 2023. It is therefore expected that MAR can be used for marketing efforts, displaying products information, support and education, storage and visualise store concepts, personalised recommendations and gamification in retail.

The functionality with highest estimated impact on retail is also the most uncertain one. This is 3D visualisation and sampling of products. Visualisation of products is already functioning and several respondents mentioned IKEA Place as one example. Some products, like clothes, are harder and more demanding to render. The respondents are not certain whether the functionality could replace a physical experience of a product or not. But if the experience is satisfying enough, it will impact the balance between physical retail and e-commerce. Using MAR as an Omni-tool do not reach the criteria of having sufficient impact on the industry.

<table>
<thead>
<tr>
<th>Trend</th>
<th>Time-frame</th>
<th>Mentioned or confirmed</th>
<th>Relevant to scope and impact</th>
<th>Certain outcome</th>
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<tr>
<td>Omni-tool</td>
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Table 5.3 - Trend analysis of MAR in retail development
T9 - Marketing: MAR will be used as a tool for marketing
Conclusively, it is clear that MAR can and will be used as a tool for marketing within the coming 5 years. This is mentioned both respondents such as Cecilia, Mario, Oliver among others, and consultancies such as Accenture, (2014) and LS Retail (2018). The impact discussed is that of a changed need from consumers, where new technologies such as MAR will be important to stay relevant to capture the attention from consumers as presented by Cecilia. In addition, MAR will enable new ways of collecting data, as presented by Björn. This further enables more relevant, personalised and even real-time adaption of marketing messages and marketing efforts, as discussed by Patrik and supported by Deloitte (2015). Furthermore, Patrik and Niklas mentioned that MAR can re-vamp traditional printed ads. Apart from these more direct marketing efforts, Erik and Niklas mentioned that MAR can create word of mouth effects as consumers speak about a retailer with a good application. The overall impact is that retailers that do not utilise MAR might fall behind on data collection and relevance of marketing messages as other more retailers become more digital and use MAR.

T10 - Product information: MAR will be used to display information about products and guide consumers in store
MAR could provide information such as providing directions, finding items and showing additional information. At one hand is the simpler information need of attaining additional information on products, by using MAR, as mentioned by Erik. Patrik elaborated on this stating that direct translation could be facilitated by MAR and supporting technologies. Björn and Erik spoke about another type of information, which is finding items in a store, which is further supported by Accenture (2014) and Citi (2016). The benefits for consumers is to access more information and to save time. Connecting this to the personalised recommendations, mentioned below, would also increase the relevance of the information for each individual consumer. The insight that the consumer could find more relevant information using less effort is supported by Spreer and Kallweit (2014). The benefit for retailers is that less staff is needed if MAR provides the information instead.
T11 - Support and education: MAR will be used to educate consumers and simplify complex information

The support and education functionality emerges around that MAR can be used for educational purposes where the information is complex. The X-ray feature that MAR can provide were mentioned by Erik and Patrik. The use case in retail is to simplify complex information, and Carl-Philip mentioned that this could support sales staff. This is similar to what Spreer and Kallweit (2014) explain in that MAR supports customers with better information. Elaborating on this, one could connect this to Cecilia’s ideas that retailers need to create new interesting experiences to catch consumer’s attention. Further, one could argue that this could support the retailers, in a future where the retailer’s knowledge is central to the experience, as discussed by Malin.

T12 - Storage and store: MAR will be used to widen assortment and as store concepts

MAR could enable retailers to show products that are not physically available in store, such as showing different colours and enable the creation of new store concepts. Carl-Philip and Oliver mentioned benefits in terms of less storage needs, and to complete sales of products that are not in the store. This is supported by Accenture (2014). In the long run, this could decrease the number of stores a retailer needs, as suggested by Cecilia. Additionally, MAR could enable new store concepts such as portable stores, as suggested by Michael. Hence, apart from the cost savings that MAR could facilitate, new ways of reaching customers, with temporary stores could be enabled.

T13 - Personalisation: MAR will be used to give personalised recommendations

MAR can support further personalisation such as presenting related products, content and offers. Cecilia spoke about matching products based on data and John provided a similar notion of the ability to leverage data from an online environment to a physical and vice versa. The effect of this was not discussed, but it could be assumed that this would improve the experience for a consumer in each channel and that the data is used more efficiently from a cost perspective. In addition, more data would be available, which was further elaborated on from a MAR perspective by Björn. Björn also stated that more precise positioning would be enabled by MAR. Also, new types of data such as gaze data, as mentioned by Patrik, could enable real-time personalisation. The notion of more personalised information, as a result of MAR, is supported by Pantano & Naccaranto (2010).

T14 - Gamification: MAR will be used as a tool gamification of the physical world

Two respondents, Patrik and Niklas, mentioned how MAR can be used as a tool for gamification. The benefits mentioned were entertainment aspects to the in-store experience and that it could add value to existing apps. It is also connected to marketing efforts and could be linked to the marketing functionality in term of creating experiences with a brand, but also to create PR buzz. Accenture (2014) found that gamification features in MAR could increase the conversion rates which is another benefit to retailers.

5.3 IDENTIFY UNCERTAINTIES

Development factors from step #2 that reach all criteria but the fourth will be further analysed in this step. This mean that the development factor will still fit within the time-frame, is mentioned, confirmed or rejected by two or more respondents, is relevant to the scope of the study and will have an impact on the industry, but the outcome is unknown. Each uncertainty will be assigned with two plausible, but distinctive outcomes (Shoemaker, 1995).
5.3.1 RETAIL UNCERTAINTIES

Seven uncertainties were identified in total. Five out of them are derived from retail development. These include consolidation, digitalisation, shopping experience, price sensitivity and privacy. Respondents agree that retail will face a consolidation process in retail. The outcome and to what extent are still unknown. Also all respondents agree that digitalisation will impact the industry, but what value it could bring, the acceptation and its ability to substitute processes in the service process are uncertain. The shopping experience is built upon two contradicting trends with a consumer that wants an experiential shopping experience in one end and a consumer that values a fast and frictionless experience in the other end. The respondents also disagree about the direction of price sensitivity of the consumer. The last retail uncertainty, privacy, is built upon a counter-reaction to digitalisation and the increased collection of data on consumers.

U1 - Consolidation: Will big global e-commerce companies be the death of retail?
Consolidation was a central topic during many interviews. Malin and Niklas mentioned that we will most likely only see a few big players in a few years. Global competition, digitalisation (EY, 2014) and mergers and acquisitions (KPMG, 2018) are some factors behind the development. One effect of this consolidation is increasing price competition, as mentioned by Johan and Malin. The price sensitivity issue however not straightforward, as some respondents disagree, and is further discussed under uncertainty 4. During the consolidation discussions, problematisation of the larger companies were raised. Johan and Carl-Philip stated that there will be room for smaller, local actors as well. John raised the issue of the problem of staying relevant for big global companies. Furthermore, it was not clear to what extent consolidation would occur or what the role of the local actors would be.

- **Outcome #1:** A few major companies dominate the retail industry with a large share of the market. The only competitive space left is taken by small local players.
- **Outcome #2:** Big retailers struggle to stay relevant and getting acceptance from consumers, which leads to a more fragmented market with small, midsize and large players.

U2 - Digitalisation: Will the emerging technologies and buzzwords generate value?
The most common theme during interviews was digitalisation. Malin refers to it as the biggest transformation process in retail history and it will have a major impact on retail as it questions existing norms and practices. KPMG (2018) supports this by describing a disrupted industry and the sense of urgency within the industry drives investments in emerging technologies. However, many technologies are still not profitable and don't generate any substantial value. There is no doubt that digitalisation will happen and impact the industry, but what is still unknown is what value it could bring and its ability to substitute processes in the service experience. Some respondents, such as Malin and John, also argue that there is a lack of understanding of how digitalisation could be used to leverage the existing strategy.

- **Outcome #1:** Retailers investments in digitalisation creates value which results in that a majority of processes between consumers and retailers are substituted by digital solutions.
- **Outcome #2:** Retailers investments in digitalisation creates little value which results in only a few processes between consumers and retailers are substituted by digital solutions.
U3 - Shopping experience: Will the shopping experience be experiential or utilitarian?

The shopping experience was a divergent topic during the interviews. The respondents spoke both about a future in which frictionless shopping would be central, but also about contexts in which the experience itself would be key. Johan mentioned both types of shopping experiences, and Niklas and Cecilia mentioned a fast and frictionless experience in an online setting. The frictionless and fast experience is supported by EY (2014). Further, Cecilia, Carl-Philip and Niklas speak about experience based stores such as showrooms, which is supported by PwC (2017). The divide seems clear, however, it is uncertain in which contexts consumers will prefer either experience. EY (2017) suggest a divide in terms of pleasure and unwanted purchases. However, it is not certain which retailers that will move either way and if one retailer could support both types of buying experiences. Further, uncertainty stems from if certain consumers will favour one way over the other, or if it the purchase itself that determines which type that is favoured. Also, it is uncertain if the future of retail holds more of one type of shopping experience or the other.

- **Outcome #1:** The consumer values a fast and frictionless shopping experience over an experiential shopping experience.
- **Outcome #2:** The consumer values an experiential shopping experience over a fast and frictionless shopping experience.

U4 - Price sensitivity: Will the consumer be less or more price sensitive?

The respondents disagree about the direction of price sensitivity of the consumer. Some respondents, such as Malin and Niklas, mean that e-commerce leads to price competition, which will make the consumer more price sensitive. Johan can see long-term challenges as the consumer never needs to pay full price. He says that it is always some actor that is willing to lower the price which affects the competitive dynamics in the industry. KPMG (2018) states the opposite and means that the arising a more conscious consumer will evaluate retailers on other factors beyond price, such as the overall customer experience. Some respondents agree to this and argue that price will be secondary when evaluating a retailer. A higher purchasing power is especially expected for convenience goods and personalised products.

- **Outcome #1:** The consumer will be less price sensitive.
- **Outcome #2:** The consumer will be more price sensitive.

U5 - Privacy: Will consumers share their personal data?

The digitalisation within retail and other industries enables actors to collect more data on consumers which in turn could provide personalised offers, ads and experiences. However, Johan raises concerns about this, as he believes that counter reactions to sharing too much data could lead to that consumers favour local actors. This would further support the local businesses as discussed under uncertainty one on consolidation. Other respondents such as Niklas do not believe that consumers will care about sharing their personal data. In addition, Lewis Silkin (2018), presents areas of regulation that could hinder collection and analysis of personal data. Building on this, it is uncertain if consumers will be willing to share their personal data, or to what extent. It could be assumed that a certain value of a digital service must exceed the perceived cost of doing so. In addition, the willingness of sharing data could impact how global retailers develop and their opportunities to stay relevant to consumers, as presented under uncertainty 1.
Outcome #1: The consumer recognises the value of sharing personal data which exceeds the cost of privacy.

Outcome #2: The consumer does not believe that the value of sharing personal data exceeds the cost of privacy.

5.3.2 MAR UNCERTAINTIES
The sixth uncertainty is derived from MAR development and is based on the market adoption of as several respondents report about social barriers that could hinder the adoption of the technology.

U6 - Adoption: Will MAR be socially acceptable to use in public?
Respondents report how the adoption of MAR is dependent on a behavioural change. The position of holding a smartphone in front of yourself is both uncomfortable and shares characteristics of filming others, which possibly can create awkward social situations. Cecilia and Erik agree, but could also see how this resistance potentially could change over time. This problem is brought up by all respondents and the social cost of using MAR in public will be put in relation to the value it could bring in the shopping process. Directing a camera front-facing camera in public or in stores could also potentially threaten integrity or be a violation against law, which is mentioned by Björn and Mario. The solution to this could be to have AR dedicated zones where it could be accepted to use.

Outcome #1: MAR is fully acceptable to use everywhere at any time.

Outcome #2: Resistance to use in public due to social and privacy issues.

5.3.3 MAR UNCERTAINTIES
The seventh and last uncertainty covers a MAR in retail functionality, which is the 3D visualisation of products. The functionality is already out on the market, but the question is if it could replace a physical experience of a product or not.

U7 - 3D visualisation of products: Will 3D visualisation of products be satisfying enough to replace physical?
3D visualisation emerged as one of the most common functionalities mentioned by respondents. How good the experience of, for example, products will be dependent on software and hardware development. Today, the functionality is not good enough to replace physical experience of a product, which is one of the advantages of physical stores according to the respondents. If the experience of a product would be just as good, or even better, than experiencing it in a physical store, it would strengthen e-commerce which was stated by Erik. Further, this would impact the purpose of physical stores, and why a consumer should visit a physical store, as mentioned by Patrik and Carl-Philip. Patrik and Niklas believe that global companies such as Amazon and Alibaba will be able to develop the best MAR experiences, due to scale benefits, and that this, in turn, would strengthen their position. Accenture (2014) supports that the functionality of MAR applications could have a big impact on retail and the e-commerce side of the industry.

Outcome #1: 3D visualisation of products is good enough to replace physical.

Outcome #2: 3D visualisation of products is not good enough to replace physical.
5.4 CORRELATION ANALYSIS

The uncertainties' consistency will be analysed in a correlation matrix. Some uncertainties might be mutually exclusive and some might support each other. This is analysed through a correlation matrix where it is asked whether the occurrence of outcome #1 for uncertainty X would increase the chances of occurrence of outcome #1 for uncertainty Y (Shoemaker, 1995). If the chance goes up, the correlation is positive (+), if the chance goes down, the correlation is negative (-) and if it is neutral or impossible to determine, it is marked with a zero (0). During the interviews, the respondents were asked if they could see any possible connections between the mentioned development factors, or if the development factors could interact.

+ U1 Consolidation and U2 Digitalisation - The first uncertainty is the development of global companies and consolidation. If the retail space is dominated by a few companies, its expected that this further increases the value discussed under U2. Many respondents mentioned that big actors will have the financial resources and economies of scale to invest in digital solutions that provide value. Furthermore, Björn mentioned that smaller companies need to create partnerships or utilise larger platforms to be able to provide a valuable MAR experience. Also, digitalisation enables companies to reach more consumers and to be more relevant and agile as mentioned by John.

+ U1 Consolidation and U3 Shopping experience - The shopping experience is expected to be impacted by the consolidation. As global actors emerge, a fast and frictionless shopping experience will be facilitated. This could occur in an online experience, enabled by more efficient sites, higher personalisation, and same day deliveries. But also in a physical retail context, such as Amazon Go, a store concept with seamless payments and registration of purchases without the need to scan them which was mentioned by John. These fast and frictionless solutions are often dependent on high tech solutions, which is why the emergence of big global companies will be better to serve the need for a fast and frictionless experience. On the contrary, it could be assumed that more local retailers would facilitate a more experiential shopping experience. This is based on what Malin mentioned, that big and global retailers would make it hard for smaller retailers to compete on price, and that smaller retailers hence would have to deliver other values.

- U1 Consolidation and U4 Price sensitivity - The combination of consolidation and price sensitivity has been marked with a “-” since the respondents such as Malin and Johan, mentioned that the emergence of giant e-commerce players will lead to price competition, and hence more price sensitive consumers. Economies of scale, digitalisation, effective logistics and deliveries enables the price competition (EY, 2014; KPMG, 2018). Also, if consumers become more price sensitive, consolidated retailers have the advantage to meet that demand.

+/- U1 Consolidation and U5 Privacy - To enable a more personalised experience in both physical retail and e-commerce, big actors need to access personal data of the consumers. As previously mentioned, big companies are expected to have the financial power to invest in digital experiences that provide value to the consumer. Hence, this would provide a value that is higher than the cost of privacy for the consumer. Also, this goes both ways - if consumers are generally open to sharing private data, companies will have an easier time providing valuable, personalised experiences. Patrik mentioned that new types of data could be collected through MAR, which would enable real-time personalisation, providing a value to consumers. Hence, if data is not shared by consumers, it will be tough to deliver the value derived from personalised experiences. This could be one way to solve the
problem mentioned by John, that consolidated retailers will have a tough time being relevant to consumers. Hence, if more data is shared by consumers, consolidated retailers will have an easier time being relevant, which further develops consolidation. On the contrary, it is also possible that the retail industry will face a counter-reaction to global consolidated within the time-frame which would hinder the collection of data.

0 U1 Consolidation and U6 Adoption - The adoption is based on the uncertainty of social acceptance, if it will be fully acceptable to use MAR everywhere at any time. Since this is mainly a social uncertainty, it is not believed that the adoption of MAR and consolidation will affect each other in a negative or positive way. The respondents didn't see any correlation between them.

+ U1 Consolidation and U7 3D visualisation of products - 3D visualisation will require heavy investments to create a satisfying user experience. Consolidated companies are expected to be the only one that has big enough sales volumes to make it profitable, as mentioned by Patrik and Niklas. Hence, it is expected that consolidation would push 3D visualisation closer to a satisfying experience, than if consolidation did not occur. Also, 3D visualisation is expected to help global actors to improve the experience of their e-commerce and thus stay relevant to consumers. This means that there is also an incentive for global companies to invest in technological development.

+/- U2 Digitalisation and U3 Shopping experience - Digitalisation is expected to provide different kinds of value in the shopping experience. In the case of a frictionless and fast experience, Cecilia mentioned a one-click process and John mentioned seamless payments. Also, many respondents have indicated that experiential value in the shopping experience could be enabled by digitalisation and MAR. Further, an increased demand on the shopping experience from consumers, both on the experiential and frictionless spectra, would push companies to develop digital solutions adapted to each need.

0 U2 Digitalisation and U4 Price sensitivity - This has been marked with a "0" due to that the digitalisation uncertainty emerges around if digital features will generate value or not. It is possible that consumers could become less price sensitive if the value of a digital solution is considered high, and thus adding value worth paying for to the experience. However, digitalisation value could also come in other forms, to capture price-sensitive customers. Also, it is not clear that a higher or lower price sensitivity from consumers would affect the digitalisation, hence this has been marked with a "0". No correlation between these uncertainties was mentioned by the respondents.

+ U2 Digitalisation and U5 Privacy - If the digitalisation efforts of companies create a value to consumers it is more likely that consumers recognise this value, and are thus more open to sharing their personal data, as the value exceeds the cost of privacy. Also, it is more likely that digital solutions provide a higher value if the consumers share their data. The digitalisation uncertainty revolves around if the value will be created for the consumers. Patrik stated that new types of data such as Gaze data could enable real-time personalisation which creates value. Hence, by sharing data, the consumer would enable developers of applications to create valuable digital tools.

+ U2 Digitalisation and U6 Adoption - If the digitalisation efforts of companies create value for consumers, it is more likely that a fast adoption of MAR is facilitated. This is since the social acceptance of using a new technology will increase as more people recognise the value of it, and
hence more people use it, for example in public spaces which further increases the acceptance by normalising the use. Also, a social acceptance and adoption would generate more investments in digital development, which could increase the value offered. Patrik, Cecilia, Mario and Erik, among others stated that the success of digital solutions as MAR is dependent on its ability to generate value for consumers. Building on this, a higher value to consumers could increase the social acceptance.

+ U2 Digitalisation and U7 3D visualisation of products - If the digitalisation features developed by retailers provide value to the end consumers, it is expected that further investments are made which would move 3D visualisation of products closer to an endgame where it is good enough to replace physical. Also, if 3D visualisation would succeed, further efforts by retailers to create value and integrate visualisation into existing platforms could be expected. Accenture (2014), argues that if AR could give a more accurate visualisation of a product, it could decrease barriers to online purchases and significantly reduce the risk of returns. This benefit to retailers is also mentioned by some respondents. Fewer returns imply a higher satisfaction of the purchased products on the customer side, which saves time and effort for consumers. The incentives for retailers to create valuable digital solutions hence works in tandem with 3D visualisation, where progress in both areas benefits the other.

- U3 Shopping experience and U4 Price sensitivity - This has been marked with a "-". If a frictionless experience is favoured, this is expected to occur more often in utilitarian purchases (EY, 2017). This, in turn, leads to more price sensitive consumers as the utilitarian purchases compete mainly on price, as derived from the interviews. Also, a more frictionless experience could facilitate easier comparability across marketplaces, which further increases price competition. In addition, if a higher level of price sensitivity occurs, this pushes the retailers to adapt and develop the shopping experience.

0 U3 Shopping experience and U5 Privacy - If the shopping experience will become either more experiential or more frictionless, it will not directly impact how consumers share their personal data and vice versa. No respondent mentioned a connection between these two uncertainties.

+ U3 Shopping experience and U6 Adoption - Assuming that the shopping experience will be more frictionless, there is also an expectancy of a higher social acceptance of using a MAR application. The frictionless experience indicates that the user simply uses the application in a utilitarian purpose in example solve a problem faster. On the contrary, if the experience would be experimental with a hedonic purpose, such as entertainment in a purchasing process, lower acceptance is expected. Many respondents, mentioned that there is a risk when MAR applications only provide entertainment, and the applications are seen as fun gimmicks, which provides entertainment for a shorter period of time. Further, a consumer study showed that 50% of consumers indicate that they want time-saving services and tools, to optimise the time spent shopping (EY, 2014).

0 U3 Shopping experience and U7 3D visualisation of products - It is not assumed that a more frictionless shopping experience or an experiential shopping experience impacts the development of 3D visualisation. Also, no impact is expected the other way around, as 3D visualisation of products could support both types of shopping experiences. No correlation between these uncertainties was mentioned by the respondents, and no correlation could be derived from the analysis.

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0 U4 Price sensitivity and U5 Privacy - These two uncertainties are not expected to influence each other as both arise from independent forces. For example, it is possible that a consumer would value their privacy highly and at the same time be very price sensitive or not price sensitive at all. No correlation between these uncertainties was mentioned by the respondents.

0 U4 Price sensitivity and U6 Adoption - These uncertainties are not expected to influence each other. A consumer could be more or less price sensitive and this would not affect the social acceptance of using MAR and thus adoption, or vice versa. The respondents did not bring up any correlation between these uncertainties.

+ U4 Price sensitivity and U7 3D visualisation of products - If a consumer becomes more or less price sensitive, this will not affect the development of MAR. MAR will develop as much or little, independent of the price sensitivity of consumers. No correlation could be derived through analysis and no respondent mentioned any correlation between these uncertainties.

+ U5 Privacy and U6 Adoption - If there is a shift towards a larger concern for privacy, the adoption of MAR, and the social acceptance is also expected to be lower. One example of this is that the sensors of MAR are the front-facing cameras, and as these could capture data on other consumers, invading their privacy, a lower social acceptance is expected. The issues of front-facing cameras and the inherent threat to the integrity of others was brought up by respondents such as Björn and Mario.

+ U5 Privacy and U7 3D visualisation of products - If consumers are less concerned about sharing private data, it is expected that companies could create more MAR applications with an added value to the consumer. This, in turn, enables development towards more advanced MAR applications such as 3D visualisation. Also, it is expected that the value of 3D visualisation of products could exceed the cost of sharing data, which could lead to consumers that are open to sharing their data. Patrik mentioned that new types of data could enable real-time personalisation, which could provide value to consumers and retailers. If this type of data is shared, it implies that consumers have fewer concerns about privacy. Also, retailers could provide more valuable applications, developing better apps and moving 3D visualisation forward.

+ U6 Adoption and U7 3D visualisation of products - If there is a high adoption of MAR applications and that it is socially acceptable to use them everywhere, it is expected to influence the development of 3D visualisation. This is due to that a larger adoption creates incentives in terms of bigger target markets for the companies that develop the applications. Also, if 3D visualisation is good enough to replace physical, a greater adoption is expected. Patrik and Niklas mentioned that the global e-commerce retailers will be able to scale and develop the best user experience of MAR. From this, one can derive that scalability is central, to develop the best MAR experiences. Hence, if there is a bigger social acceptance, the scalability increases, which in turn provides incentives to develop 3D visualisation.
5.5 CONSTRUCT SCENARIO THEMES

The most important uncertainties will be bundled in two dimensions and crossed in a scenario matrix. The judgement of importance is based on the respondents' estimated impact on the industry, the number of mentions and whether they could be bundled with other uncertainties or not. If one dimension covers more than one uncertainty, their accumulated importance could outcompete a stand-alone uncertainty even if it has a higher estimated impact in the grid. The interaction among the dimensions creates initial scenario themes when plotting them in a two-by-two matrix, reflecting four different future scenarios (Van der Heijden, 2005; Schwenker & Wulf, 2013).

5.5.1 SCENARIO DIMENSION #1: TECH-DRIVEN SERVICE VS TECH-SUPPORTED SERVICE

The first dimension that will shape the future of retail is a dimension based on two different uncertainties. These are U2 and U5 (Digitalisation and Privacy). As elaborated in the previous step, correlation or inconsistencies are present among the uncertainties and the outcome of them is expected to create two radically different futures. The increased importance of service in retail is confirmed by trend 3. Carl-Philip and John believe that data can facilitate a more personalised service experience in both e-commerce and physical stores. However, this is dependent on the consumer's willingness to share personal data. The willingness to share personal data is a cost-benefit trade-off between the value of digitised, personal service offering and the cost of privacy.

Martínez et al. (2014) highlight this compatibility issue in Rogers innovation diffusion theory (2010) for MAR adoption and argue for a low consistency to social practices and norms due to privacy issues. In a wider perspective, John and Johan also mention a possible counter-reaction to global, powerful retailers with a careful and timid consumer that puts a high value on integrity. This consumer will rather go back-to-basics and prefer to shop local over using personalised data-leveraged services, enabled by global actors.

There is, however, no doubt that digitalisation of the retail industry will happen. The two opposites of the theme describe how dominant digital tools will be of the service offering. In one end, digitised tools will drive service and could possibly even replace staff in store. In the other end, digitalisation will be in the periphery and will rather support the service process.
5.5.2 SCENARIO DIMENSION #2: EXPERIENTIAL SHOPPING EXPERIENCE VS FAST AND FRICTIONLESS SHOPPING EXPERIENCE

The second scenario dimension covers the consumer's fundamental view of shopping and is a bundle of two uncertainties, namely U3 and U4 (Shopping experience and Price sensitivity). The respondents described a polarisation of the shopping experience with two contradicting trends. Several respondents describe how the shopping process will become smarter, faster and more frictionless. At the same time, respondents mean that adding an experimental value to the shopping experience will be crucial to compete in the future of retail. When the consumer has a utilitarian view of shopping, a fast and frictionless experience will be rewarded. Since shopping is seen as something necessary evil with the purpose of utility maximising, a more price-sensitive consumer is expected. When the consumer has a hedonistic view of shopping, an experiential shopping experience is valued. A consumer with high purchasing power and less price sensitivity is expected as shopping is seen as an enjoyment.

The two ends of the dimensions could co-exist, but it is not known to what extent or whether some of them will dominate over the other. The dimension will also enable a nuanced usage of MAR in retail. This as a pattern emerged during the interviews where functionality could either be categorised as hedonic or utilitarian. Johan describes the polarisation accordingly:

"We see a shift where the physical store could become more experiential, similar to showrooms. But in the other end of the spectrum there are customers who wants a more effective process and simply want their products as fast as possible."

- Johan Lidenmark

5.5.3 SCENARIO THEMES

Crossing the two dimensions in a matrix creates four radical different, but still plausible future scenarios of retail. The evolvement towards the scenarios and what triggers the outcomes of the uncertainties will be further elaborated in next step. Four out of seven uncertainties are included in the two dimension. The remaining three, U1, U6 and U7 (Consolidation, Adoption of MAR and 3D visualisation), are still present in the analysis and will be included in the influence diagrams in step #6, but are not selected to be the main forces that will shape future of retail.

Consolidation has a high estimated impact on the industry, but the correlation analysis rather shows that consolidation is dependent on other uncertainties. Respondents identify 3D visualisation as the MAR functionality with highest industry impact in relation to other functionality. However, respondents also indicate that its estimated impact on retail will be moderate compared to other retail uncertainties. The impact of MAR adoption is also expected to have a lower impact and rather be a result of the outcome of the first dimension.
5.6 SCENARIO STORYLINES

The trends, uncertainties and their relationships are described, which shapes the scenarios. The chain reaction is visualised through an Influence diagram that describes the levers behind each scenario (Van der Heijden, 2005). The diagram uses the most important trends and uncertainities and explains the path using arrows, showing the linkage and how they impact each other, which is based on the correlation analysis in step #4. Each scenario should be assigned with a name that captures the essence in the scenario and storytelling is used to describe the narrative of each scenario (Ramirez et al., 2017; Shoemaker, 1995). According to Shoemaker (1995), all scenarios should reach four criteria to be effective - the scenarios should be 1) relevant for retailers, 2) have an internal consistency, 3) be archetypical by describing radical different futures and 4) describe an equilibrium where the competitive environment is stable for longer than a short period of time. The role of MAR will further be analysed and elaborated in each scenario with Mathwick’s (2001) framework of consumer value.

SCENARIO #1

**SHOW ME TO MY ROOM**

A consumer visits the city’s shopping mall that consists of over 100 temporary and small showrooms. She doesn’t really need anything but sees the shopping as enjoyment. She walks into a fashion retailer’s MAR store. The interior is almost non-existent and the store only has four products in storage. The store becomes alive through a MAR application and by directing the front-facing camera to a garment, she will see other variations and colours which could be ordered and picked up immediately in store. The store’s selection is highly personalised based on her browser history, education, lifestyle and past purchases. This specific retailer is also offering treasure hunting through the MAR application which lets the consumer collect loyalty points and unlock special offers by walking in the aisles.
The first scenario is built upon a tech-driven service and an experiential shopping experience. In this specific scenario, digitalisation succeeds to create substantial value for both retailers and consumers. The provided value is significantly higher than the cost of sharing personal data to retailers. Digitised tools are embraced by the consumer who expects value beyond the product. The consumer wants to be entertained throughout the shopping process that is seen as an enjoyment. Physical stores still exist, but in a different shape than we are used to. Bigger retailers and car dealers, which previously were placed outside the city, have moved in to city malls with smaller showrooms. This movement is enabled by digitised solutions that lower the need of having products on stock. For example, through the use of MAR applications, the consumer could get a view of how a car or shirt would look like in other colours.

Bigger retailers will struggle to be relevant. This as the consumer has high expectations on a personalised and experiential shopping experience, which is hard to produce with scale. The result is a more fragmented market with many mid-sized companies that have some financial bearing to develop high-tech solutions. The consumer has a high willingness to pay for additional value beyond product value, such as brand value and store experience.

**Role of MAR**
The MAR functionalities that are relevant to scenario #1 are Storage and store, Gamification, Marketing, Personalised recommendations and 3D Visualisation. Storage and store is a functionality that builds around concepts such as temporary stores, reduced storage and the possibility to show products that are not physically available. This functionality requires the consumer to be active and use a MAR application, to fill the store with virtual products. This responds well to what Mathwick et al. (2001) and Dacko (2017) describes as active value for consumers, where the consumer can
derive a value from participative actions. Furthermore, this retail scenario describes a future where the consumer values the shopping experience, and where technology is central to the service offering. This is further supported by the concept of intrinsic value, where the experience itself provides value to consumers (Mathwick et al., 2001). Considering the value for the retailer, in connection to the Storage and Store functionality, is the benefit of enlivening static retail inventories while enhancing interaction and thus reducing the cost and management of physical inventory (Dacko, 2017).

The gamification functionality suits the experience based and tech-driven scenario well, as it enables extended experiences and interactions with retailers and brands. Furthermore, gamification elements have previously been discussed, where the example of ARMUSE app that included MAR gamification was presented. This app was classified as an app providing consumers with intrinsic and active value, hence fitting the "playfulness" quadrant (Dacko, 2017). The app is built around the concept of a "treasure hunt" which was also mentioned as one way to provide gamification aspects by Patrik. The value of this to a retailer is closely connected to the next functionality which is Marketing. By using gamification, new experiences and engagement with brands and stores can be enabled. Facilitating new experiences and engagement have been pointed out as important by Cecilia, Erik and Mikael. Other concepts that were mentioned within the Marketing functionality spectra were PR buzz, brand experience and emotional experience among others. These concepts could be suitable as tools within scenario one as the shopping experience is central and deeper messages than simple ads could be facilitated. Furthermore, the tech-driven aspect of this scenario increases opportunities for personalisation, which is beneficial for personalised and emotional experiences. The PR Buzz concept within the Marketing functionality was often mentioned as an additional benefit by the respondents. Some respondents mentioned that this could be facilitated by word-of-mouth marketing when launching MAR applications. This connects well to the showroom aspect of scenario one, and the notion of creating buzz around MAR applications is further supported by Dacko (2017) and Accenture (2014).

As Patrik and Niklas mentioned, only a few big players will have the financial means to develop the best MAR solutions. This is enabled by niche retailers with a small horizontal scope that reaches high volumes by operating on a global level. However, 3D visualisation could be more suitable for the extrinsic value, or the fast and frictionless experience, when consumers simply wish to visualise and purchase at home, which is why the provided value of this functionality would be limited in this scenario. Another issue regarding MAR in this hedonic driven scenario is the social acceptance of MAR. As the main focus in this scenario would be to provide hedonic value, a lesser acceptance is expected than when MAR is used for utilitarian purposes. Hence, it does not fulfill the compatibility characteristic of consistency with social practises and norms (Rogers, 2010) However, it could be socially acceptable to use MAR in certain contexts or areas, as suggested by Björn and Mario. This could, for example, be in an AR-supported showroom or store. In this case, the privacy issues presented by Martínez et al. (2014), would be mitigated in these areas.

SCENARIO #2

GIANTS LEAD MY WAY

A consumer walks into a grocery store. She wants the store visit to go as quickly and smoothly as possible without putting too much effort or thinking into the process. A majority of her goods are...
purchased online at Amazon, which now controls over 50% of the retail industry. She only purchases goods in physical stores when she needs the product instantly. She picks up her smartphone and scans a chicken. On the screen, she gets a personalised recommendation of Tikka Masala sauce. The application already knows, based on her past purchases and browser history, that she loves Indian food and is too lazy to make her own sauce. A MAR application guides her among the aisles and shows the exact position on the shelf. By scanning the product, she can see user reviews and product information. No check-out is needed as the transaction is made instantly on the phone. Service is provided solely through the smartphone and retail staff are therefore not needed.

In scenario #2, a tech-driven service process and a fast and frictionless shopping experience are anticipated. All service processes are substituted by digitised tools that lead to efficiency gains. MAR applications are a central part of the shopping experience and are used continuously in-store and out-store to ease the shopping process. This also leads to benefits for retailers as digitised tools lead to cost savings in terms of personnel. The digitised tools are expensive to develop and requires economies of scale to be profitable. The result of this is that big and consolidated players are able to develop the best, digitised tools which will strengthen their position even more. Heavy investments in 3D visualisation have been made, and the experience of products can now replace a physical visit to a store, which will strengthen e-commerce. Digitalisation further enables collection of data on consumers, which allows a comprehensive analysis of consumption patterns that foster a high degree of personalisation in both products and shopping experience. In this scenario, the consumer has no doubt in sharing their personal data. The purpose of shopping is utility maximising and high price sensitivity is expected due to an increased consumer awareness with a high possibility to compare products and prices online. Smaller players will be unable to compete on price with the global, consolidated retailers, why the only competitive space left is for small and local retailers. Therefore, scenario #2 is dominated by a few retailers with a big horizontal scope.

![Figure 5.6 - Influence diagram for scenario #2](image-url)
Role of MAR

In scenario two, Product information, Personalised recommendations and 3D visualisation are considered to play an important role in retail.

The first MAR functionality that has an important role in this scenario is Product Information. The concepts mentioned by the respondents, building this functionality, were concepts such as finding items in store, additional information attached to products and translation of information. All concepts share one common denominator in that information is easier for the consumer to obtain, regardless if that information is location, or additional information on products. The ease of obtaining the information connects to the frictionless experience in this scenario. Furthermore, it connects well to the extrinsic and active value quadrant as presented by Dacko (2017). In this quadrant, the consumer derives value from a greater efficiency when shopping and possibly economical value of the purchase and is altogether labelled as "consumer return on investment" (Dacko, 2017). Since the functionality delivers a high level of value and has a utilitarian stance, a high social acceptance of MAR is expected. It is such a central role in shopping process that it is accepted to use everywhere at anytime. Thus, it is argued that MAR would fulfil the second characteristic in Rogers innovation diffusion framework, as it would be consistent with social practices (Rogers, 2010). The personalised recommendations functionality also connects well to this scenario, as each consumer values different types of information in this process. Erik mentioned segmentation benefits and exemplified this by stating that some consumers are more interested in finding offers, and some are not. However, the personalised recommendations could go even further as new types of data are enabled by MAR applications in connection to other technical solutions. Patrik mentioned that the right type of offers can be presented at the right time and place, even enabling real-time personalisation. One type of data that was mentioned was "Gaze-data", which enables personalised messages based on what the consumer is looking at.

3D visualisation is a functionality that connects to this scenario as it could ease the online shopping experience, in terms of making it more frictionless. One example of this could be the concept of visualising products at home, and hence not having to make the effort of going to a store. The previously mentioned investments, that enable a good enough 3D visualisation is expected to be done by major actors such as Amazon. Hence, consolidation and economies of scale are crucial, which are central in this scenario.

SCENARIO #3

LOCALLY PRODUCED SERVICE

A consumer visits a furniture store. She is met by a seller at the door who shakes her hand and addresses her with her name. A couple of months ago, she was exposed in one of the many privacy scandals where data leaked from a big consolidated retailer. Last time was enough and she decided to delete her account and turn off all personalised recommendations. Nowadays, she prefers to shop from local companies and will only trust service staff she has a relation to. Face-to-face service is essential when shopping and she has high demand on the staffs’ knowledge level. The personal and caring treatment in the store is without a doubt the most important parameter when evaluating retailers. The seller, who has a higher degree in interior and service, are using a MAR application to show an X-ray version of a couch’s cushioning.
The third scenario is built upon tech-supported service and experiential shopping experience. This scenario is characterised by a timid consumer that values integrity over digitised solutions, which is a counter-reaction to powerful and global retailers. Local shopping is preferred with a back-to-basics approach in service that mainly is provided by trained service personnel. E-commerce has, however, continued to grow which has pushed the expected service level in the physical store to higher levels. The consumer sees shopping as enjoyment and has high expectation on personalisation, but the service needs to be provided by humans, as automated digitised tools are not trusted. The experiential view of shopping in combination with resistance to digitised tools lead to a higher willingness to pay for face-to-face service. Higher service demands and the new role of physical stores results in a boost for the retail profession. To work in a retail store, it is needed to have a higher education degree in service or similar. MAR applications are primarily used as sales support by personnel and due to privacy issues and the experiential view of shopping, a low social acceptance of MAR is expected.

Role of MAR

In the third scenario, Support & Education and Marketing are two functionalities that are considered to have an important role in retail. The consumer in this scenario values personal service and the experiential experience of shopping. As the consumer also values integrity, tech-driven solutions are limited. A response to this is the need for knowledgeable retail staff that can support the shopping experience. In addition, as MAR would be used for more hedonic purposes, a low social acceptance is expected but accepted when retail staff use it as a tool. This means that the social practice and norms, or the second characteristic of Rogers innovation diffusion theory (Rogers, 2010), would be fulfilled as retailers use MAR. The importance of knowledgeable retail staff and importance of face-to-face meetings has been mentioned by respondents such as Carl-Philip and Malin and is supported by consultancies (KPMG, 2017; PwC, 2017). The role of MAR in this context should hence improve this experience, supporting the retail staff in the sales process. Support and Education is one functionality of MAR that was mentioned by Patrik and Erik among others, including concepts as X-ray vision, instructions on installing and education on how products work.
Connecting this to the consumer value, this fits well with the intrinsic-reactive value quadrant. This quadrant is labelled "aesthetics" and integrates the value of visual attraction and entertainment (Mathwick et al., 2001; Dacko, 2017). The word "aesthetics" might not be the best description of how the Support and Education functionality has been presented by respondents, but it contains similar elements as MAR applications could be used to visualise product elements in a more visually immersive way. Also, this quadrant consists of reactive value from the consumer, which means that she is passive and consists of how she appreciates and understands the experience. In this scenario, the activity is based around the interaction, with emphasis on the knowledge from the retail staff, hence the consumer could be passive and simply emerge by the experience that is provided from staff with support from MAR applications. The benefit for the retailer could be argued to be improved conversion rates, as Dacko (2017) argues that MAR could be used to provide enhanced service or entertainment, and thus improve conversion rates.

The marketing functionality should be adapted to the consumer preferences in this case, as the consumer is reluctant to share data and value their integrity. Two suitable concepts within the marketing functionality were mentioned by respondents, namely complementing printed media and emotional experience. The emotional experience could be enhanced by the in-store example provided above, as consumers build a better understanding of the products or brand while supported by retail staff. MAR could also complement printed media, which Niklas and Patrik mentioned, and consultancies support (Accenture, 2014). This would improve the previously discussed "aesthetics" of the printed ads which are valuable to consumers in this scenario. However, it requires the consumers to be more active than passive, which is less suitable in this scenario.

SCENARIO #4
CONVENIENCE KNOCKING ON MY DOOR

A consumer purchases new running shoes online. Four hours later, she receives the package at the door. Convenience, comfort and speed are valued and a big part of her consumption is, therefore, built on standardised, but not personalised, subscription-based services. E-commerce and physical stores co-exist in harmony and have reached equilibrium. Physical retailing mainly consists of hybrid-stores with impulse purchased products and a range of different concepts. MAR is struggling as the usefulness is limited. It hasn't reached social acceptance and she thinks that people who use it in public look stupid.

In scenario #4, a tech-supported and fast and frictionless shopping experience is anticipated. This scenario is especially characterised by a consumer that values integrity and convenience. Standardised, but not personalised, subscription services of goods are therefore a big part of the retail industry. E-commerce and physical stores co-exist in harmony and have reached equilibrium. Subscription services and better and faster deliveries have impacted the supplied products in physical stores. The utilitarian view of shopping will support e-commerce growth as online shopping is seen as a more convenient option than visiting a physical store. This, among faster and more convenient deliveries and subscription-based services, has impacted the selection in physical stores. Physical retailers compete with convenience and are mainly offering goods that are impulse-driven and needed instantly. The consumer is only willing to pay a premium for convenience and fundamental
perception of shopping as something necessary evil leaves little room for offering additional value, such as brand value or store experience, why a high price sensitivity is expected. As digitised tools face resistance and local shopping is to be preferred, global retailers will have trouble to establish a competitive position. MAR applications never reached adoption and were forever associated with fun, but useless marketing activities.

Role of MAR

In the fourth scenario, MAR has not reached adoption and few functionalities provide value to consumers and retailers. As a result, Marketing functionalities is the only functionality of MAR applications in this scenario. Consolidated players struggle as consumers are hesitant to share their data which decreases their chances for personalisation and thus their relevance. John mentioned that one risk for big global actors was to stay relevant to the consumers. This, in turn, leaves room for local actors that can stay relevant by providing personalised services such as home deliveries and in-store meetings with retail staff. MAR applications, and mainly marketing functionalities, will still be developed but provide little value to consumers. Concepts such as PR buzz, playing and engagement could be included in the marketing efforts of the MAR development. Many respondents mentioned that this is one of the main struggles for MAR today and Patrik mentioned that it is hard for a retailer to come up with the next big MAR application after the first one is launched. Some respondents were uncertain about how the consumers would perceive the value of MAR apps and how or if they would be used. Also, some of the respondents, such as Björn and Oliver, mentioned that investments in MAR applications usually comes from the marketing budget of companies. Given that scenario four presents a future with high personal service, to some extent supported by technology in a utilitarian and frictionless shopping environment, this future connects well to the extrinsic and reactive value quadrant of consumer value. The extrinsic and reactive value quadrant is labelled as "service excellence" and is described as the consumer's appreciation of a company to deliver on its promises, in terms of service (Mathwick et al., 2001; Dacko, 2017). As scenario four is centralised around a high service degree, for example, personal deliveries, it is unclear if MAR applications solve this problem better than existing digital solutions, such as tracking and placing orders. In addition, as local actors are favoured in this scenario, the financial means to develop valuable MAR applications might be limited.
6. CONCLUSION

6.1 ANSWER TO RESEARCH QUESTION

This has been an explorative and qualitative study, with the purpose of investigating the role of MAR within a retail context in a 5 year-horizon. An empirical investigation consisting of consultancy reports and twelve interviews have been conducted to identify development factors that are of relevance for the future application of MAR in retail. The following research question has guided the research:

- What is the role of mobile Augmented Reality in the future of retail?

Scenario planning methodology has been used to analyse the development of the retail industry, MAR and MAR in retail in combination. The scenario planning process is built to challenge the prevailing mindset and to look beyond the current circumstances where the scenarios visualise radical extremes. It is, however, possible that the reality will consist of a mix of the different scenarios in different genres within retail or in different geographic areas. A retailer can by tracking and being aware of the development of uncertainties adapt their current strategies and understand the role of MAR, given the industry and technology development.

The most prominent uncertainties with highest estimated impact on retail have been bundled into two different dimensions which created the foundation of the scenarios. The first dimension covers two uncertainties (price sensitivity and shopping experience) which describes the consumer's fundamental view of shopping. In one end, the consumer sees shopping as an enjoyment and values an experiential shopping experience. In the other end, the consumer sees shopping as something necessary evil and values a fast and frictionless shopping experience. The second dimension covers two uncertainties (digitalisation and privacy) and describes to what extent digitised tools are used in the service process, which is a cost-benefit trade-off between privacy and personalisation value generated from digitised tools. In one end, the value exceeds the cost and therefore, the service process will be substituted and driven by digital tools. In the other end, the cost exceeds the value, where digitised tools will still be present, but only to support the service process.

By crossing the dimensions in a matrix, four different scenarios were created and the role of MAR was analysed using Mathwick's (2001) framework of consumer value. The intrinsic-extrinsic and active-reactive value matrix provide an explanation to which role MAR should take in each scenario.

- Scenario #1 - Scenario one is built around an experiential shopping experience and a tech-driven service. Digitalisation has succeeded to create substantial value for retailers and consumers. MAR functionalities such as Storage and stores, Personalisation, Gamification and Marketing, are suitable in this scenario, as they could facilitate an active participation and intrinsic value for the consumer. 3D visualisation falls behind as mid-sized companies have some financial strength, but not sufficient to enable a full development of the functionality. MAR applications are further expected to be socially acceptable in some contexts, but not all as the main use is of hedonic character. The benefit to retailers is that of enlivening static retail environments and products, less cost of retail storage and retail space, and creating strong experiences through marketing functionalities and gamification.
- **Scenario #2** - In scenario two, a tech-driven service process and a fast and frictionless shopping experience act as the foundation. A high level of digitalisation, substituting traditional service processes leads to efficiency benefits. MAR functionalities such as Product information, Personalised recommendations and 3D visualisation are central in this scenario. These functionalities support an active participation and extrinsic value for the consumer. In this scenario, scale benefits of consolidated retailers lead to a high development of 3D visualisation. As the shopping process is of a utilitarian character, a high social acceptance is expected. Further benefits to the consumer are anticipated, as greater efficiency, ease of information access, and real-time personalisation is expected. Retailers benefit as the information need from consumers is delivered through MAR applications, hence cost savings in terms of staff can be facilitated. In addition, retailers will be able to access new types of data, which could be leveraged.

- **Scenario #3** - In scenario two, a tech-supported service and an experiential shopping experience are expected. The consumer values data privacy and local shopping are favoured over digitised solutions. MAR functionalities that are suitable in this scenario are Support and education and Marketing. These functionalities aid a reactive participation and an intrinsic value for consumers. The consumer in this scenario values interaction with knowledgeable retail staff. Further, the use of MAR is considered hedonic, which provides ground for a low social acceptance. Hence, the use of MAR applications will most likely be in the hands of retail staff, supporting in providing an experience to consumers. The role of marketing functionalities of MAR should focus on enlivening aesthetical aspects of, for example, print ads, which provides immersion for the consumer. Benefits for the retailer in this scenario is improved conversion rates.

- **Scenario #4** - In scenario four, a tech-supported and fast and frictionless shopping experience is expected. The consumer values integrity and a high level of convenience, why standardised subscription services and fast deliveries are central. In this scenario, MAR has not reached a high adoption, and thus the only functionality suitable is marketing. The tech-supported and frictionless shopping experience connects well to a reactive participation and extrinsic consumer value. However, MAR is argued not to solve the needs of consumers, such as a high service degree, better than existing digital solutions. Hence, marketing functionalities will be one way to use MAR, but it is doubted that these solutions will provide value to consumers and a low adoption could be expected.

Mathwick's (2001) value quadrants match well in scenario 1-3, where functionalities of MAR could provide the consumer value needed. However, in scenario four, MAR fails to deliver the consumer value wished for by consumers, and little adoption is expected. Dacko (2017) provides one interesting finding in that 50,3% of the MAR apps investigated are focused on the "service excellence" quadrant. As discussed, scenario four share similar traits to what the consumer values in the "service excellence" quadrant, as presented by Mathwick et al. (2001). Hence, given the fourth scenario's low adoption, the investments in MAR applications today might not be positioned well if scenario four is the what the future of retail holds.
### Table 6.1 - Summary of scenario characteristics and role of MAR

<table>
<thead>
<tr>
<th>Scenario #1 - Show me to my room</th>
<th>Scenario #2 - Giants lead my way</th>
<th>Scenario #3 - Locally produced service</th>
<th>Scenario #4 - Convenience knocking on my door</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome of dimension #1</strong></td>
<td>Experiential shopping experience</td>
<td>Fast and frictionless shopping experience</td>
<td>Experiential shopping experience</td>
</tr>
<tr>
<td><strong>Outcome of dimension #2</strong></td>
<td>Tech-driven service</td>
<td>Tech-driven service</td>
<td>Tech-supported service</td>
</tr>
<tr>
<td><strong>Retail industry characteristics</strong></td>
<td>- Smaller and temporary showrooms - High personalisation and entertainment throughout the shopping experience</td>
<td>- Strong consolidated retailers dominate the market - E-commerce is strong - Retail staff is replaced by digital tools</td>
<td>- Face-to-face service important - High knowledge-level of retail staff - E-commerce and physical stores operates in equilibrium - Subscription based services for products a big part of the market</td>
</tr>
<tr>
<td><strong>Consumer characteristics</strong></td>
<td>- Expects a value beyond the product - Sees shopping as enjoyment</td>
<td>- Wish to minimise effort in shopping - Uses digital tools to ease the shopping process</td>
<td>- Values competence and interaction with staff - Afraid of sharing personal data - Values convenience - Afraid of sharing personal data</td>
</tr>
<tr>
<td><strong>MAR functionality</strong></td>
<td>- Storage and stores - Gamification - Personalised recommendations - Marketing - (3D Visualisation)</td>
<td>- Product Information - Personalised recommendations - 3D visualisation</td>
<td>- Support and Education - Marketing - Marketing</td>
</tr>
<tr>
<td><strong>Degree of interaction</strong></td>
<td>Active</td>
<td>Active</td>
<td>Reactive</td>
</tr>
<tr>
<td><strong>Purpose of usage</strong></td>
<td>Intrinsic</td>
<td>Extrinsic</td>
<td>Intrinsic</td>
</tr>
<tr>
<td><strong>MAR role</strong></td>
<td>Playfulness</td>
<td>Consumer ROI</td>
<td>Aesthetics</td>
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<td></td>
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<td>Service excellence</td>
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</tbody>
</table>

#### 6.2 FUTURE RESEARCH

During this research, some observations have been made that call for future research within the area. The objective of this research was to provide insights of how MAR could be applied in the future of retail, leaving deeper investigation of specific areas for further research.

- **A study in a narrowed retail genre** - The retail industry is a broad subject to investigate. This study could act as a ground for further research of a narrow subgenre in retail or for a comparison among different type of products, such as low-engagement and high-engagement products - a division of products which was mentioned during several interviews. This could provide deeper knowledge of which retailers that could benefit the most from MAR technology.

- **A quantitative analysis of the study’s findings** - As MAR applications hit the market and gain acceptance, a quantitative model, based on the findings of this report, could be used to test and verify the role of MAR. This by connecting functionality to value and to gain a deeper understanding of the potential value that could be generated.

- **An analysis of the role of headwear AR in retail** - Several respondents also mentioned headwear AR as the next generation of devices which is expected, in a relatively short term, replace smartphones as we are used to. This shift will result in new opportunities for both MAR and
retailers, and this report could possibly act as a springboard for analysing the role of headwear AR in the future of retail.

- **Track development towards scenarios** - Scenario analysis is an extensive forecasting methodology which many times includes several steps beyond this study's scope, why it leaves room for further research. This includes tools for monitoring purposes which is used to track the triggers that lead up to the scenarios. Scenario cockpit is one example of this where the influence diagram is extended to track the change in an industry's environment (Schwenker & Wulf, 2013). This study could, therefore, be used as a basis for follow-up of potential applications for MAR in retail. To increase the relevance of the study's findings, the scenario analysis could be applied to a specific retailer with the purpose of making a case study.

- **Assign probabilities to scenarios** - Scenario planning differs from other forecasting methodologies in many ways. For example, the scenario analysis does not include assigning probabilities of scenarios or analysis of best case/worst case scenarios. This study could be used to further extend the understanding of likeliness and what is the most favourable scenario for retail or MAR's acceptance.
REFERENCES


Baum, L. F. (1901). The Master Key: An Electrical Fairy Tale Founded Upon the Mysteries of Electricity and the Optimism of Its Devotees. It was Written for Boys, But Others May Read it. Bowen-Merrill Company.


APPENDIX

APPENDIX #1 - INTERVIEW GUIDE

INTRODUCTION
- General warm-up questions about who they are and their experience.
- Short presentation about ourselves and the study.
- Retail is undergoing disruption with a higher closure rate than in 2008 during the worst financial crisis for decades. We know that retail will not look the same as in the past. That is why we are doing a scenario analysis of how the future might unfold. There will be a lot of different forces, trends and technologies that will shape the future of retail. Scenario analysis is a forecasting method that combines all these factors into an analysis and presents a range of different plausible futures. One part of the retail puzzle is Augmented Reality. Many researchers expect a breakthrough of the technology, but the value of it and how it could be used in the future of retail are still a quite unexplored area.
- Rules and guidelines
  - Purpose of interview and how it is going to be used.
  - We will be interviewing approximately 10 different experts within the field of retail or AR in both academics and the business area. You will all have different backgrounds and perspectives in the study, which is beneficial for us and we want you to answer from your own values and experience. We will mainly discuss trends and uncertainties in retail in a five year horizon which is a critical part of the scenario planning process.
- Are we allowed to record?
- Any questions before we start?

INITIAL QUESTIONS ON AR AND RETAIL
- What is your opinion on AR? Will we see a major breakthrough or is it just a buzz word? Why?
- Will businesses in retail be impacted by MAR? If yes, what businesses? If no, why? What will the effect be? Why?
- Could you see value of MAR in both e-commerce and physical retail? Will they differ? How?
- What is critical to succeed with a MAR app in retail?
- What is your view of what is happening in retail today?
- What will be the most critical differences in retail in 2023 in comparison to current industry practice?

WORKSHOP
- We will now make an exercise where you will be asked to come up with as uses of MAR in retail in three minutes. At this stage, we want you to think visionary and include functionality that also are unlikely to happen.
- [The respondent gets three minutes to write on as many ideas as possible on applications of MAR in retail on post-its and are asked to arrange them on the grid. The first axis in the matrix is uncertainty, that is how likely they are to happen until 2023. The other axis covers how big impact the application or use case will have on the industry.]
Follow up questions on each idea
- Why/how would this have an impact on the industry?
- What kind of value would this generate to the customer?
- What kind of value would that generate from a business perspectives?
- Why is this likely to happen? Why is this unlikely to happen?
- What are the bottlenecks for adoption/development of this functionality?

Would you like to rearrange some of the ideas on the grid?

[When all of the respondent’s ideas are placed on the grid, we will continue to ask them about previously identified applications in literature and interviews to see if they confirm or rejects them.]
- Application #1
- Application #2
- Application #3

To you see any other retail trends that are likely to affect these applications?
[When all of the respondent’s retail trends are discussed, we continue to ask about perviously identified trends in literature and previous interviews.]
- Retail trend #1
- Retail trend #2
- Retail trend #3

Could you see any patterns/connection/correlation among the applications?

FINAL QUESTIONS
- Do you see any drivers or bottlenecks for the development of AR?
- You will of course get a copy of this report about application of MAR in retail, what do you wish to read about in this?
- We are going to make the same interviews with 10 other candidates that are prominent in AR and retail, what do you want us to ask them?
- Is it anything that you wish to add on this topic?

- Can we write your name in the thesis?
- Can we state the company name?
Background to research
Retail is undergoing disruption with a higher closure rate than in 2008 during the worst financial crisis for decades. The competitive landscape is changing and retailers need to innovate in order to maintain their position and stay ahead of competition. Many different forces, trends and technologies interacts in a system and will together shape the future of retail.

That is why we are doing a scenario analysis of how the future of retail might unfold. Scenario analysis is a forecasting method that combines many factors into an analysis and presents a range of different plausible futures. One part of the retail puzzle is Mobile Augmented Reality (MAR). Many researchers expect an adoption of the technology, but the value of it and how it could be used in the future of retail are still quite unexplored areas.

The interview
We are truly glad that you will participate in our master thesis. You are one of ten highly selected respondents, prominent in either the field of AR or retail. The interview is expected to take no more than 90 minutes and will be held in Swedish. Of course you can be anonymous if you wish to. We do not expect any preparation from your side, but will attach some question to give you a view of what we will be talking about.

- If any, what user cases and applications of MAR in retail do you see?
- What is your opinion on AR? Will we see a major breakthrough or is it just a buzz word? Why?
- Will businesses in retail be impacted by MAR? If yes, what businesses and how?
- Could you see value of MAR in both e-commerce and physical retail? Will they differ? How?

Don't hesitate to contact us if you have any further questions. We look forward to meet you in person.

Best regards,
Tim & Johan
### APPENDIX #3 - THEMES AND CONCEPTS

#### RETAIL

<table>
<thead>
<tr>
<th>Theme</th>
<th>Concepts</th>
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<tbody>
<tr>
<td><strong>E-commerce</strong></td>
<td>Shopping online</td>
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<td>Shift from physical to digital</td>
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<td><strong>Omni-channel</strong></td>
<td>Seamless experience</td>
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<td>Click and collect</td>
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<td>M-commerce</td>
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<td>Merging online &amp; offline</td>
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<td><strong>Service</strong></td>
<td>Personalisation</td>
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<td>Increased demand on retail employee knowledge</td>
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<td>Servitization</td>
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<td><strong>Consumer awareness</strong></td>
<td>Cautious consumer</td>
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<td>Digital customer journey</td>
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<td>Partsumers</td>
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<td>Purpose of staff</td>
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<td><strong>Personalisation</strong></td>
<td>Personalisation</td>
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<td>Data-driven decision making</td>
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<td>Related products based on look, behaviour or past purchases</td>
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<td>New types of behavioural data</td>
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<td><strong>Delivery</strong></td>
<td>Delivery speed</td>
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<td>1-day delivery</td>
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<td><strong>Consolidation</strong></td>
<td>Global players</td>
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<td>Merging companies</td>
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<td>Domination of a few big players</td>
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<td>Amazon/Alibaba</td>
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<td>Global trade</td>
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<td>Scale benefits</td>
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<td>Specialisation</td>
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<td><strong>Digitalisation</strong></td>
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<td>AI</td>
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<td>AR</td>
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<td>Big-data analytics</td>
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<td>Sense of urgency</td>
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<td>Shooting in the dark</td>
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<td>ROI</td>
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<td><strong>Shopping experience</strong></td>
<td>Meaningful shopping experience</td>
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<td>Showroom</td>
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<td>In-store experience</td>
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<td>Face-to-face experience</td>
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<td>Experiential value</td>
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<td>Fast and frictionless purchasing experience</td>
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<td>Reduced shopping time</td>
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<td><strong>Price sensitivity</strong></td>
<td>Purchasing power</td>
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<td><strong>Brand loyalty</strong></td>
<td>Loyal customers</td>
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<td>Trust brands</td>
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<td>Brand story</td>
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<td><strong>Sustainability</strong></td>
<td>Sharing economy</td>
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<td>Sharing products</td>
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**MAR**

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<tr>
<th>Theme</th>
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<td>Market penetration</td>
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<td>Hyped apps</td>
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<td>AR development</td>
<td>Battery power</td>
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<td>Computing power</td>
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<td>Computer vision</td>
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<td>Camera</td>
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<td>Calculations in cloud instead</td>
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<td>ARKit &amp; ARCore</td>
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<td>Open API’s</td>
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<td>AI; Machine learning</td>
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<td>Image recognition</td>
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<td>3D-modelling</td>
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<td>Ecommerce loading time</td>
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<td>Tracking</td>
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<td>Positioning</td>
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<td>Adoption of AR</td>
<td>Socially acceptable</td>
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<td>Legal considerations</td>
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<td>Uncomfortable or new use of smartphone</td>
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<td>Usefulness for consumers</td>
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<td>More than entertainment</td>
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<td>Headwear development:</td>
<td>Headwear devices</td>
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<td>AR glasses</td>
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<td>Social acceptance</td>
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<td>Better experience with glasses</td>
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<td>Immersiveness of phone</td>
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**MAR IN RETAIL**

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<td>Customer engagement</td>
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<td>Playing</td>
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<td>Brand experience</td>
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<td>Complement printed media</td>
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<td>Emotional Experience</td>
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<td>Product information</td>
<td>Finding items in store</td>
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<td>Product information attached to product</td>
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<td>Translating or interpreting information</td>
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<tr>
<td>Omni-tool</td>
<td>Merging physical experience and digital content</td>
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<td>Cohesive and seamless experience</td>
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<td>Integrated in existing services and apps</td>
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<td>Using mobile to enhance store experience</td>
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<tr>
<td>Support and education</td>
<td>Instructions or installing</td>
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<td></td>
<td>Educating how products work</td>
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<td>X-ray vision</td>
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<td>Storage and stores</td>
<td>Temporary stores</td>
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<td>Portable stores</td>
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<td>Reduced storage</td>
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<td>Showing products that aren't physical available</td>
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<tr>
<td>Theme</td>
<td>Concepts</td>
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</tbody>
</table>
| Personalised recommendations  | Related products or information based on look, behaviour or past purchases  
|                               | New types of behavioural data                                 |
| Gamification                  | Gamification in physical store                                |
|                               | Playing                                                       |
| 3D visualization of products  | Sampling of products                                          |
|                               | Visualize products at home                                    |