



Final paper for the obtainment of the Master of Arts Degree

Mobile Augmented Reality for Marketing Purposes?

An empirical analysis of the influence of augmented reality on the brand experience of fashion brands

in the study course Open Media Master

- Brand Management -

First Examiner: Prof. Dr. Christian Rudeloff

Second first Examiner: Prof. Dr. Gabriela Rieck

Submitted by: Katharina Larissa Hoefler H-37406 Open Media Master – Brand Management

Hamburg, 30.07.2018

Zusammenfassung

Die vorliegende Masterarbeit befasst sich mit dem Einfluss von mobilen Augmented Reality (AR) Anwendungen auf das Markenerlebnis von Modemarken. Hierbei soll herausgefunden werden, wie dieses durch die tatsächliche Nutzung einer AR App beeinflusst wird. Als Grundlage hierfür wurden verschiedene Dimensionen eines Markenerlebnisses herausgearbeitet, von denen erwartet wird, dass sie einen Einfluss auf das Erlebnis der Marke von Kunden haben. Zusätzlich gilt es zu untersuchen, ob ein positives Markenerlebnis, welches durch mobile AR hervorgerufen wurde, Einfluss auf die Kaufabsicht sowie die Markenverbundenheit von Kunden hat.

Ziel dieser Arbeit ist es, die zuvor beschriebene Fragestellung mit Hilfe einer experimentellen Versuchsanordnung zu testen. Für diese Untersuchung wurde eine Online-Befragung mit insgesamt 181 Teilnehmern, aufgeteilt in eine Experimentalgruppe (mit AR) sowie eine Kontrollgruppe (ohne AR), durchgeführt. Die empirische Studie konnte signifikante Unterschiede zwischen den beiden Stichproben hinsichtlich des Markenerlebnisses aufweisen. Die Versuchspersonen unter Verwendung der AR App zeigten ein positiveres Markenerlebnis. Eine weitere wichtige Implikation dieser Masterarbeit stellt der gefundene positive Zusammenhang zwischen dem durch die mobile AR App stimuliert Markenerlebnis auf die Kaufabsicht und die Markenverbundenheit der Konsumenten dar.

Abstract

This master thesis made the influence of mobile augmented reality (AR) applications on the brand experience of fashion brands a subject of discussion. The purpose of this study was to find out whether the brand experience is evoked through the actual usage of a mobile AR app and whether a positive brand experience influences on the purchase intention and brand loyalty of potential customers. Therefore, four specific dimensions of brand experience were identified, from which it is assumed that they measure the brand experience of consumers. Hence, it was tested whether these dimensions are evoked through the usage of mobile AR application, leading to a positive brand experience.

The research activities conducted for this graduation study followed a deductive approach: an in-depth literature review identified the relevant theoretical framework for this study. Most relevant theories and literature reviews on brand experience and augmented reality applications uncovered the need to examine the influence of augmented reality on the brand experience of fashion brands since it represents a gap in research. Therefore, an experimental research design was chosen including an experimental as well as a control group. The data was collected with an online survey method. In total 181 respondents participated (78 experimental group, 78 control group). The results of the study demonstrated significant differences between the experimental and control group regarding the stimulation of the dimensions of brand experience and therefore, a positive influence of actual mobile AR application usage was verified. Further, the effect of a positive brand experience on the purchase intention as well as on the brand loyalty of consumers was statistically proven.

Schlüsselbegriffe

Augmented reality

Modemarken

Markenerlebnis

Kaufentscheidung

Markenloyalität

Key Words

Augmented reality

Fashion brands

Brand experience

Purchase intention

Brand loyalty

Table of Contents

List of Figures	V
List of Tables	VI
1 Introduction	1
2 The fashion retail market in the digital age	2
3 Macro-trend: augmented reality	4
3.1 Definition and fundamental characteristics	5
3.2 Augmented reality technologies	6
3.3 Augmented reality in specific fields of application	7
3.4 Current relevance of mobile AR applications	8
3.5 Augmented reality as an interactive communication technology?	9
4 Brand experiences - a theoretical framework	11
4.1 The concept of brand experience	11
4.2 Dimensions of brand experience	13
4.3 Effects of brand experiences	15
4.4 Brand experiences in the digital age	16
5 Augmented reality applications in fashion retail - from a marketing	
perspective	17
5.1 Opportunities for fashion brands using mobile AR applications	18
5.1.1 Designing AR experiences for fashion brands	19
5.1.2 AR application scenarios in fashion retail	20
5.2 State of research summary	20
6 Empirical research: Brand experiences evoked through mobile AR	
applications	22
6.1 Research objective	22
6.1.1 Practical example: mobile AR application of Zara	23
6.1.2 Research questions & hypotheses	24
6.2 Methodology	26
6.2.1 Choice of research approach and method	26
6.2.2 Choice of research design	27
6.2.3 General conditions of the experiment	28
6.2.4 Operationalization of theoretical constructs	29
6.2.5 Structure and implementation of the survey	20
6.2.6 Assessment of quality criteria: reliability & validity	36
6.2.7 Presentation of statistical sample	
6.3 Descarch Posults and Analysis	
6.4 Discussion	56
7 Conclusion	62
	02
List of References	65
Appendix	69

List of Figures

FIGURE 1: REALITY – VIRTUALITY CONTINUUM. SOURCE: MILGRAM AND KISHINO (1995)	. 6
FIGURE 2: CURRENT CHALLENGES IN BRAND MANAGEMENT ACCORDING TO CONSUMERS	.17
FIGURE 3: PRESS PHOTOS OF MOBILE AR SHOPPING APP FROM ZARA	.24
FIGURE 4: RESEARCH MODEL ABOUT THE INTERDEPENDENCIES BETWEEN THE DIMENSIONS AND THE	
POSITIVE BRAND EXPERIENCE EVOKED THROUGH MOBILE AR	.25
FIGURE 5: PERCENTAGE DISTRIBUTION OF AGE GROUPS IN THE EXPERIMENTAL GROUP	.38
FIGURE 6: PERCENTAGE DISTRIBUTION OF AGE GROUPS IN THE CONTROL GROUP	.39
FIGURE 7: AUGMENTED REALITY FAMILIARITY LEVEL OF EXPERIMENTAL GROUP	.41
FIGURE 8: AUGMENTED REALITY FAMILIARITY LEVEL OF CONTROL GROUP	.41
FIGURE 9: TECHNOLOGY AND APP AFFINITY OF THE EXPERIMENTAL GROUP	.42
FIGURE 10: TECHNOLOGY AND APP AFFINITY OF THE CONTROL GROUP	.43
FIGURE 11: RESULTS OVERVIEW OF QUESTION 13 - EXPERIMENTAL GROUP	.53
FIGURE 12: RESULTS OVERVIEW OF QUESTION 13 - CONTROL GROUP	.54
FIGURE 13: OVERVIEW OF FUNCTIONS INCREASING THE PROBABILITY OF AR APP USAGE OF CONTROL	-
AND EXPERIMENTAL GROUP	.55

List of Tables

TABLE 1: MEDIA CHARACTERISTICS APPLIED TO MOBILE AR APPLICATIONS.	.10
TABLE 2: DIMENSIONS OF BRAND EXPERIENCE CATEGORIZED ACCORDING TO ACTIVE AND PASSIVE	
PARTICIPATION BY PINE II AND GILMORE (1999)	.14
TABLE 3: OVERVIEW OF EMPIRICAL RESEARCH DESIGN	.27
TABLE 4: OVERVIEW OF EXPERIMENTAL EXECUTION.	.29
TABLE 5: OPERATIONALIZATION OF THEORETICAL CONSTRUCTS	.31
TABLE 6: VERIFICATION OF NORMAL DISTRIBUTION WITH A KOLMOGOROV-SMIRNOV TEST (H1).	.45
TABLE 7: VERIFICATION OF NORMAL DISTRIBUTION WITH A KOLMOGOROV-SMIRNOV TEST (H3).	.47
TABLE 8: VERIFICATION OF NORMAL DISTRIBUTION WITH A KOLMOGOROV-SMIRNOV TEST (H4)	.48
TABLE 9: VERIFICATION OF NORMAL DISTRIBUTION WITH A KOLMOGOROV-SMIRNOV TEST (H5)	.49
TABLE 10: VERIFICATION OF NORMAL DISTRIBUTION WITH A KOLMOGOROV-SMIRNOV TEST (H6)	.50
TABLE 11: SUMMARY OF THE ESSENTIAL RESULTS	51

1 Introduction

In today's highly technological environment it has become increasingly difficult for brands to create long-lasting competitive advantage and to meet the quickly changing demands of consumers to create corporate development and corporate survival for the company. The way how consumers interact with brands fundamentally changed and therefore, solely concentrating on communicating product and service benefits is no longer sufficient. On the contrary, since a considerable time, the focus for brand management purposes shifted towards the consumer's needs and wants. Therefore, delivering unique and memorable brand experiences has become a central element of marketing (Pine and Gilmore, 1999; Brakus et al., 2009).

Especially, the fashion retail market faces enormous pressure. Due to structural changes, a highly competitive market environment as well as the continuous growth of online shopping, fashion brands have to create new and innovative way how to sustain the brand experiences of customers in order to gain competitive advantage and moreover, to implement further digital touchpoints between the brand and its customers (Iglesias, Singh and Batista-Foguet, 2010). Additionally, the customer is no longer in the receptor role to passively receive informational and promotional messages but rather seeks for interactive and memorable experiences to identify himself with the brand and its products and services.

Augmented reality (AR) is seen as an emerging interactive trend technology with increased interest of marketers and consumers in the last years. AR mixes the physical reality with virtual computer-generated elements and is therefore, of high interest for companies as a marketing tool due to the possibility to provide consumers with digital information on a highly innovative level. Hence, AR technology is used to react towards the above-mentioned market developments as to create memorable experiences and to establish a customer-centric marketing approach (Olsson and Salo, 2011). In addition, especially mobile augmented reality aims at meeting the consumer demands since a clear tendency towards mobile technology and therefore, cross- channel retailing has become of high importance for fashion brands. As a result, the task is to clarify whether and how mobile augmented reality applications impacts the brand experience of fashion brands.

The goal of this thesis is to answer the following central research question: *What influences do mobile augmented reality applications have on the brand experience of fashion retail brands?* In the course of the academic discussion of this thesis, first of all the fashion retail market in the digital age with current trends and developments is going to be outlined. Furthermore, the technology of augmented reality is going to be introduced and the relevance of mobile augmented reality applications will be addressed. Additionally, the theoretical framework is based upon the reflection of the theoretical construct of brand experience.

In order to establish the base for the empirical research, firstly the specific dimensions of brand experiences are pointed out as to underline the effects of brand experiences in the next step. A connection of brand experiences towards the digital age will also be drawn. After having introduced all relevant main topics of this thesis, the opportunities for fashion brands making use of mobile AR are going to be described as to unify the topics of the first chapters as well as presenting the current state of research. Lastly, the central research question about the influence of mobile AR applications on the brand experience will be answered within the empirical research chapter of this thesis. Therefore, the collected data is going to be presented, analyzed as well as interpreted in order to critically reflect upon it.

2 The fashion retail market in the digital age

First of all, the relevant market environment is going to be described since this thesis focuses on mobile AR applications within the fashion industry. The fashion retail market is one of the most relevant consumer goods market in Germany. The German fashion branch was able to generate continuous growth within the last years. The market volume in 2017 comprised about 67.900 billion Euros and is forecasted to increase to around 69.100 billion Euros in the year of 2018 (Euromonitor, 2018). In addition, as many other branches, the fashion retail market is subjected to the rise of the digitalization in all areas of life and therefore, has to find ways how to stay relevant, competitive and innovative. This results in much pressure for retail fashion brands.

However, the competition in the fashion market today is tremendous. The whole branch is governed by major changes due to digitalization and a shift in customer needs and wants. Even large companies are pressured to be innovative and continuously focused on creating new ideas and concepts to maintain competitive market share on the fashion market. The ongoing growth of the online retail segment, the individualization of the customers as well as the continuing demand for innovative ideas and styles will determine the direction of the fashion retail market in the future (KMPG Fashion 2025, 2015). In general, the market situation in the branch of fashion is subjected to fundamental structural changes. This is mainly due to the fact that more and more retailers integrate their value-chain vertically in order to increase efficiency. Next to that, online shopping will gain even more importance in the next years. As statistics shows, the sales volume of fashion online retailing is supposed to comprise around 24 billion Euros until the year of 2022 (Statista, 2017 A). In comparison, in the year of 2017 the revenue of fashion e-commerce contained about 16 billion Euros in Germany. Moreover, statistics forecast that by the year of 2021 around 26% of the sales volume in the fashion market is going to be generated through online channels (Statista, 2018).

As the online trade is growing, the stationary trade fears the disappearance of physical clothing retail stores within city centres. The technological progress provides the freedom for consumers to independently move through time and space and still stay connected to the business via shopping apps and online shop websites. Consequently, the consumer is not obliged to shop in physical stores anymore leading to a new customer journey for fashion brands to deal with. Therefore, the digitalization leads to many new challenges but also opportunities for fashion retail brands. As the KMPG Future Fashion Report (2015) shows, consumers tend to increasingly connect offline and online channels in their way of consuming fashion goods. Other research studies support this assumption and point out that in the segment of clothing about 40% of the participants combine offline and online channels (Statista, 2017 B). As a consequence, the cross-channel shopping behavior puts a certain pressure on the fashion retail industry since brands have to create innovative ways to connect and integrate online and offline concepts as to enhance the customer shopping experience and to meet the customers' expectations.

Nevertheless, it is observable that vertical integrated labels such as Zara, H&M and C&A as well as mono-label stores such as Esprit, Tom Tailor and Gerry Weber are covering most of the market share of the German stationary fashion market. In contrast, multi-label retailers such as Peek & Cloppenburg and Breuninger, which are offering a range of different fashion brands in the same fashion house, are losing shares on the market (KMPG Fashion 2025, 2015). In addition, as McKinsey & Company (2017) underline, the fashion industry in 2018 is characterized by its fast pace. As already mentioned, online and offline fast fashion players are increasingly holding shares of the market. Next to that, leading fashion players from the luxury segment such as Gucci are also trying to adapt to these new customer demands by optimizing their supply chain process in order to be more responsive. This development is mainly driven by the importance of social media within this branch. New trends and therefore new customer demands are

modifying on a regular basis, intensifying the pressure for fashion brands to react and adapt (McKinsey & Company, 2017).

Consequently, there is to say that the customer is the focus of all activities, strategies and processes of fashion brands. Whereas years ago, the product and its producer played the main role in retail one can now speak of a fundamental shift in the balance of power towards the customer and its needs and wants (Trends & Innovations Fashion Retail, 2015). Therefore, companies are obliged to adapt their traditional business models as well as their supply chain management in order to implement a customer-centric strategy.

3 Macro-trend: augmented reality

With the launch of the mobile application called "Pokémon Go", the concept of augmented reality became tangible and more conceivable. The hype around this app was enormous and the general public started to consciously understand that technology is able to create a reality with elements which do not actually exist and help to experience the environment in an enriched way. Since then, augmented reality is conceived as a macro-trend of the mega-trend virtual experience (Augmented and Mixed Reality: Macro-Trend, 2018).

Today more and more companies make use of augmented reality applications to enhance the customer experience, to stay innovative and lastly to differentiate themselves from competition. Spreer et al. (2012) point out that augmented reality is seen as one of the most discussed technologies that could be of great importance for marketing purposes. Especially, at the point of sale within the retail industry, the concept of AR depicts to be promising as it may help to generate useful information for customers. However, also in the e-commerce environment, mobile augmented reality generates possibilities to simplify the online shopping experience for consumers and therefore, creates new ways to establish positive brand experiences. Furthermore, Arnoldy (2017), director of SAP Digital Retail at PWC, underlined that "companies will use AR as an instrument for improving the customer experience and to differentiate themselves from competition" (p.1).

Within the next chapter of this thesis augmented reality as part of the evolving phenomenon of virtual experience is supposed to be analyzed. First of all, the definition and fundamental characteristics of AR will be displayed. Secondly, a brief overview on AR technology will be given in order to better understand its possibilities and limitations. Moreover, an overview of possible fields of applications regarding AR technology is going to be pointed out as to explain the relevance of mobile AR applications and their field of usage since mobile augmented reality will be the focus for the empirical research of this graduation project.

3.1 Definition and fundamental characteristics

The general concept of augmented reality (AR) can be seen as a variation of the concept of virtual environments, also called virtual reality (VR). Technologies belonging to the idea of a virtual reality, create a complete synthetic environment where real objects are embedded into a complete virtual surrounding. In contrast, augmented reality provides a mix of reality and virtual components by putting 3D virtual objects into the real environment with the help of computer-generated information. According to Van Krevelen and Poelman (2010), augmented reality is a technology that creates a "next generation, reality-based interface". In general, one can say that AR is supposed to simplify the user's life by demonstrating virtual information to the real-world surrounding. AR therefore belongs to the area of a mixed reality (Van Krevelen and Poelman, 2010).

The very first AR prototypes were already created in the 1960's. Research revealed that since then different surveys appeared that provide an overview on AR applications, scenarios and developments, many with a strong focus on the technological part of AR. Azuma, Baillot, Behringer, Feiner, Julier and MacIntyre (2001) define augmented reality as the following: "An AR system supplements the real world with virtual (computer-generated) objects that appear to coexist in the same space as the real world" (p.34) and moreover, reduce the main elements of AR to the following approach:

- AR is a combination of virtual objects in a real environment
- AR operates interactively and in real time
- AR is an alignment of real and virtual objects

Another important aspect to correctly define augmented reality is underlined by Hoellerer and Feiner (2004), saying that AR is an interactive technology providing an experience that "aims to supplement the real world, rather than creating an entirely artificial environment" (p.1). Moreover, the literature review revealed that many independent authors refer to Milgrams, Takemura, Utsumi and Kishino (1995) reality-virtuality (RV) continuum which specifies the approach of augmented reality in relation to virtual reality and therefore, clearly marks the difference between AR and VR. The continuum puts the virtual environment at the one side of the continuum and the real environment at the opposite. Consequently, the left side defines the environment comprising real objects whereas the right side consists solely out of virtual objects (see Fig. 1). The concept of augmented reality (AR) is arranged closer to the real environment whereas augmented virtuality (AV) is arranged closer to the concept of virtual environment. As a consequence, AR as well as AV are seen as a mixed reality, due to the fact that they encompass components of the real but also the virtual environment.



Figure 1: Reality - Virtuality continuum. Source: Milgram and Kishino (1995).

3.2 Augmented reality technologies

The AR experience demands certain technologies. The basic components of an augmented reality system remained very similar to the first developments of AR applications made by Ivan Sutherland in the 1960's. Displays, graphic computers, a software and tracking can be seen as the main AR devices that are needed to create an augmented reality user experience (Furht, 2011). Since this thesis focuses on the marketing approach of augmented reality in relation to brands, only a brief overview of the basic technology will be given.

<u>Displays</u>

According to Van Krevelen and Poelman (2010), there are three different types of displays used for augmented reality applications:

- 1. Head mounted displays (HMD)
- 2. Handheld displays
- 3. Spatial displays

The main distinction between these displays are reflected in their way of usage. First of all, HMD display devices are worn like a helmet, placing the virtual environment or object over the user's real – world view in form of a display that is tied to the helmet. Secondly, handheld displays which are applied by computing devices that are held in the hands of the user and lastly, spatial displays which make use of video-projectors to directly display augmented information onto physical objects without any physical contact of the user to the device. At the moment, three different kind of handheld devices are used to implement AR systems which are namely: mobile phones, tablets and portable digital

assistants (PDA). Furht (2011) underlines that smartphones are seen as the most promising platform for augmented reality applications since they are very portable, widespread and already equipped with a camera, a GPS-tracker as well as a central processing unit (CPU). Nevertheless, the author also underlines that due to the small screen of smartphones, 3D user interfaces can get more complicated and less user friendly. For the purpose of this thesis, handheld displays and especially mobile devices are of importance.

AR systems

Next to that, AR systems can be distinguished according to the following main characteristics: fixed and mobile systems as well as indoor and outdoor systems. In this specific case, a mobile system allows the user to freely move around without any spatial restriction. In contrast, using a fixed AR system limits the user to the location where the system is set up. These characteristics are determined according to the purpose of the AR system and presupposes the choice of display type, tracking techniques as well as the interface (Furht, 2011).

Tracking sensors

The reproduction of virtual objects within a real environment much depends on the ability of the system to sense the user's movements as well as the surrounding. Therefore, many different techniques exist how this can be best implemented. Typically, such systems use hybrid-tracking techniques (magnetic and video sensors) or GPS-systems in order to support the AR technology. In general, tracking gets easier with indoor AR systems due to the simple fact that there are less disruptive factors that may interrupt the technological system. Such interruptions can be caused by a change of lighting as well as variations in temperature (Van Krevelen and Poelman, 2010).

3.3 Augmented reality in specific fields of application

To highlight the relevance of augmented reality as well as providing a state of the art regarding the current usage of AR, the branches and fields of applications are going to be outlined.

First of all, there is to say that the worldwide market size for augmented as well as virtual reality is forecasted to increase up to 215 billion U.S. dollar until the year of 2021. In comparison, the projected market size of 2018 contains around 17.8 billion U.S dollar (IDC, 2017). Since augmented reality applications can be set up in many different ways, several fields and branches are making use of AR technology in order to stay competitive

and innovative. Researcher continuously identify more areas that could benefit from augmented reality technology. Van Krevelen and Poelman (2010) point out that the military, the medical sector as well as the industrial sector were first movers regarding the use of AR systems. However, today AR is also used for the purpose of advertisement and entertainment. According to Goldman Sachs (2016), augmented reality will be mainly used by the branches of video games and video entertainment, live events, retail, education, healthcare, engineering and real estate by the year of 2025.

Furthermore, one can argue that augmented reality is a current macro-trend that possibly can revolutionize many branches, especially the retail sector. To give a more detailed impression: the segment of retail is forecasted to contain a user base using AR and VR software of about 31.5 million by the year of 2025 on a worldwide basis. Therefore, many retailers have sensed the potential of this advanced technology and try to identify ways how to incorporate the interactive technology within their field of business. Consequently, it becomes obvious that many various segments can possibly profit from modern virtual technology in order to create a competitive advantage and to meet the quickly changing customer demands. Due to the fact that this thesis is focused on the impact of augmented reality within the fashion retail sector, a more detailed insight will be given at a later stage.

3.4 Current relevance of mobile AR applications

In general, the technological process and the digitalization in all areas of life can be seen as the major driver for the development of mobile AR applications. Since mobile computing systems such as smartphones are becoming more practicable and widespread, the access to online applications everywhere at any time becomes more feasible. As a consequence, literature review revealed that within the last years the availability of mobile augmented reality applications for end users has grown constantly. The number of mobile AR app usage worldwide within the consumer market is forecasted to rise from about 342.8 million unique monthly active users in 2016 to about 1.9 billion unique monthly active users by the year of 2022 (Tractica, 2017). Therefore, the revenue of mobile AR is expected to increase from about 749.0 million to 18.5 billion US \$ annually.

However, Olsson and Salo (2011) emphasize that due to the constant improvement of technology and the growth of the digitalization, mobile AR applications are reaching the point where they become very helpful for day-to-day activities such as shopping and other average demands of consumers. Generally, the approach in mobile handheld AR is to show the typical camera viewfinder image on the display of the mobile device as to then insert augmented 3D images that create a mixed reality for the user consisting of

the real physical world linked to augmented elements. Since many consumers possess advanced smartphones which have image recognition, object tracking, display technology as well as sensor technology, the provision and usage of AR applications becomes more and more convenient. In today's highly technologized environment, the usage of mobile computing applications can be seen as a fixed component of consumer's daily activities since people access online resources on a regular basis (Olsson & Salo, 2011).

As a consequence, mobile augmented reality applications provide the opportunity to integrate virtual information into a consumer's physical environment as to supply the potential customer with information needed in the exact surrounding (Hoellerer and Feiner, 2004). Moreover, the authors Hoellerer and Feiner (2004) even forecast that mobile AR systems "hold the potential to revolutionize the way in which information is presented to people" (p.1). Therefore, mobile augmented reality is already used by many companies with a commercial, entertaining and informing purpose to enhance the brand and customer experience and to stay innovative in times of the progressing digitalization. This is of relevance for this study due to the fact that the empirical research will be undertaken with a prototype mobile AR application since it can be seen as the most attractive as well as most feasible version of augmented reality technology for fashion brands.

3.5 Mobile AR as an interactive communication technology

After having defined augmented reality from a technological perspective and explained its areas of applications, it has to be identified whether AR applications show characteristics from an interactive technology in relation to communication and marketing purposes.

First of all, according to Varadarajan, Srinivasan, Vadakkepatt, Yadav, Pavlou and Krause et al. (2010) an interactive technology is a device that enables people to engage with in mediated communication and moreover, is based on digital technology. Examples of digital technology providing interaction are: e-mails, web browsers, instant messaging, access technologies (GPS), mobile phones, search engines, social networking (as cited in Javornik, 2016). It is underlined that interactive technologies demonstrate media characteristics, such as the aspect of communication implying the exchange of messages between different entities. Since the purpose of this study is to research whether mobile AR applications enhance the brand experience of fashion brands, the potential and the characteristics of mobile AR have to be determined.

Literature review revealed that the author Javornik (2016) collected different media characteristics of interactive technologies which are displayed in the following table and are related towards mobile AR applications:

Media characteristics	Definition & author	Application to mobile AR apps
Interactivity	 Machine and personal interactivity Two-Way Communication Responsiveness (Song & Zinkhan as cited in Javornik, 2016) 	Medium to high interac- tivity of user and tech- nology device depending on the app
Hyper textuality	 Potentially high number of linked sources (Hoffman & Novak as cited in Javor- nik, 2016) 	Few-to-many linked sources to the online shop, corporate web- site, social media
Modality	 Diverse content representa- tion (Sundar et al. as cited in Javornik, 2016) 	Images, videos, text, in- formation
Connectivity	 Network capabilities of the technology (Varadarajan et al. as cited in Javornik, 2016) 	Medium to high network capabilities: social me- dia, customer reviews, messenger
Location-specificity	 Specificity of location of the user (Varadarajan et al. as cited in Javornik, 2016) 	Medium to high speci- ficity due to GPS of mobile device
Mobility	 Portability that allow a mobile use (Varadarajan et al. as cited in Javor- nik, 2016) 	High portability due to the mobile device – smartphones, tablets
Virtuality	 Level of virtual elements al- lowing an immersion in a graphic/ digital environment (Lister et al. as cited in Javornik, 2016) 	High immersion de- pending on the design of the app

<u>Table 1:</u> Media characteristics applied to mobile AR applications. Source: Javornik (2016), Own assessment towards mobile AR apps.

Looking at the table, it becomes obvious that mobile AR can be seen as an interactive communication tool for marketing purposes. However, it depends on the design and features such a mobile AR application is providing. The level of interaction grows depending on the features and added value the app offers to its user. Next, the theoretical framework is going to be introduced, as the technology of mobile AR applications will be looked at in the context of brand communication purposes.

4 Brand experiences - a theoretical framework

After having introduced the fashion retail market and the system of augmented reality, it is necessary to elaborate a theoretical framework as a basis for the further course of this thesis as the above constructed topics will be put in relation to the theoretical framework of creating brand experiences for marketing communication purposes. Within this chapter the theoretical construct of band experience will be explained. Therefore, the specific dimensions as well as the effects of a positive brand experience will be highlighted since the specific dimensions of brand experience are essential for the empirical research of this thesis. Moreover, the theoretical construct of brand experience will also be related towards the digital age. Since technologies such as augmented reality can possibly enhance brand experiences of consumers, it is of high importance to firstly define this theoretical branding concept in more detail.

4.1 The concept of brand experience

Traditional marketing has always put its focus on the physical benefits of products and services such as price, availability, functionality and quality and therefore the communication strategy and marketing activities of companies have been very product-oriented (Mascarenhas et al., 2006). However, literature review also revealed that for a considerable time, a strong shift towards a customer-centric marketing approach is taking place, where the creation of lasting experiences as well as meeting the real demands of consumers is seen as the main goal for companies (Pine and Gilmore, 2007, Morrison & Crane, 2007). It becomes obvious that the concept of experience itself has been a major topic of study in the field of marketing over the last years. Different studies have been conducted on the construct of brand experience, how it effects brand loyalty and customer satisfaction, and if it somehow can be measured. But to correctly understand the construct of brand experience has to be defined at first.

The authors Pine II and Gilmore (1998) already recognized the movement towards experiential marketing at an early stage and therefore stress that selling experiences can be seen as the next level of economic value, favoring positive customer memories. In addition, the authors underline at a later point that "what customers want today are experiences – memorable events that engage with them in an inherently personal way" (p.1, Pine and Gilmore, 2007).

From a more rational perspective, *Cambridge dictionary* describes the term experience as "the process of getting knowledge or skill from doing, seeing, or feeling things" (Cambridge University Press, 2014).

In addition, *Oxford Dictionary* defines an experience as "the knowledge or skill acquired by a period of practical experience of something (...)" (Oxford University Press, 2018). As it becomes clear when reflecting upon the two definitions, the difficulty of understanding the term of experience lies within the ambiguity of the word. Therefore, on the one hand an experience refers to a process of undergoing an event, in German called "Erlebnis", and on the other hand, experience can be seen as a learned outcome that may lead to predictable behaviors like knowledge and skills of consumers which are gained after the occurrence of an event, in German referred to as "Erfahrung" (Palmer, 2010). Complementary, Carbone and Haeckel (1994) point out that an experience can be seen as a take-away impression which results from the emotional and rational interaction of customers with a brand's products and services.

When reviewing literature, one can identify that the concept of brand experience is much debated by marketers since knowing the needs and wants of customers and how they experience brands is seen as crucial for creating successful marketing activities and for creating brand loyalty. Brakus et al. (2009), conceptualize the term brand experience as "sensations, feelings, cognitions and behavioral responses evoked by brand-related stimuli that are part of the brands design and identity, packaging, communications, and environments" (p.52). This definition by Brakus et al. (2009) is most commonly referred to in literature when it comes to the concept of brand experience. Consequently, a brand experience is evoked by the inner perception including emotions and knowledge of a customer stimulated by the outer appearance such as the communication, packaging and the environment a brand is placed in. Ambler, Bhattacharya, Keller, Lemon, Mittal (2002) define brand experience as "the extent to which customers use the brand; talk to others about the brand; seek out for information, promotions and events; and so on" (p.15). The authors underline that brand experience is part of the customer's mind-set next to four other dimensions such as brand awareness, brand associations, brand attitudes and brand attachment.

It becomes obvious that the term of brand experience is tied closely to many other brand related constructs. Therefore, the often referred to concept in relation to experience marketing, is the construct of a customer experience. In order to clearly differentiate these two terms a definition of customer experience will be given. A customer experience is defined by Gentile, Spiller and Noci (2007) as "a set of interactions between a customer and a product, a company, or part of its organization, which provoke a reaction" (p. 397). As a result, one can argue that a customer experience is mediated by a brand through the interaction of a customer with their products and services. This in turn leads to a customer's mind-set regarding the brand which may lead to a certain behavior like a

purchase intention. Consequently, the terms brand experience and customer experience are closely interrelated but due to the fact, that this thesis aims at improving and broadening the perspective of brand communications, the term brand experience will be focused on and used within the context of this thesis.

4.2 Dimensions of brand experience

After having explained the term of brand experience in detail, the dimensions of brand experience will be outlined. In literature, various dimensions by different authors have been suggested. Nevertheless, there is consensus when it comes to the most important types of dimensions regarding brand experience. Holbrook and Hirschman (as cited in Nysveen et al., 2012) already determined aspects such as *activities, emotions* and *sensations* as the main aspects when it comes to the consumption experience.

They highlight that these dimensions complement cognitive activities such as processing information of products and brands. Next to that, they point out the importance of *symbolic, hedonic* and *esthetic* dimensions when it comes to the concept of brand experience. Similar to the dimensions named above, the authors Brakus et al. (2009) define the most important dimensions in order to measure the concept of brand experience as:

- *"The sensory dimension":* refers to the visual, auditory, tactile, gustative and olfactory stimulations that are evoked by the brand.
- *"The affective dimension":* brand experiences which are made through feelings and emotions generated by the brand, leading to a brand-consumer relationship.
- "The *intellectual dimension*": the ability of the brand to match with the consumer's divergent and convergent thinking.
- *"The behavioral dimension":* is focused on bodily experiences and interactions between customer and brand.

Here, the intensity of the brand experience is depending on the number of dimensions that are evoked by the brand and how intense the stimulation is taking place. Brand-related stimuli can possibly be represented by colors, shapes, typefaces, designs, slo-gans, mascots and other brand-related experiences. However, one has to note that an experience not necessarily has to be evoked by only one specific stimuli. Colors, shapes, typefaces can lead to a sensory experience but at the same time address the affective dimension. Consequently, when it comes to an experience, it is difficult to set clear distinctions. The authors Pine II and Gilmore (1999) already defined fundamental

dimensions of "staged experiences" in a retail environment at an early stage. The authors differentiate between:

- *"The esthetic dimension":* refers to the experience of a passive immersion in an environment.
- *"The educational dimension":* engaging in an experience through active participation as to increase knowledge and skills.
- *"The entertaining dimension":* refers to the dimension of an experience that is passively captured though the senses and emotions of an individual.
- *"The escapist dimensions":* the individual is actively involved in the experience and takes place in an immersive environment. The authors underline that an example of such an experience might be virtual reality settings.

The dimensions defined by Pine II and Gilmore (1999) are distinguished between passive and active involvement of the individual in the experience. Therefore, the esthetic and entertaining dimensions are considered to be passively experienced whereas the educational and escapist dimensions are actively captured by the individual having the experience.

_ . _ _

PASSIVE	ACTIVE
Entertaining dimension	Educational dimension
Esthetic dimension	Escapist dimension

<u>Table 2:</u> Dimensions of brand experience categorized according to active and passive participation by Pine II and Gilmore (1999). Source: Own illustration.

It becomes obvious that the dimensions identified by various cognitive scientists and management professionals overlap and show very similar characteristics. For the purpose of this study, a relevant number of dimensions have to be conceptualized as to make them more manageable and measurable. Therefore, since there has been an apparent agreement regarding the categorization of experiences by different authors, it is necessary to exhibit the similarities of the characteristics. As a result, the various similar dimensions are summed up to a set of dimensions that will be relevant for the further course of this thesis as the following:

- *"The sensory / esthetic dimension":* this dimension refers to the immersion into an experience evoked by sensory stimulations such as touching, seeing, hearing, tasting and smelling. This process is mostly taking place passively.
- "The intellectual / educational dimension": aims at the knowledge and skills acquired through an experience that can either match or contradict with a consumer's mind-set.
- The "affective / entertaining dimension": refers to the emergence of emotions and feeling evoked through an experience that is captured through sensational perceptions.
- **The "escapist / behavioral dimension":** aims at the bodily and immersive experience of a consumer with a brand that is actively undertaken.

In the further process of this thesis when addressing the dimensions of brand experience, the above named and summarized dimensions are referred to. Since the dimensions of brand experience are an elementary part of the empirical research it is of high importance to outline their definition in detail.

4.3 Effects of brand experiences

Brand experiences show diverse level of strength and intensity, may occur spontaneously or more deliberate and lastly, vary in valence since they can be positive or negative and may be long-term or short-term. Nevertheless, all kinds of brand experiences are stored in the memory of the consumer and therefore affect the consumer satisfaction, the brand loyalty as well as the brand associations (Brakus et al., 2009; Nysveen et al., 2012; Dennis, Brakus, Gupta and Alamanos, 2014). This effect is reasoned by the fact that a positive brand experience provides value for the consumer and as a result, favors an increased satisfaction, leading to increased brand loyalty. One can argue that a customer experiencing a brand very positively, is likely to develop a higher level of brand loyalty when assuming that affective commitment has been developed between the customer and the brand (Iglesias et al., 2010).

Since consumers tend to repeat positive and satisfactory experiences, the effect of a positive brand experience on brand loyalty becomes obvious (Nysveen et al., 2012). In addition, a positive brand experience impacts not only the customer satisfaction and brand loyalty, as already pointed out by various authors, but also builds a brand- consumer relationship. This is reasoned since a positive brand experience increases the perceived value of a brand, exceeding the functional and economic benefits of a brand (Dennis et al., 2014).

As a consequence, a positive brand experience has direct effects on the purchase intention of consumers. The positive effect on the purchase intention then again has an effect on how the brand performs in the general marketplace since it influences sales and brand promotion (Ambler et al., 2002; Schmitt, 2010).

Moreover, the authors Moreira, Fortes and Santiago (2017) also identify a strong positive connection between multisensory stimulation of consumer senses and brand experience effecting the purchase intention of consumers. Connecting the brand with senses such as the visual, auditory, tactile, gustative and olfactory stimulations as already mentioned above, makes it more connectable and therefore memorable on an emotional level (Schmitt, 2010). A study by Nysveen et al. (2012) verifies that "sensory experiences positively influence brand personality and brand satisfaction" (p. 419). The authors underline that marketing activities aiming to stimulate the senses of consumers have a positive effect on the brand experience and therefore strengthen the purchase intention (Moreira et al., 2017; Schmitt, 2010).

4.4 Brand experiences in the digital age

Since this thesis discusses of the impact of mobile AR application on the brand experience a subject of discussion, it is of importance to demonstrate the relevance of brand experiences in the digital age. Shocker, Srivastava and Ruekert (1994) already identified at an early stage that due to technological change and the globalization of markets, marketers are facing challenges in how to successfully manage their brand.

Next to that, the needs and wants of consumers are changing due to the above-mentioned aspects. Since the innovation of technologies like augmented reality, new and better ways how to solve the everyday problems of consumers are created and a certain pressure for brand managers to constantly adapt towards those changes evolves. Moreover, competitive threats are increasing due to a globalized market and therefore, innovative as well as creative responses from brand managers are required in order to stay competitive (Shocker et al.,1994). Hence, these developments are still adaptable today. Nowadays consumers are not simply buying products anymore. They want to purchase products with experiences they can identify with (Merrilees, 2016).

In addition, the digital progress increases the complexity of everyday situations which leads to a disorientation of the people and creates a need for products and services that counteract this disorientation (Jausen, 2014). Therefore, a study of Horizont (2014)

underlines the following aspects as current challenges in brand management from a consumer perspective:



<u>Figure 2:</u> Current challenges in brand management according to consumers. n = 600. Source: Horizont (2014), Nr. 3, 16.01.2014, p. 18. Source: Own illustration.

The study clearly underlines current challenges brands are facing when it comes to managing their brand. It becomes obvious that a clear differentiation towards competitors as well as that the concept of brand interaction with the customer and the creation of coherent brand experiences are of relevance when it comes to current challenges for the management of brands. This clearly underlines the need for brands to put extra effort in creating memorable brand experiences for their customers and to create points of interaction between brand and consumer both online as well as offline.

5 Augmented reality applications in fashion retail - from a marketing perspective

After having examined the change in the fashion retail market in the digital age, the technology of augmented reality and its current relevance as well as having explained the theoretical construct of brand experience in detail, the following chapter of this thesis will put the now separate elements in context. First of all, the opportunities for fashion brands making use of AR applications in a marketing environment are going to be addressed. Therefore, the issue of how to design effective AR applications for marketing purposes as well as different scenarios of AR in a fashion retail context are going to be outlined. Lastly, the current state of research will be summarized in order to provide a sufficient basis and overview for the empirical research.

5.1 Opportunities for fashion brands using AR applications

Augmented reality has become a relevant interactive technology for marketing purposes. According to literature, augmented reality technology implies many opportunities for brands, especially retail brands, to meet the demands of customers, to create unique and memorable experiences and to stay innovative and competitive (Javornik, 2015). As mentioned in the beginning of this thesis, the fashion retail market undergoes fundamental changes and AR can be seen as one possibility how to engage with customers and to create memorable brand experiences in an innovative way. Recently, brands have been making use of AR in different variations in order to identify the most appropriate and effective use. However, research revealed that within the fashion brands. However, supporting the above-mentioned developments, the author Javornik (2015) underlines that:

"AR has emerged as a relevant interactive technology in the marketing environment, increasingly used in retail contexts and often developed in formats of smart device applications. Its ability to overlay the physical environment with virtual element such as information or images, which can interact with the physical environment in real time, provides new possibilities for content delivery to consumers" (p. 252).

Consequently, innovative marketers can make use of augmented reality to shape unique brand experiences, to allow the consumer to experience a brand's products, services and spaces in an extraordinary way, and to establish a more interactive way of communicating the brand (Scholz and Smith, 2016). Since AR can be seen as a human-computer interaction, through which consumers are able to view the real world through an "AR lens", demonstrating additional visual or textual information (e.g. text, pictures, videos, advertisements, product packaging), it contains many possibilities for brands to create experiences. As already mentioned in a previous chapter, the mixed reality is experienced via digital screens, most of the times with smart phones, due to the simple fact that many customers are already in possession of a mobile device and moreover, are familiar with its usage. Therefore, Scholz and Smith (2016) emphasize that AR applications, when executed effectively, can play an important role for creating valuable integrated marketing approaches that correspond with the highly digital environment of today's shopping behavior online as well as offline.

As a result, augmented reality technology is more and more used by fashion brands in order to create innovative mobile applications for their customers. As to create value, AR applications are able to provide the user with relevant product information, establish

contextual adaption, whether the consumer is in a retail or home environment, and lastly, generate additional data from industrial partners (Välkkynen, Boyer, Urhemaa and Nieminen, 2011). Therefore, the adaptation of mobile AR applications in a fashion retail environment, online and offline, implies many opportunities for fashion brands to better engage with their consumers and to meet the diverse demands of consumers on an experiential level.

5.1.1 Designing AR experiences for fashion brands

Generally, one has to note that augmented reality is a rather new technological phenomenon for fashion brands and therefore, does not only grant opportunities but also challenges marketers should be aware of. Since an AR application is supposed to enhance the shopping experience of customers, marketers should not solely look at AR from a technological perspective. Scholz and Smith (2016) stress that an augmented reality campaign has to be planned wisely in order to achieve the desired outcome.

One important factor when designing an AR campaign for a fashion brand is to take the user-brand engagement into consideration. Therefore, researchers from the field of virtual environments distinguish between three different types of action, influencing the intensity of an experience with a brand, which are namely: perception, manipulation and interaction. Some AR experiences are undertaken by passively perceiving content. This might generate brand awareness, interest and exposure. However, when offering more interaction within the AR application, the user-brand engagement rises. This is achieved when the user is able to manipulate the displayed AR content or is actually able to interact with it. This is often referred to as "self-augmentation" since such AR applications allow the user to upload a piece of apparel on one's own personalized avatar or mirror picture (virtual mirror) for example. The active interaction of the user with the brand created through AR content can be seen as the highest level of experience according to Scholz and Smith (2016).

Furthermore, AR applications are able to augment a product through simply scanning a code or the product with a smart device. Then, additional information about the products can be provided. In a fashion brand context this can be applied by providing information about the product stock, direct linked customer reviews, a size guide or the possibility to change the color of the clothes to the desired color for example.

As a consequence, AR applications imply many opportunities for fashion brands to interact with the consumer and to communicate the brand on an experience level. AR applications also allow to add gaming elements that enhance the entertainment factor of customers. In addition, marketers are able to initiate user-user engagement with AR applications that allows the customer to interact with others by sharing content on social media for example.

5.1.2 AR application scenarios in fashion retail

Even though the technology of augmented reality has become more and more relevant, in a fashion retail environment, AR applications can be seen as a rather new marketing approach to communicate the brands. So far, only a few examples of fashion brands, which offer an augmented reality application experience to their customers, are known. Research revealed that well-known brands like Zara, Burberry, Topshop, Uniqlo, Nike and Adidas are making use of different AR applications in their retail environment (McDonald, 2018). The fashion brand Topshop for instance created a virtual dressing room where the customer is able to change outfits by undertaking easy gestures standing in front of a fixed screen. The luxury fashion brand Burberry- inspired drawings which were inserted into the smartphone camera of the user. Therefore, pictures taken by the user were branded with Burberry- inspired AR drawings. Consequently, the user engaged with the brand in an entertaining way, creating memorable experiences.

Lastly, the fast-fashion brand Zara launched a mobile AR application which customers were able to test within two weeks either in Zara stores or with the packages from online shopping. In order to create an AR application as effective as possible for a brand, most AR applications related to a fashion environment are directly linked to the online shop of the brand in order to enhance the customer touch points and to create cross-channel possibilities. The user then is able to directly "shop the look" online, leading to an easy and comfortable shopping as well as brand experience for the customer. Since the mobile application designed by the brand Zara functions as a prototype for the experiment of this research project, its features are going to be explained within chapter 6.1.1.

5.2 State of research summary

In the following the state of research will be summarized. As already mentioned in chapter 2, the development of augmented reality technology has already begun in the 1960's and got the first widely spread societal attention when the Pokémon Go application was released. However, since then various branches became aware of the interactive and innovative technology and different studies were conducted regarding the technology of augmented reality. Nevertheless, the studies were often undertaken from a very technological perspective. Furthermore, it also becomes obvious that mobile augmented reality applications in relation to the construct of brand experience have not been object of an empirical study yet and represent the research gap this thesis builds upon. It can be noted that in a fashion retail setting mobile AR applications are a rather new phenomenon and only a few fashion brands are making use of AR technology so far.

In addition, the construct of brand experience in relation to the application of mobile AR is the central theoretical construct this thesis is studying. The general concept of brand experience is widely looked into and its influence on brand loyalty as well as the purchase intention of consumers is already intensively researched. However, how mobile augmented reality applications influence the brand experience of consumers is not investigated yet and will therefore represent the central research question of this study.

The following table provides an overview and summarize the most relevant studies of the theoretical construct of brand experience and its effect on brand loyalty and the purchase intention of consumers. In addition, most of the studies refer to the dimensions of brand experience proposed by Brakus et al. (2009), underlining the relevance of these dimensions.

Central	Author	Reference	Results
Determinant		Object	
	Brakus et al. (2009)	Brand experience dimensions, brand loyalty	Existing effect (may be positive or negative)
	lglesias et al. (2010)	Brand loyalty	Positive effect on brand loyalty
Brand experience	Schmitt & Zarantonello (2010)	Purchase intention	Positive effect for holistic customers
	Nysveen et al. (2012)	Brand experience di- mensions, customer loyalty	Existing effect (may be positive or neg- ative)
	Ramaseshan & Stein (2014)	Brand loyalty	Positive effect on brand loyalty
	Van Krevelen & Poelman (2010)	AR technologies, applications, limitations	Verified the influ- ence of AR in different industries

1. Previous relevant studies on the theoretical construct of brand experience and the technology of (mobile) augmented reality

Augmented Reality	Olsson et al. (2011)	Current mobile AR applications	Positive mobile AR experiences with current app offer
	Spreer et al. (2012)	Acceptance of mobile AR	Intention to reuse AR application verified
	Olsson, Lagerstam, Kärkkainen & Väänänen- Vainio-Mattila (2013)	User experience of mobile AR in shopping centres	Raised awareness of the information related to the shop- ping environment
	Javornik (2016)	Impact of AR media characteristics on consumer behavior	Interactive charac- ter but no two-way communication

Table 3: Summary of state of research. Source: Own illustration.

6 Empirical research: Brand experiences evoked through mobile AR applications

After having addressed the fashion retail market, augmented reality technology, the concept of brand experience as well as the state of research, the empirical research part is following. Within this chapter, the research objective will be outlined first. Next to that, the practical example of a Zara AR application will be explained since it will function as a research object for the experiment of this study. Accordingly, the central research question and sub-questions as well as the hypotheses will be described. Moreover, a description of the methodology is going to be presented in order to analyze the collected data and summarize the results in the next step. Lastly, the implementation of the empirical research and the consequential results are going to be critically discussed.

6.1 Research objective

The goal of the presented work is to study the impact of mobile augmented reality applications on the brand experience of fashion brands. In addition, the research is supposed to investigate whether a positive brand experience has an influence on the purchase intention of consumers and moreover, if it influences the brand loyalty positively. Therefore, a comparison will be made between potential customers that actually test an AR application of a fashion brand and potential customers not having tested an AR application of a fashion brand. First of all, differences in the perceived brand experience will be examined. It is understood that potential customers having experienced an AR application of a fashion brand show a greater level of brand experience than the potential customers not having used the AR application. This will be studied by testing the different dimensions of a brand experience amongst both potential customer groups. Thereupon, the study addresses the question whether a positive brand experience leads to an actual purchase intention, transforming the potential customer into an actual customer and if a positive brand experience leads to a higher brand loyalty. The assumption is that potential customers having used the AR application show a higher willingness to buy the shown products than potential customer not having used the AR application and in addition, it is presumed that having used the AR application leads to a higher brand loyalty.

6.1.1 Practical example: mobile AR application of Zara

Since the Zara AR App will be used to carry out this study, the features of this app will be explained in more detail. The fashion brand Zara determined a test phase of two weeks which started on the 18th April 2018. From that day on, the mobile AR app of Zara was available for customers in 120 stationary flagship stores worldwide. Moreover, the application was also usable from at home with an e-commerce purchase. The latest studio collection of Zara was presented through this AR app by virtual models. As soon as a customer scanned the Zara AR logo, either in the stationary store window or on the e-commerce package at home, a virtual mannequin in 3D appeared. The model then was wearing a dress from the studio collection, walking around on a catwalk and presenting the look. Therefore, twelve AR-sequences in a studio of 170 square meters were produced and ensured that the virtual models could be viewed form every perspective (Matera, 2018).

Generally, the AR application of Zara was mainly created for marketing purposes in order to promote their summer studio collection in an experiential and innovative way. This not only created attention for Zara's social media channels but was also widely covered in online fashion magazines.

Headlines like "Mit diesem Konzept will Zara das Shopping revolutionieren" or "Zara announced that they are changing the shopping game as we know it" were widely published (Korte, 2018; Matera, 2018). Furthermore, the app allowed its users to take pictures or to make a movie within the application in order to share it on social media channels. As a consequence, an interaction between users and the brand was created. Additionally, the brand Zara linked its online shop to the app so that the presented outfit could be directly purchased by simply pressing the "shop the look" button. The aim of Zara to also generate sales through the usage of the app becomes obvious. Since the fashion brand Zara only created a prototype version for the studio collection to test mobile AR technology, only female models presenting the studio collection were created in 3D and not their whole collection. So far, the male collection was not available. The Zara AR application is one recent example of a fashion brand making use of the AR technology for their marketing purposes. Therefore, it functioned as an example for the experiment of this research study. However, this study is not undertaken in cooperation with the brand Zara. It solely operates as an example version for the implementation of the empirical research in order to generalize the results for other fashion brands at a later point. Since the test phase within the stationary stores was already finished before the empirical research of this study was undertaken, the e-commerce version functioned as an experimental treatment for this study. The following pictures give an impression on what the AR application of Zara looked like in a store setting:



Figure 3: Press photos of mobile AR shopping app from Zara. Source: Korte (2018).

6.1.2 Research questions & hypotheses

The goal of this thesis is to answer the following central research question as well as sub-questions:

Central Research Question: What influences do mobile augment reality applications have on the brand experience of fashion retail brands?

Sub-Question 1: *Does a positive brand experience evoked by a mobile AR application lead to an actual purchase intention?*

Sub-Question 2: Does a positive brand experience evoked by a mobile AR application lead to brand loyalty?

In order to answer central research question as well as the sub-question, different hypotheses have been developed. The hypotheses cover the different dimensions determining a positive brand experience. Consequently, the following hypotheses will be researched within this study:

H1: Sensory stimulations evoked through the actual usage of the mobile AR application positively impact the brand experience.

H2: Emotions and affects evoked through the actual usage of mobile AR application positively impact the brand experience.

H3: The level of brand knowledge and curiosity acquired through the actual usage of the mobile AR application positively impact the brand experience.

H4: The behavioral interaction evoked through the actual usage of mobile AR application positively impacts the brand experience and leads to physical actions.

H5: A positive brand experience acquired through a mobile AR application leads to a purchase intention.

H6: A positive brand experience acquired through mobile AR applications leads to a greater brand loyalty.

The research model can be illustrated like in the following graphical representation:



<u>Figure 4:</u> Research model about the interdependencies between the dimensions and the positive brand experience evoked through mobile AR. Source: Own illustration.

The research model consists out of the four dimensions determining a brand experience and from which is presumed that they have an influence on a brand experience that is evoked through AR applications (H1+, H2+, H3+, H4+). The plus icons symbolize that a positive relation is presumed.

In addition, H5+ and H6+ are supposed to examine whether a positive perceived brand experience has an influence on the purchase intention as well as on the brand loyalty. These aspects were added to demonstrate the relevance of a positive perceived brand experience through mobile AR applications as well as to prove the influence on the purchase intention and brand loyalty. Moreover, it is assumed that a positive perceived brand experience evoked through a mobile AR application has a positive influence on the brand loyalty as well as purchase intention.

6.2 Methodology

In the following chapter the methodological procedures are going to be outlined. First of all, the choice of the research approach and method as well as the choice of the research design will be justified and explained. Secondly, the general conditions and the implementation of the experimental research design will be outlined in detail. Thirdly, the theoretical constructs of this study will be operationalized to lastly, demonstrate the structure of the quantitative survey method.

6.2.1 Choice of research approach and method

Within this chapter, the approach and strategy of the research study will be elaborated, justifying the choice of the research method. Since a research can be carried out either quantitative or qualitative, leading to differential insights, it is important to clearly outline the most suitable research method in order to successfully answer the central research question as well as hypotheses as to reach the research objective of this study.

Generally, this research takes a **deductive approach**, testing theories and hypotheses regarding the theoretical concept of brand experience evoked through mobile AR in a practical context. According to the theory of Saunders, Lewis and Thornhill (2007), this research study creates and makes use of **explanatory** knowledge due to the fact that studying the impact and influence of a mobile AR application on the brand experience of fashion brands aims at explaining the causal relationship between variables.

In order to answer whether mobile AR applications have an impact on the brand experience of fashion brands, an experimental research design is chosen using a **quantitative data** collection method. Research activities generating quantitative data, allow to analyze this data using **descriptive** as well as **inferential statistics** (Saunders et al., 2007). Consequently, by using this research method it is not of relevance how a single case rates the situation but rather how a low or high percentage of a representative sample size evaluates the research subject. Consequently, to receive representative research results, a rather large sample size has to be investigated.

6.2.2 Choice of research design

Saunders et al. (2007) underline that the research strategy and therefore, the research design has to be chosen according to the purpose of the study as well as according to the research questions. Therefore, this research is undertaken by an experimental research design, collecting quantitative data by making use of a survey method. Generally, Verschuren and Doorewaard (2010) point out that an experiment is most suitable for a research that is investigating newly aroused situations or processes and can be applied as to study effects. Moreover, the purpose of an experiment is to research the mechanisms of action between variables. As a consequence, the experimental design is most suitable for the purpose of this research simply due to the fact that effects between the construct of brand experience and the use of a mobile AR application are researched to investigate whether mobile AR applications have an impact on the brand experience of fashion brands. This research study is cross- sectional since it involves the data analysis from a population at a specific point in time. Moreover, a comparison between two groups (experimental and control group) is undertaken to study the above-mentioned interrelation of a mobile AR application and the construct of brand experience. The following table summarizes the research design of this study:

Type of research design	Type of knowledge	Research ap- proach	Data collection method
Cross-sectional experimental re- search design	Explanatory knowledge	Deductive research approach (testing theory)	Quantitative data collection with online survey method

Table 4: Overview of empirical research design. Source: Own illustration.

6.2.3 General conditions of the experiment

For the purpose of this experiment two groups were formed- one experimental group as well as one control group. The experimental group tested the prototype of the mobile AR application of the fashion brand Zara whereas the control group did not receive the experimental treatment of testing the mobile AR application of Zara. In both cases, the groups filled out a slightly different online questionnaire. The experimental group was asked to answer the questions of the survey after having received the treatment. In contrast, the control group was provided with detailed information within the online questionnaire. Therefore, a definition on the general concept of AR technology as well as a detailed step by step instruction on how the mobile AR application of Zara functions was given. In addition, the instruction was supported by pictures of the Zara AR app.

The allocation of participants towards the two different groups took place randomized since the researcher randomly selected participants belonging to the experimental group and the questionnaire of the control group was filled out by randomly assigned people found on social media. Therefore, the selection of participants taking part in the experiment or the control group survey was chosen randomly not following any specific characteristics. The participation in the experiment differed between the two groups. The experimental treatment therefore, was the actual testing of the mobile AR application of Zara. For the experimental group, the treatment was undertaken within three days at the Macromedia University of Applied Sciences in Hamburg as well as at the office buildings of the StyleRemains GmbH in Hamburg.

Therefore, the treatment was undertaken in a neutral room in order to create the laboratory character with as little outside influences as possible in order to ensure a higher validity of the experiment. The online questionnaire for the control group was spread via social media channels and therefore, following a snowball effect. This control group did not receive the treatment in form of actually testing the AR app in person. Since this questionnaire was launched simultaneously to carrying out the actual experiment with the mobile AR application, an explicit indication was given that participants who already took part in the experiment with the AR app treatment should not fill out the online spread questionnaire in order to avoid double participation which would lead to a distortion of the research results. The following table presents a general overview of the general conditions and implementation of the experiment of this research study:

Implementation of experiment	Time and place of experiment execution
Experimental group:	Experimental group:
Treatment:	Time:
 testing the mobile AR Application 	- 3 days: 05.06 – 07.06.2018
of Zara	- 9.00 am – 06.00 pm
- Answering online questionnaire	
	Place:
	 Macromedia University
	 Offices of StyleRemains GmbH
	(workplace of researcher)
Control group:	Control group:
Treatment:	Time:
 Not testing mobile AR application 	- 7 days: 05.06 – 12.06.2018
ightarrow only written description sup-	Place:
ported by pictures showing a	 Online distribution of question-
step-by-step instruction on mobile	naire via snowball principle on
AR app functions within online	Facebook and Intranet of
questionnaire	StyleRemains GmbH

Table 5: Overview of experimental execution. Source: Own illustration.

6.2.4 Operationalization of theoretical constructs

To analyze the hypotheses, it is necessary to operationalize the theoretical constructs as to make them measurable for the purpose of this empirical research. Therefore, an operationalization of the independent as well as dependent variables are of importance since they are not measurable through a direct question but have to be tested through indicators. This procedure will lead to a higher level of validity of the research results (Calder, Phillips and Tybout, 1981). For the operationalization of the four dimensions of brand experience, already existing constructs are used which have to be slightly adapted to the purpose and context of this specific study since the construct of brand experience in relation to AR applications exhibit no previous research. However, the authors Brakus et al. (2009) invented a scale for generally measuring the concept of brand experience and suggested ways on how to operationalize the different dimensions. Therefore, the approach of the authors serves as the basis for operationalizing the theoretical constructs and will be adapted in so far that they are expedient for this research study.
First of all, the technological affinity was operationalized into four items as suggested by Olsson et al. (2013). Further, the influence of the sensory / esthetic dimension is measured by two items, which are indicating the sensory experience of the mobile AR application: the visual perception as well as the manual usage of the mobile AR application. This approach is adapted from Brakus et al. (2009) and applied to the use of a mobile AR application and therefore, the research context of this study. Secondly, the operationalization of the construct of the affective / entertaining dimension has to be measured. For this purpose, the basic emotions (happiness, surprise, sadness, fear, disgust and anger) suggested by Merten (2014) are gueried. Next to that, parts of a scale measuring positive affects by Moorman, Neijens and Smit (as cited in Bruner II, 2009) is used since they are supposed to measure a person's positive affective reaction to a stimulus. Only the parts of the scale that are applicable in the context of this research study and therefore to mobile AR application are used for this research. Moreover, the scale is added with suitable affects that one can possible have when making use of experiential technology in a negative way extracted from the scale of negative responses developed by Watson, Clark and Tellegen (as cited in Bruner II, 2009). In total the construct is measured by 16 items.

Thirdly, the operationalization of the intellectual / educational dimension was adopted by Brakus et al. (2009) and is measured by the following three items: brand knowledge, stimulation of curiosity and brand confrontation. In addition, the construct of the escapist / behavioral dimension has to be made measurable. In order to correctly measure this construct, two items are created: increased desire to shop, increased desire to visit the online shop or the stationary store. These items were adopted by Brakus et al. (2009) since a desire to shop or a desire to visit the store can be seen as an engagement in physical actions as suggested by the authors. The operationalized items will be measured by asking the participants of the research study to indicate their level of approval regarding a prescribed set of statements. The approval can be expressed by a six-point Likert scale. Only the theoretical construct of the affective / entertaining dimension will be measured by presenting the operationalized items and the participants can simply chose with which items they agree and select them.

Theoretical	ltems	Source
construct		
Technological affinity	 Processing speed of new apps Level of fear using new apps Likeability of technology in everyday life Usefulness of friends knowing 	Olsson et al. (2013)
	everyday life 4. Usefulness of friends knowing	

Sensory / esthetic	1. Visual perception	Brakus et al. (2009)
dimension	2. Manual usage	
Affective / entertaining dimension	1. Happiness7. Entertainment2. Surprise8. Enthusiasm3. Sadness9. Interest4. Fear10. Excited5. Disgust11. Determined6. Anger12. Inspired13. Fun14. Irritation15. Uncomfortable16. No Affects	Watson et al. (1988) Moorman et al. (2002) Merten (2014)
Intellectual / educa-	1. Brand knowledge	Brakus et al. (2009)
tional dimension	2. Brand curiosity	
	3. Brand confrontation	
Escapist / behavioral	1. Increased desire to shop	Brakus et al. (2009)
dimension	2. Increased desire to visit the store or online shop	
Purchase Intention	 Probability of future reuse for shopping online or offline Probability of increased visitation of store / online shop 	Schnmitt & Zarantello (2010)
Brand Loyalty	1. Changed loyalty to brand	Ramaseshan & Stein (2014)

Table 6: Operationalization of theoretical constructs. Source: Own illustration.

6.2.5 Structure and implementation of the survey

In general, the questionnaire for the experimental group and the control group were designed the exact same way with the same set of questions. The only difference was that the control group was given a detailed explanation on how the mobile AR application of Zara works in a step by step explanation supported by pictures after the second part of the questionnaire instead of receiving the opportunity to actually test the AR application like the experimental group. Moreover, the questions were asked in hypothetical way since the control group did not actually test the AR app. The whole questionnaire was formulated in German due to the simple fact that the questionnaire was targeted towards German participants and therefore, a further reason for formulating the questionnaire for both groups in German was to avoid a decrease in participation due to language barriers.

The online questionnaire for the experimental as well as the control group was divided into four parts. The first part presents the welcome page. Next to the general welcoming

of the participants, the purpose of the study was explained within this section. In addition, an approximate time frame for answering the questionnaire was given. In order to ensure that all participants have a general idea of a mobile AR application, the term augmented reality was defined and shortly explained within this section. However, the experimental group also had an idea about how such an AR application functions due to the testing. The control group was given a definition in the beginning as well as a detailed explanation at a later stage of the online questionnaire. Within the second part of the questionnaire, the participants were asked to answer questions regarding their own demographic information. These questions were asked by a single correct answer question type. Within this section, the following aspects were asked:

- Gender
- Age
- Profession

Moreover, the participants were asked questions regarding their affinity towards app and technology usage as well as their knowledge about augmented realty. These questions were asked with a single correct answer question type as well as a Likert scale in which the approval or disapproval of pre-formulated statements were asked. The following aspects were asked within the second part of the questionnaire:

- Average usage of apps

 \rightarrow single correct answer question

- Augmented reality familiarity

→ scale from "I know how augmented reality works" to "I do not know how augmented reality works"

Technology affinity
 → Six -point Likert scale reaching from "I fully agree" to "I do not fully agree"

The third part of the questionnaire focused on the usage of the mobile AR app from Zara. At this point, the questionnaire for the experimental group gives a short notice that the following questions should be answered against the background of having tested the mobile AR app. It was pointed out that the participants cannot make any mistakes but that they have to answer according to their personal estimations. This information was given to encourage the participants to give their truthful opinion. For the control group, a detailed explanation regarding the mobile AR app was given with a step by step explanation on how the application works, supported by pictures of the app.

Consequently, the participants were asked regarding their opinion, attitude as well as perception in relation to the mobile AR application. As to measure these aspects in the best possible way, single correct answer questions, multiple correct answer questions and a six-point Likert scale question with pre-formulated statements were applied. The following aspects regarding the actual or hypothetical usage of the mobile AR application was asked within the third section of the questionnaire:

- First impression of the mobile AR app
 - \rightarrow Single correct answer question
- Assessment regarding the level of innovation of the mobile AR app
 → Single correct answer question
- Importance of innovations in relation to brands
 → Single correct answer question

Next, questions regarding the dimensions of brand experience were asked to measure whether participants undergo a positive brand experience when using the mobile AR application of Zara according to Brakus et al. (2009). Therefore, the first question aimed at testing the affective dimension of brand experience and the participants were asked to assess which specific affects the usage of the mobile AR app has evoked. It was also possible to answer that no affects were evoked. A list of possible evoked emotions was given (Watson et al. and Moorman et al., as cited in Bruner II, 2009; Merten, 2014).

Affective /entertaining dimension:

Evoked affects having used the mobile AR application
 → Multiple correct answer question

The other three dimensions of Brakus et al. (2009) were tested by asking for a range of approval or disapproval of the participants according to pre-formulated statements. The six-point Likert scale ranges from I totally approve" to "I do not approve at all". In addition, the influence of a positive brand experience on brand loyalty and the purchase intention evoked through mobile AR was also tested within this question.

Sensory / esthetic dimension:

- Increased visual perception of the brand Zara through using the mobile AR application (positive influence on the senses)

- Increased perception of the brand Zara through manually using the mobile AR application (positive influence on the sensors)

Intellectual / educational dimension:

- Increased knowledge regarding the brand Zara through mobile AR app usage
- Sharpened confrontation regarding the brand Zara through mobile AR app usage

Escapist / behavioral dimension:

- Aroused curiosity for the presented products of Zara through mobile AR app usage
- Aroused need to visit the Zara store or online shop through mobile AR app usage (taking action)

Purchase Intention:

- Aroused need to shop the presented products of Zara through mobile AR app usage
- Probability of future AR app usage to shop online or offline (stationary)

<u>Brand Loyalty:</u>

- Positive change in brand attachment through mobile AR app usage

→ The last three dimensions as well as the construct of brand loyalty and purchase intention were asked with a six-point Likert scale reaching from "*I fully agree*" to "*I do not agree at all*" as well as five-point Likert scale reaching from 1-5 (1= highly probable; 5= highly improbable)

The fourth part of the survey contained questions regarding future implication of the mobile AR application, also indicating whether the usage of the mobile AR application leads to a more positive brand experience leading to a higher brand loyalty. Therefore, the first question of the fourth part was asked indicating the probability of occurrence regarding certain events. This was tested by pre-formulated statements and the participants were supposed to rate the probability of these statements. The probability was expressed in numbers from 1-4 where the number 1 means very likely and the number 5 means very unlikely. The statements asked were related to:

- Probability of a positive influence on the brand experience (online or offline) in the future when using the mobile AR app usage
- Probability of a future mobile AR app usage (online or offline)
- Probability of a visiting the Zara store more often due to a long-term implementation of the mobile AR app
 → Five-point Likert scale (1= highly probable; 5= highly improbable)

The last two questions inquired about the environment in which the participants would most likely make use of the mobile AR application and whether the participants were missing any specific functions in order to investigate if the usage of mobile AR applications for fashion brands is of importance in the future and whether such an application creates a value proposition for consumers. Therefore, questions targeting the following were asked:

- Shopping environment in which the usage of a mobile AR application is more likely
 - \rightarrow Multiple correct answer question
- Which functions would higher the probability of the mobile AR app usage
 → Multiple correct answer question

To avoid problems of comprehension the questionnaire was tested with five participants in a pretest. Spelling errors as well as misleading formulations were corrected. A few pre-formulated statements were simplified to guarantee a better understanding of the questions due to the fact that the topic of augmented reality is a rather complicated topic for people who haven't heard of the concept before. In the experimental group therefore, each participant was asked before filling out the questionnaire whether it is clear what an augmented reality application is. In general, the questionnaire was kept rather short to enhance the number of participants and to avoid a high dropout rate. For the creation of the questionnaire, the researcher chose the survey tool *"Umfrage Online"* due to the simple fact that it offers cost-effective features for students. Moreover, the tool also allows to insert pictures within the questionnaire which was of high importance for designing the questionnaire of the control group. In addition, the collected data can be downloaded in CSV and excel format which is needed for the statistical analysis in *SPSS Statistics*.

6.2.6 Assessment of quality criteria: reliability & validity

To ensure the usefulness and trustworthiness of the attained information the reliability as well as internal and external validity of this research study is going to be assessed:

Reliability:

According to Saunders et al. (2007), the reliability refers to whether the chosen data collection technique yields consistent findings. Moreover, reliability marks the level of accuracy of the test method and can be measured when answering the following three questions (Saunders et al., 2007):

- Will the measures yield the same results on other occasions?
- Will similar observations be reached by other observers?
- Is there transparency in how sense was made from the raw data?

The first question is can be answered positively due to the fact that the results were collected with a quantitative standardized approach. Moreover, the measurement method was chosen independent from location and time setting. However, a participant error might be possible since the results can be dependent on the current mood and emotional state the participant was in during the time of experiment. Nevertheless, it was ensured that the participants were taking part voluntarily without any pressure. Participant bias was avoided by explaining the purpose and the anonymity of the survey analysis in the experimental setting as well as on the introduction page of the online questionnaire. The setting of the experiment created a rather neutral environment trying to blank out any interruptions. Regarding the control group, this neutral setting cannot be ensured. However, since the collected data is numeric and quantitative, other observers would make the same observations from the collected data.

In addition, since all theoretical constructs are operationalized, and the statistical program SPSS is used for interpreting the results, transparency regarding the analyzation of the results is given.

Validity:

The quality criterion validity refers to whether the findings of a research study really report about what they pretend to report about (Saunders et al., 2007). Moreover, the concept of validity can be split in external and internal validity. The external validity reflects on the generalization of the research findings. In this case, the findings can be generalized since a quantitative research method was chosen and a representative number of participants took part in the experiment as well as in the online questionnaire for the control group. However, certain limitations have to be respected when generalizing the findings of this study. These limitations will be elaborated on in chapter 6.4.

Saunders et al. (2007) indicate that the internal validity is concerned with whether the measured effects actually rely on the treatment. Within this study, the internal validity for the experimental group was given due to the simple fact that the experiment was a laboratory experiment with an exact control over confounding variables. Therefore, the measured effects show a high level of dependency on the treatment, the mobile AR application. Looking at the control group, the internal validity can be assessed weaker since confounding variables could not be controlled by the researcher. Therefore, the internal validity of the experimental and control group varies since they took place in a different setting.

As a consequence, both researched groups slightly vary in their assessment of quality criteria since the implementation of the experiment was in the hands of the researcher whereas the questionnaire for the control group was filled out in absence of the researcher and therefore, no control over confounding variables was undertaken. Never-theless, the researcher tried to eliminate disruptive factors to the validity by matching the sample of both groups to almost the same size.

6.2.7 Presentation of statistical sample

Before presenting and analyzing the relevant statistical results in the next chapter, the statistical sample of the research will be described. In general, the type of sampling took place random. Since this study tested two different groups, the sample of the experimental group as well as the sample of the control group are going to be introduced. Therefore, the demographic characteristics of the participants will be presented. These aspects are the basis for the analysis of the research results since significant differences will be examined through comparing these two different sample groups. The experiment with the treatment of the Zara AR app was undertaken within three days and a number of 78 participants. The online questionnaire for the control group was available online for one week and was ended with a total number of 103 participants. As a consequence, in total 181 participants took part in this research study.

Experimental group: with mobile AR application treatment:

In order to provide a clear overview, at first the sample of the experimental group will be displayed. The gender of the sample splits into 28,21 % male and 71,79 % female. The age groups of the sample of the experimental group splits as the following:



Figure 5: Percentage distribution of age groups in the experimental group. Source: Own illustration.

The largest part of the sample is between the age of 20 and 29 demonstrating a percentage over 55,0 %. This significant tendency is most likely explainable due to the fact that the experiment with the additional questionnaire was undertaken at the Macromedia University where mostly students are taking part in the questionnaire and are as a consequence of this age group. However, in order to also gain insights into other demographic age groups the experiment was also undertaken at the workplace of the researcher. Therefore, the age groups 30-39 with 21,8 % as well as the age group 40-49 with 14,1 % makes up a representative sample size. The smallest age groups of the experimental group sample make up the age group of over 50 years old with 5,1 % and moreover, the age group of under 20 with only 3,9 %.

In the next step the professional status of the sample will be presented. In the experimental group the following percentages were revealed:

- Student: **0,0 %**
- Trainee: 7,7 %
- University student: 41,0 %
- Employed: 48,7 %
- Other: 2,6 %

The collected data reseals that most participants of the experimental group are employed with 48,7 %. The second largest group regarding the professional status makes up the university students with 41,0 %. Only 7,7 % are job trainees. Due to the fact that the experiment was conducted in a university setting as well as at the workplace of the

researcher the strong focus on these two professional groups gets obvious. 2,6 % indicated to have another profession which was not listed.

Control group: without mobile AR application treatment

In the following the sample of the control group who has not received the treatment of testing the mobile AR application but has only seen how the mobile AR application functions in pictures and a written description is going to be presented. The gender of the participants of this sample splits into 18,0 % male and 82,0 % female. In comparison to the experimental group less male and more female respondents took part within this questionnaire. This can be explained due to the online distribution on social media where the followers often have similar demographic characteristics as the researcher. However, the age groups of this sample divide as the following:



Figure 6: Percentage distribution of age groups in the control group. Source: Own illustration.

The largest part of this sample group is between the age of 20 to 29 with 65,0 %. Therefore, in both groups most participants are of the age between 20 and 29. The second largest age group of this sample is over 50 with 13 %, followed by the age groups of 30 to 39 with 11,0 % and 40 to 49 making up 8,0 %. Only 1,0 % was under the age of 20. In addition, the professional status amongst the control group is allocated as the following:

- Student: 1,0 %
- Trainee: 0,0 %
- University student: 43,7 %
- Employed: 44,7 %
- Other: 10,7 %

It becomes obvious that similar to the experimental group most participants are employed making up 44,7 % of the sample, followed by the university students with 43,7 %. The option "other" was chosen by 10,7 % of the sample and the participants who indicated to be pensioners or self-employed. Next to the demographic information the participants were asked to indicate their average expenditure of time a day regarding their usage of mobile apps. Therefore, a direct tabular comparison of both groups will be made:

Experimental group

Control group

- Less than 5 minutes: **5,1 %**
- 5-10 minutes: **7,7 %**
- 10-20 minutes: **14,1 %**
- 20-30 minutes: **23,1 %**
- More than 30 minutes: **50,0 %**
- Less than 5 minutes: 0,0 %
- 5-10 minutes: **20,4 %**
- 10-20 minutes: 7,8 %
- 20-30 minutes: **11,7 %**
- More than 30 minutes: 60,2 %

The figures show that in both samples the average expenditure of time a day regarding the usage of apps is more than 30 minutes. 50,0 % of the participants of the experimental group stated to use mobile applications more than 30 minutes a day. In comparison, in the control group even 60,2 % stated to make use of mobile apps more than 30 minutes a day. In the experimental group 5,1 % stated to use mobile applications less than five minutes a day whereas in the sample of the control group no participant indicated to make use less than five minutes a day mobile application. In the experimental group the second largest sector makes up 20 to 30 minutes a day with 23,1 % whereas in the control group the second largest segment regarding the average time exposure to mobile apps are five to ten minutes with a percentage of 20,4 %.

Additionally, the respondents of both questionnaires were asked to state their level of knowledge regarding the concept of augmented reality, which the respondents were able to indicate on a movable bar (see appendix). The number 100 stands for not having any knowledge about augmented reality whereas the number one stands for knowing the concept of augmented reality. When looking at the answer it becomes obvious that in both samples the concept of augmented reality is rather unknown. Within the experimental group a total number of 28 indicated to know nothing about augmented reality. The mean of this sample group is 74,35. Within the control group 39 participants declared to not be aware of augmented reality technology. Similar to the experimental group, the sample of the control group exhibits a mean of 72,04. Only one person in each sample indicated to fully be aware of the concept of augmented reality. The following tables indicate how both samples answered this question:





Figure 7: Augmented reality familiarity level of experimental group. Source: Own illustration.







The follow up question to the above evaluated question asked whether the respondents have tried augmented reality applications before. This will indicate if people having tried such augmented reality applications show a greater brand experience at a later stage. However, the question also provides further details about the sample of both groups. In the experimental sample, 59,0 % revealed that they have never tried augmented reality applications. At least 39,7 % stated to have used AR apps and 1,3 % is unsure about having used AR applications. In contrast, the sample of the control group shows a higher number of people who are unsure about having used AR apps. 27,2 % ticked the "I don't know" response option. Furthermore, in the control group sample 29,1 % stated to have used AR apps.

6.3 Research Results and Analysis

In the following chapter relevant findings regarding the impact of mobile augmented reality on the brand experience of fashion brands will be presented and analyzed according to significant differences between the experimental as well as the control group. Therefore, the results will be presented in the order of the previously presented hypotheses. First of all, the results regarding the influence of the four dimensions of brand experience evoked through the mobile AR application are going to be analyzed. Furthermore, the results regarding the influence of a positive brand experience on the purchase intention as well as brand loyalty are going to be described. Afterwards, other relevant results that should be regarded independently from the hypotheses will be pointed out.

Results regarding the technological affinity

First, it will be presented how the participants of the two sample groups answered the question regarding their technology and app usage in everyday life. Figure nine and ten visualize the answers of both groups regarding the pre-formulated statements.

Experimental group:

"Bitte beantworten Sie die folgenden Aussagen zu Ihrer Nutzung von Apps und Technologie im Alltag":



Figure 9: Technology and app affinity of the experimental group. n= 78. Source: Own illustration.

When looking at the diagram it becomes apparent that in general, all pre-formulated answers were mostly *fully agreed* and agreed upon. Only the last pre-formulated statement demonstrates other tendencies. Over 70 % *fully agreed* as well as *agreed* upon the statement "ich kann neue Apps sehr schnell anwenden". The second statement was fully agreed and agreed upon with over 65 %. Only around 9 % stated to *not fully agree* or *not agree* with the first two statements. Similar tendencies were observable when looking at the third pre-formulated statement saying "Ich empfinde Technologie im Alltag als sehr hilfreich". Over 90 % decaled to *fully agree, agree* and *rather agree* with this statement. The same trends can be recognized for the fourth statement, indicating that the experimental group perceived technologies, which are simplifying everyday life as positive since around 94 % *fully agreed, agreed* and *rather agreed* with the statement. Only the last pre-formulated proposition demonstrated that over 50 % declared to *fully disagree*, *disagree* and *rather disagree* with the statement "ich empfinde es als hilfreich, wenn meine Freunde sehen was ich gerade mache und wo ich bin".

Control group:



"Bitte beantworten Sie die folgenden Aussagen zu Ihrer Nutzung von Apps und Technologie im Alltag":

Figure 10: Technology and app affinity of the control group. n= 100. Source: Own illustration.

Similar to the research results of the experimental group, also the participants of the control group mainly *fully agreed, agreed* or *rather agreed* with the pre-formulated statements regarding their affinity to technology and apps. Therefore, 89 % indicated to be able to apply new apps very quickly. The second question was *fully agreed, agreed* and *rather agreed* by almost 80 %. Only two participants (1,94%) indicated to fully disagree with this statement. As one can see in the graphical representation of the results, the answer options *fully disagree and disagree* were not chosen at all for the third and fourth questions. However, *96 % fully agreed, agreed* or *rather agreed* to finding technologies helpful in everyday life. This is supported by 95 % who *fully agree, agree* or *rather agree* to having a positive attitude towards technology in everyday life. The last statement demonstrates similar tendencies as in the experimental group, indicating that almost 15 % fully disagree with the fact of finding it helpful when friends are aware of the own whereabouts and activities. Further 46 % disagreed or rather disagreed with the last preformulated statement.

As a consequence, for both groups the answer options *disagree* and *fully disagree* only made up between 2 and 10 % for both groups when not looking at the last statement. Therefore, it is recognizable that the participants mostly fully agreed, agreed and rather agreed when it comes to the pre-formulated statements that were constructed positively favoring the affinity of technology and apps. In addition, no significant differences when comparing the two sample groups with a *t*-test regarding their affinity to technology and apps were discovered *t* (179)-.996 =, p > .05 Therefore, the single variables making up the affinity of technology revealed no significant differences and thus, the experimental as well as the control group demonstrate similar mean values (see Appendix).

However, it was also of interest whether the technology affinity differs regarding the independent variable of age and whether respondents who indicated to most likely have a more positive brand experience using the mobile AR app also showed a higher affinity towards technology. First of all, a univariate ANOVA analysis with the independent variable age and the dependent score variable of technology affinity was conducted. The assumption that the independent variable has to be interval scaled was met as well as that the dependent variable has to be categorical (Fields, 2009). Moreover, due to a larger sample size than 30 the violation of the normal distribution in both groups is not assumed (Bortz and Schuster, 2010). Additionally, the assumption of variance homogeneity was given since the Levene test revealed a not significant value of p > .05 (see Appendix). Nevertheless, the post-hoc analysis in accordance with Gabriel (as cited in Field, 2009) revealed a significant difference between the age group of 20-29 in relation to the age groups of 40-49 and over 50 regarding the score of technology affinity. Therefore, the technology affinity was greater amongst the respondents belonging to the age group of 20-29 in comparison to the age group 40-49 (- 3,479, 95%-Cl, -4,5193, -2,4382). The same statistical test was undertaken for testing whether respondents with a greater brand experience evoked through mobile AR demonstrated a higher technology affinity. The assumptions were met including the variance homogeneity since p > .05. The univariate ANOVA analysis revealed that there was no significant difference of the variable regarding the probability of a positive brand experience and the technology affinity p >.05.

Results regarding the brand experience evoked through mobile AR application

Since the questionnaire questions for each dimension consisted out of different items, a score variable for each dimension was created in SPSS. In that way, the dimensions can be analyzed as whole including all relevant variables.

Analysis of hypothesis H1:

The verification of the hypothesis **H1** was undertaken by a *t*-test for independent samples. Before analyzing the results, the required assumptions for undertaking a t-test for independent samples were reviewed (Field, 2009). The independence of scores was given due to the fact, that the collected data was collected amongst independent groups of people. Moreover, the measurement of the dependent variable on an interval scale applied since a six-point Likert scale accounts for an interval scaling method (Greving, 2006). Participants who have not completed the questionnaire were excluded from the analysis (n=1). The existence of a normally distributed sampling was examined with the help of the Kolmogorov-Smirnov test (Field, 2009). The verification of the normal distribution has to be done for both groups independently. The results of the Kolmogorov-Smirnov test are demonstrated in the following table:

Table 7: Verification of normal distribution with a Kolmogorov-Smirnov Test (H1). Source: Own illustration.

<u> </u>	Komologorov-Smirn	Komologorov-Smirnov-Test						
	D	df	р					
Experimental Group	.275	77	.000					
Control Group	.170	103	.000					

*p<.05 **p<.01 ***p<.001

The Komolgorov-Smirnov test was significant for the experimental group as well as the control group, demonstrating that the assumption of normal distribution does not apply. However, since each sample group has a number of over 50 participants, one can assume that a normal distribution is still given (Bortz and Schuster, 2010). A further assumption of the *t*-test is the variance homogeneity, which is reviewed by the Levene test whether to see if variances are different in the two different groups. With regard to the sensory stimulation evoked through the mobile AR app, the variances of the two groups (experimental and control group) are not homogenous and therefore, the assumption of variances homogeneity has been violated and the *t*-test will be read in the row labelled *Equal variances not assumed*. When analyzing the SPSS output for the independent *t*-test one can identify a highly significant result with *t* (*22*, *963*) = -*4*, *178*, *p*<.05, approving that there is a significant difference between the experimental and control group (see Appendix).

Results of hypothesis testing H1:

Hypothesis **H1** postulated that the sensory stimulations evoked through the actual usage of the mobile AR application have a positive impact on the brand experience. It was

approved that there is a significant difference between the experimental group, who has tested the mobile AR application and the control group who has not actually tested mobile AR app. Since the average mean of the experimental group is 2,51 (1= totally agree, 6=totally disagree) whereas the mean of the control group is 3,16 (1= totally agree, 6=to-tally disagree), it was concluded that the sensory stimulation evoked through actually using the mobile AR app is perceived greater by the experimental group and therefore, H1 can be confirmed. The effect (d) according to Cohen (as cited in Field, 2009) was calculated to be d= 0.63 and is therefore considered as a medium to strong effect. Measuring the effect level according to Cohen (as cited in Field, 2009) is most appropriate since the two sample groups differ in their size (Field, 2009).

Analysis of hypothesis H2:

In hypothesis **H2** it was predicted that affects evoked through the actual usage of the mobile AR application positively impact the brand experience. Since this variable was differently gathered in comparison to the other dimensions, the analysis was adapted. Since it was also of interest for the researcher which specific affects and emotions were evoked, the variable of the affective / entertaining dimension was measured in a multiple answer choice and not in an interval scale. The results regarding the question *"Bitte beurteilen Sie, ob und welche Affekte die Nutzung der App in Ihnen hervorgerufen hat"* are presented below.

Results of hypothesis testing H2:

The experimental group revealed that the affects of *interest* with 74,4 %, *entertainment* with 60,3 % and *surprise* with 62,8 % were mostly evoked through actually using the mobile AR application. It is becoming apparent that solely positive affects were named. Negative affects such as *fear* was only named by 1,3 %. The answer option *no affects* was indicated only by 1,3 % as well. The control group demonstrates similar evoked affects. Mostly named was interest with 54,4 %, then entertainment with 43,7 % and thirdly, inspiration with 36,9 %. It becomes obvious that also in this sample group only as positive considered affects were evoked through the usage. However, within the control group also 19,4 % indicated to have felt *no affects* at all which is clearly different to the sample of the experimental group. Furthermore, the control group indicated further suggestions for further affects such as: *uselessness, disinterest, uncertainty* but also *excitement*. Consequently, the rather negative evoked affects within the control group became clear in comparison to the experimental group. Hypotheses **H2** can be approved since the experimental group who has actually tested the mobile AR application experienced the usage more positively.

Analysis of hypothesis H3:

Hypothesis **H3** forecasted that the level of brand knowledge and curiosity acquired through the actual usage of the mobile AR application positively impacts the brand experience. Therefore, a *t*-test for independent samples was calculated to investigate whether there are significant differences between the experimental and the control group. Before validating the hypothesis H3, a Kolmogorov-Smirnov test was conducted to test the assumption of a normal distribution. The result of the Kolmogorov-Smirnov test was significant and therefore the assumption of normal distribution cannot be approved. Nevertheless, as already mentioned as soon as the sample size is larger than 50, a normal distribution can be assumed (Bortz and Schuster, 2010).

<u>Table 8:</u> Verification of normal distribution with a Kolmogorov-Smirnov Test (H3). Source: Own illustration.

	Komologorov-Smirnov-Test							
	D	df	p					
Experimental Group	.171	78	.000					
Control Group	.139	103	.000					

*p<.05 **p<.01 ***p<.001

The Levene test revealed that the variance homogeneity is not given and therefore, the *t*-test will be analyzed in the row labelled *Equal variances not assumed*. Further, the *t*-test with the score variable of the intellectual/ educational dimension items was analyzed.

Results of hypothesis testing H3:

It was approved that there is a statistically significant difference between the experimental and control group regarding the intellectual/ educational dimension score variable consisting out of the items brand knowledge, brand confrontation and brand curiosity. The *t*-test for independent samples was significant with *t* (178,986)-1,985 =, p < .05 (see Appendix). Hypothesis **H3** stated that the usage of a mobile AR application leads to a higher level of knowledge about the brand, increasing the brand experience. Since it was approved that there is a statistically significant difference between the experimental group, who has actually tested the mobile AR application and the control group, **H3** can be approved. The average means of *4*,564 for the experimental group and *5*,068 for the control group (1= totally agree, 6=totally disagree) indicate that the experimental group demonstrated a more positive reaction to the score variable of the intellectual / educational dimension. However, the average mean of only *4*,564 also indicates that the experimental group does not completely positively agree with the pre-formulated

statements. The effect level of d =.28 corresponds according to Cohen (as cited in Field, 2009) with a low effect.

Analysis of hypothesis H4:

Hypothesis **H4** presumed that the behavioral interaction with the mobile AR applications leads to an increased brand experience that results in physical actions. The *t*-test will yield information whether there is a significant difference between the two samples indicating if the actual usage of the mobile AR application of Zara influences the brand experience and leads to the desire to shop the presented clothes and therefore, might lead to the physical action of visiting the store or online shop.

The variable of the escapist / behavioral dimension consists out of two items that were summed up in a statistical score. Testing the score variable with the Kolmogorov-Smirnov test for normal distribution revealed that the data was not normally distributed since the result was statistically significant on the highest level and consequently, **H1** *"the attribute of the escapist / behavioral dimension score is not normally distributed"* was approved. However, in this case the normal distribution was also assumed due to the large sample size of *181* participants. The Levene test demonstrated that the variances are not homogeneous.

<u>Table 9:</u> Verification of normal distribution with a Kolmogorov-Smirnov Test (H4). Source: Own illustration.

<u> </u>	Komologorov-Smirnov-Test								
	D	df	р						
Experimental Group	.127	78	.003						
Control Group	.157	103	.000						

*p<.05 **p<.01 ***p<.001

Results of hypothesis testing H4:

The *t*-test for independent variables revealed that there was no statistically significant difference between the brand experience leading to a physical action of the experimental group and the control group, with *t* (178,465)-1,282 =, p > .05 (see Appendix). Comparing the mean values of both groups supports the result of the statistical test, since both samples demonstrate a similar mean value with *3*,058 for the experimental group and *3*,296 for the control group. As a result, hypothesis **H4** could not be approved. Nevertheless, it gets obvious that the mean value of the experimental group can be considered as slightly more positive when *1* = *totally agree* and *6* = *total disagree*.

Analysis of hypothesis H5:

Hypothesis **H5** postulated that a positive brand experience acquired through the actual usage of a mobile AR application leads to a purchase intention. This hypothesis was verified making use of a univariate variance analysis without repeated measurements. First of all, the assumptions for conducting a univariate ANOVA were reviewed (Field, 2009). The independence of the data, as well as the measurement of the dependent variable on interval scale level, was given. Whether the data was normally distributed was tested with the Kolmogorov-Smirnov test (Field, 2009).

<u>Table 10:</u> Verification of normal distribution with a Kolmogorov-Smirnov Test (H5). Source: Own illustration.

	Komologorov-Smirn		
	D	df	p
Experimental Group	.170	78	.000
Control Group	.144	102	.000

*p<.05 **p<.01 ***p<.001

Since the Kolmogorov-Smirnov test was statistically significant for both groups, it is assumed that the assumption of normal distribution is violated. However, according to Bortz and Schuster (2010) one can assume a normal distribution when the sample size is larger than n=30 since the sample size is considered to be more robust against the violation of a normal distribution. The assumption of variance homogeneity was tested with a Levene test. With regard to the variable of purchase intention the variances of both groups were not significantly different, F(8,170) = 1,838, p > .05. Therefore, the variance homogeneity was given.

Results of hypothesis testing H5:

The SPSS output of the univariate ANOVA demonstrated that the complete model is highly significant, F(9,170) = 22,800, p < .001, aligned R2 = .523 (see Appendix). Therefore, there was a significant effect of a positive brand experience on the purchase intention. Therefore, the model explained 52.3 % of the spread around the total average value. Moreover, the SPSS output demonstrated that the group membership towards the experimental group or the control group did not demonstrate a significant relationship with the purchase intention, F(1,170) = 0,004, p > .05. Additionally, The Bonferroni correction indicated that all five levels of a positive brand experience are statistically different. As a result, the analysis approved the effect of a positive brand experience evoked through mobile AR on the purchase intention. Consequently, hypothesis **H5** was confirmed.

Analysis of hypothesis H6:

Hypothesis **H6** predicted a that positive brand experience acquired through mobile AR applications leads to a greater brand loyalty. Similar to hypothesis **H5**, the testing was undertaken by a univariate ANOVA analysis in SPSS. Therefore, the variable of brand loyalty was tested along with the variable of positive brand experience evoked through mobile AR that was imposed in question 13 of the questionnaire. The independence of the data was given next to the measurement of the dependent variable on interval scale level. Whether the data was normally distributed was tested with the Kolmogorov-Smirnov test (Field, 2009).

<u>Table 11:</u> Verification of normal distribution with a Kolmogorov-Smirnov Test (H6). Source: Own illustration.

	Komologorov-Smirn	Komologorov-Smirnov-Test						
	D	df	p					
Experimental Group	.246	78	.000					
Control Group	.179	103	.000					

*p<.05 **p<.01 ***p<.001

Since the Kolmogorov-Smirnov test was statistically significant for both groups, it is assumed that the assumption of normal distribution is violated. However, it was presumed that a normal distribution is given when the sample size is larger than n=30 (Bortz and Schuster, 2010). The assumption of variance homogeneity was investigated with a Levene test. Regarding the variable of brand loyalty, the variances were not significantly different, *F* (8,170) = 1,242, *p* >.05. As a result, the variance homogeneity was given (see Appendix).

Results of hypothesis testing H6:

Having analyzed the test on intermediate subject effects, it became obvious that the complete model is significant, F(9,170) = 11,290, p < .001, aligned R2 = .256 (see Appendix). However, the group membership in relation to the dependent variable of brand loyalty was not statistically significant with p > .05 and therefore, there was no difference regarding the two sample groups and the effect on brand loyalty. Nevertheless, the model explained 25.36 % of the spread around the total average value of brand loyalty with an effect size of $\eta^2 = .191$. This is considered to be a strong effect according to Keller (2015). Since the general model demonstrated a statistical significance, the univariate ANOVA test confirmed the effect of a positive brand experience evoked through mobile AR on the brand loyalty and therefore, hypothesis **H6** was verified. Lastly, the main

results regarding the hypotheses and their statistically significance will be summarized and displayed in the following table:

Hypothesis &	Analysis method	Statistical result	Impact
Object			
Technology	Univariate variance	Significant	Respondents of age group
Affinity & age	analysis	difference	20-29 show greater technol-
groups			ogy affinity than respond-
			ents belonging to age group
			<i>40-49</i> and <i>over 50</i>
Technology	Univariate variance	<u>No</u> significant	Respondents who revealed
Affinity & positive	analysis	difference	a greater probability of a
brand experience			positive brand experience
evoked through AR			evoked through AR do <u>not</u>
			show a greater technology
			affinity
H1:	<i>t</i> -test for	Hypothesis	Impact on the brand experi-
Sensory / esthetic	independent	verified	ence evoked through AR
dimension	samples		
H2:	Comparison	Hypothesis	Impact on the brand experi-
Affective / entertain-	of statistical	verified	ence evoked through AR
ing dimension	mean value		
H3:	<i>t</i> -test for	Hypothesis	Impact on the brand experi-
Intellectual / educa-	independent	verified	ence evoked through AR
tional dimension	samples		
H4:	<i>t</i> -test for	Hypothesis	No impact on the brand ex-
Econist / boboy	independent	falsified	perience evoked through
ioral dimonsion	samples		AR
		L hun ath a aig	A positive brend experience
			A positive brand experience
Purchase Intention	analysis	vermed	evoked inrough AR impacts
			the purchase intention
H6:	Univariate variance	Hypothesis	A positive brand experience
Brand Loyalty	analysis	verified	Evoked through AR impacts
			the brand loyalty

Table 12: Summary of the essential results. Source: Own Illustration.

Additional relevant results

In the following, additional relevant results, complementing the analysis of the hypotheses are going to be presented. First of all, results regarding the following question will be covered below: *"Wie bewerten Sie den ersten Eindruck der AR App?"*.

Experimental group:

The participants of both sample groups were asked about their first impression regarding the mobile AR application of Zara. It became obvious that in both groups the first

impression was mostly very positive and positive. In the experimental group *16,7 %* stated to find the application *very positive* and *69,2 %* indicated to find the app *positive*. Only *11,5 %* stayed *neutral* and *2,6 %* stated to find it *less positive*. No participant of the experimental group stated to have a *negative* impression of the mobile AR application.

Control group:

As already mentioned, also the control group indicated to mostly have a very positive or positive impression of the mobile AR application even if they did not actually used the mobile app of Zara. Therefore, 17, 5 % of the 103 participants stated to have a *very positive* impression and 42,7 % had a positive first impression. 25,2 % stayed neutral which is a considerable higher percentage than in the experimental group. However, also within the control group no participant stated to have had a *negative* impression. 14,6 % pointed out to have a rather *less positive* impression. Further, the participants were asked regarding their perception whether they find the AR app innovative and whether innovations from brands are of importance for them. Therefore, the following results occurred when asking the following questions: *"Wie berwerten Sie den Innovationsgrad der AR App?"* and *"Sind Ihnen neue Innovationen bei Marken wichig?"*.

Experimental group:

The experimental group indicated that 37,2 % assess the mobile AR app as *very inno-vative* and even 51,3 % pointed out to evaluate the app as *innovative*. As a consequence, over 85 % think that the AR app from Zara is *innovative* or even *very innovative*. 5,1 % stayed *neutral* and only 5 participants, so 6,4 % stated to find the app *less innovative*. Moreover, the question whether the participants find innovation from brands important was answered with *yes* by 92,3 %. Only 2,6 % answered with *no* and 5,1 % were *unsure*.

Control group:

Analyzing the results of the control groups, it becomes obvious that very similar answers to the experimental group were given. 31,1 % found the innovativeness level of the app as very *high*. 43, 7 % answered to find the app *innovative* and only 5,9 % found the app either *less innovative or not innovative at all*. However, 19,4 % stayed *neutral*, which is a recognizable higher percentage than in the experimental group. Whether innovative-ness is of importance for brands, 72,8 % of the participants answered with *yes*. 10,7 % stated to find it *not important* and 16, 5 % is *unsure* about this fact.

In addition, it was of interest whether the participants would reuse the application in the future and if the long-term introduction to the market would higher the probability of a store visit online or offline. Moreover, it was asked whether the mobile AR app usage

would lead to an increased positive brand experience in the future. The first variable of the positive brand experience was used for undertaking the univariate ANOVA analysis to test the impact on the purchase intention and brand loyalty. However, the results will be presented in more detail since they are of high importance for the discussion. The respondents were asked to indicate the probability towards three pre-formulated statements.

Experimental group:

Regarding the question "Die Nutzung der AR App wird mein Markenerlebnis in Zukunft online oder offline positiv beeinflussen" (1= most probable, 5= most improbable). 55,13 % of the participants chose number two meaning that it would probably positively influence their brand experience in the future online as well as offline. Only 1,28 % stated that it would most probably not positively influence their future brand experience. 20,51 % tended to the middle when number one was very probably and five very improbable. In addition, the results show that 37,18 % would probably make use of the AR app in the future and 11,54 % most probably. The long-term introduction of the AR app in the stores or the online shop would most probably and probably motivate almost half of the participants with 46,16 %. But also 25,19 % indicated that it would be improbable or most improbable that they would visit the store online or offline because of the long-term introduction of the Zara AR app.

13. Bitte bewerten Sie die Wahrscheinlichkeit der folgenden Aussagen: *

Anzahl Teilnehmer: 78

	1 (1)		2 (2)		3 (3)		4 (4)		5 (5)			
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	ø	±
Die Nutzung der AR App wird mein Mark	8x	10,26	43x	55,13	16x	20,51	10x	12,82	1x	1,28	2,40	0,89
Ich werde die AR App auch in Zukunft v	9x	11,54	29x	37,18	22 x	28,21	10x	12,82	8x	10,26	2,73	1,15
Die langfristige Einführung der AR App b	9x	11,54	27x	34,62	22x	28,21	14x	17,95	6x	7,69	2,76	1,12

Figure 11: Results overview of question 13 - experimental group. Source: Own illustration.

Control group:

In comparison to the experimental group, the control group sample answered slightly more negatively, meaning with an increased tendency towards the *improbability* regarding the occurrence of the pre-formulated statements. The mean values of the control group were slightly higher. The first pre-formulated statement of question 13 was answered with a mean value of 2,82 whereas the experimental group has a mean value of 2,40. It became apparent that the control group clearly showed a higher tendency to choose number three (see Fig. 12).

13. Bitte bewerten Sie die Wahrscheinlichkeit der folgenden Aussagen: *

Anzahl Teilnehmer: 102

	1 (1)		2 (2)		3 (3)		4 (4)		5 (5)			
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	ø	±
Die Nutzung der AR App würde mein Ma	11x	10,78	32x	31,37	31x	30,39	20x	19,61	8x	7,84	2,82	1,11
Ich würde die AR App in Zukunft anwen	11x	10,78	36x	35,29	23x	22,55	23x	22,55	9x	8,82	2,83	1,16
Die langfristige Einführung der AR App b	8x	7,84	25x	24,51	33x	32,35	24x	23,53	12x	11,76	3,07	1,13

Figure 12: Results overview of question 13 - control group. Source: Own illustration.

The variable of positive brand experience was also statistically tested with a *t*-test for independent samples in order to support the verification of the above tested hypotheses. The assumptions of this test were all given besides the variance homogeneity, as the Levene test revealed: p < .05. However, the *t*-test was analyzed according to unequal variances and was statistically significant t (4,493) = -2,858, p < .0.1. Consequently, the two samples indicated a significant difference regarding the probability of having a positive brand experience evoked through AR. Additionally, the participants were asked *"In welchem Shopping Umfeld würden Sie eine AR app eher anwenden?"*. The following insights resulted from the questionnaire:

Experimental group:

Within the experimental group sample 65, 4 % answered that they would use it most likely for the *online shop* directly, 53, 8 % indicated that they would use it within the *stationary store* and 70,5 % and therefore, the highest probability would be for *online purchased packages*, like the Zara AR app proposes. However, only 2,6 % indicated that they would not use it in any of those shopping environments.

Control group:

The control group in contrast stated with 70,9 % that they would mostly make use of the AR application directly while *online shopping*. Only 22,3 % would apply the application in a *stationary environment*. 39,8 % responded that they would make use with *online purchased packages* which is significantly less than in the experimental group. Also interesting is that 15,5 % would not use the AR app in any of the named shopping environments and therefore, the control group who has not used the application show a recognizable lower level of interest of making use of the AR application in a shopping situation online or offline. Lastly, the participants were asked to indicate which specific features would increase the probability of using the mobile AR application: *"Welche der*

folgenden Funktionen würde die Wahrscheinlichkeit einer Nutzung der AR App erhöhen?".

Experimental group:

The most chosen answer in the experimental group with 82,1 % was the possibility of designing a *personalized 3D avatar* with the own measurements. Moreover, 70,5 % of the participants would have wished for *more information about the products* regarding the fit of the clothes and the materials. It also became clear that the usage probability would be increased when *customer reviews* were added to the AR application. 29,5 % would have wished for *more information regarding the brand* and only 1,3 % stated that *no function was missing*.

Control group:

The control group pointed out very similar figures. The possibility of creating a *personalized 3D avatar* was chosen by 76,7 %, followed by the option of receiving *more information about the fashion products* itself. Furthermore, similar to the experimental group 69,9 % revealed that *outfit proposals* would increase the probability of using the AR app. Of particular interest was that one participant underlined, within the supplementary field, that from his perspective the app lacks various features as well as that the AR app does not have any added value in comparison to the classic product videos in online shops. Additionally, it was especially emphasized by another respondent that seeing the fashion products on oneself would be more interesting than seeing it on a model.



<u>Figure 13:</u> Overview of functions increasing the probability of AR app usage of control and experimental group. Source: Own illustration.

6.4 Discussion

After having analyzed and presented the results of this research in detail, the findings will be interpreted and critically reflected on as to implement the generated insights into the present state of research. In general, there is to say that hypotheses **H1**, **H2**, **H4**, **H5** and **H6** were statistically verified whereas hypothesis **H3** was statistically falsified. Before interpreting and discussing results of the hypotheses and the main part of this study, the revealed insights regarding the technology affinity will be shortly discussed.

Discussion of results regarding the technological affinity

The results indicated that the younger age groups, especially the age group of 20-29, independently from the sample affiliation, demonstrated a higher affinity towards technology.

As a consequence, one can argue that a technological product such as the mobile AR application might rather be attractive for the younger generation due to the fact that they show a greater understanding of basic functionalities and are able to faster adapt to new technology applications. In addition, the concept of technology affinity implicates the question whether the respondents see innovative technologies, that add convenience to everyday life, as positively. As a result, it can be argued that the younger respondents who grew up in times of the digitalization and technological process could feel more comfortable using an innovative application like the mobile AR app. This assumption can be supported by a study of the German institute for more confidence and safety on the internet (2012), which revealed that digital natives who are considered to be of younger age are more comfortable and safe interacting with the internet than digital outsiders or digital immigrants who are mostly older aged and are considered to rather be sceptic and who predominantly see possible threats in relation to the internet. Since mobile AR technology is internet-based, the assumptions of the study could be transferred to the usage of mobile AR apps.

However, this research study also exposed that there was no statistically significant difference between the technology affinity and the probability of a positive brand experience and therefore, it could be argued that a greater affinity towards technology favors the positive impact of a mobile AR application on the brand experience of fashion brands but does not necessarily depend on it. One also has to note the limitation of this study that most respondents of both samples belonged to the age group of 20-29 and therefore, the statistical result could show a certain bias. Additionally, future research could reveal whether there are differences within the age group of 20-29 in relation to the affinity of technology having influence on the brand experience using mobile AR apps.

Discussion of results regarding the brand experience evoked through mobile AR

Further the main research subject of this study has to be discussed and critically reflected on. Therefore, reference to the state of research will be drawn as well as the new implications will be discussed.

H1: Sensory / esthetic dimension:

Former studies demonstrated that the concept of brand experience has a sensory as well as an esthetic dimension (Brakus et al., 2009; Pine II and Gilmore, 1999). Whether mobile AR applications trigger this dimension of a brand experience was not researched so far but can be verified due to the results of this research study. Since the results revealed a significant difference between the experimental group and the control group it can be assumed that actually making use of the mobile AR application leads to a more positive brand experience of the fashion brand Zara. Therefore, one could argue that the actual usage of an AR app stimulates the senses as well as the haptics and therefore, leads to an intensified perception of the brand. The statistical result was supported by comparing the average mean value, which underlined the greater consent to the preformulated statements regarding the sensory / esthetic dimension by the experimental group and therefore, supports this assumption. Nevertheless, the additional relevant results also showed that the first impression of the AR app was mostly positive amongst both sample groups and therefore, it could be concluded that even without actually having tested the mobile AR application, the respondents demonstrated at least a positive attitude towards the esthetics and the initial impression of the AR app.

H2: Affective / entertaining dimension:

The literature review revealed that next to the above-named dimension, also the affective and entertaining dimension have an influence on the brand experience. The results of the research revealed that generally, both sample groups mostly pointed out to have or would have felt certain affects and therefore, one can argue that the actual as well as the hypothetical usage of a mobile AR application evokes certain affects. Since the answer option "no affects" was barely chosen by the participants one can argue that almost all participants were approached emotionally. Since the results revealed that the experimental group demonstrated more positive affects it can be concluded that the actual usage of the Zara AR app leads to experiencing more positive affects and therefore, results in a positive brand experience. It should nevertheless, here be mentioned that the data evaluation of this question is not statistically proven since the assumptions for undertaking a statistical test in SPSS were not met. Respondents mainly indicated to be inspired, entertained, surprised as well as interested and therefore, it is of importance for marketers of fashion brands to be aware that different affects and emotions can be evoked leading to various brand experiences. That in particular the just mentioned affects were mainly mentioned, could also be explained by the fact that the technology of AR is rather unknown amongst both sample groups, as this study revealed. Consequently, one has to be aware that the positive reaction evoked through the AR app could also be evoked due to the innovativeness of the AR technology and therefore was seen as very interesting and entertaining.

Nevertheless, in a fashion context the affect of inspiration can be seen as very desirable. This is supported by a study of Gentile et al. (2007), which underlines that experiencing a firm's brand positively on an emotional level leads to a stronger connection between the brand it's customer, which in turn can increase the loyalty of the customer. The influence of mobile AR on the brand loyalty will be discussed at a later point of this chapter.

H3: Intellectual / educational dimension:

Hypothesis **H3**, relating to the intellectual / educational dimension was verified by this study. The statistical analysis revealed that there was a significant difference between the experimental and control group and therefore, it is assumed that the brand knowledge, brand curiosity as well as brand confrontation was evoked and stimulated through the actual usage of the mobile AR application and therefore, had a positive impact on the brand experience of Zara for the respondents of the experimental group. However, this result should be discussed since there was a special reference by some respondents who wished for further information about the brand of Zara or the products within the application itself.

The remark regarding the lack of added value for customers making use of this AR application was supported by the fact that many respondents of both sample groups would have wished for further features, as the additional relevant results of the questionnaire revealed. The participants showed a tendency to mark functionalities with an informational character such as more product and brand information as well as customer evaluations as missing. Further, inspirational information such as outfit combinations were named as desirable for the AR application. Consequently, incorporating those additional features to the mobile AR application, could even increase the value proposition of making use of such an AR application. Also, it would increase the stimulation of the intellectual / educational dimension, which refers to the knowledge of a brand acquired through experiences. Further research studies could provide insights regarding the special type of knowledge and skills an AR app has to provide in order to stimulate the intellectual/ educational dimension and therefore, the brand experience even more.

H4: Behavioral / escapist dimension:

Former studies by Brakus et al., (2009) as well as Pine II and Gilmore (1999) demonstrated the behavioral / escapist dimension as part of a brand experience. However, research did not reveal whether this dimension is approached when creating a brand experience through a mobile AR application as a brand-related stimulus for marketing purposes. The results of this study pointed out that there is no significant difference between the experimental group, who actually tested a mobile AR application of the fashion brand Zara, and the control group, who only received a detailed description and pictures of the application. The assumption was that the actual and active bodily experience of the customer with the mobile AR application leads to a greater experience with the brand of Zara and therefore, to physical actions such as the desire to visit the stationary or online store or to even shop the presented products. This result contradicts with the definition of Brakus et al. (2009) since the authors suggested "that brand-related stimuli constitute the major source of subjective, internal consumer responses, which we refer to as "brand experience" (p. 53). Since there was no significant difference between the groups it can be argued that the actively usage of the mobile AR app does not make a difference towards just looking at pictures of the application in relation to the behavioral / escapist dimension and leading to physical actions such as buying the presented fashion outfits.

However, this can also be discussed positively since the respondents of the control group were even appealed without actively using the AR application and therefore, no significant difference was tested. In addition, the control group was encouraged to transfer themselves in the situation of having tested the AR application, which could be a reason for the correlation of the answers of both samples regarding the behavioral / escapist dimension. Nevertheless, it can also be pointed out that in order to achieve a greater response regarding the desire to shop the presented outfits or to increase the desire of visiting the online or stationary store, the mobile AR application should add further features as to create added value for the consumer. Many respondents underlined that the added value would be increased when the 3D avatar would have the own body measurements and a similar look. As a result, it can be concluded that seeing an own designed 3D avatar would lead to a more positive brand as well as shopping experience, especially for online retail. Customers then would be able to try outfits from the online-shop before purchasing them. Furthermore, one could argue that in a stationary setting this feature

would be time saving since the customer would not have to try the desired clothes but can simply try them with their own 3D avatar leading to a greater brand experience at the point of sale.

H5: Purchase Intention:

Independent from the result of H4, it was statistically tested whether there a positive brand experience has an effect on the purchase intention. The result was significant and consequently, it can be argued that a positive brand experience evoked through mobile AR can lead to an increased purchase intention since it stimulates the desire to shop the shown products or to visit the online or offline store of Zara. The result was independent from the belonging to the experimental or control group and is therefore, generally valid for both samples. It becomes obvious that this result slightly contradicts the evaluation of H4 and it has to be noted that the univariate variance analysis for testing the effect on the purchase intention was undertaken with a different variable which was extracted from question 13, statement one. Since most participants from both groups fully agreed or agreed with this proposition, it can be argued that the mobile AR application increases the brand experience positively and moreover, the statistical test supports the assumption that a positive brand experience impacts the purchase intention of consumers. However, it has to be noted that the variance of the purchase intention was explained with around 52 % and as a result, further concepts have an influence on the purchase intention.

H6: Brand Loyalty:

The statistical test for **H6** was significant and it can be concluded that a positive brand experience evoked through mobile AR effects the brand loyalty. Nevertheless, the model explained a variance of around 25 % and therefore it has to be noted that the concept of brand loyalty is only explainable by about 25 % with a positive brand experience and that there are more factors influencing this brand concept. A study of Iglesias (2011) is supporting the conclusion, that a positive brand experience influences the brand loyalty. The author underlines that to create loyal customers, companies have to improve and work on their brand experience as to generate active and affective connections.

Discussion of additional relevant results and limitations

Lastly, the additional relevant results as well as the limitations of this study will be critically discussed. An interesting insight from the survey, that was not covered by the hypotheses, demonstrates that most participants from both groups did not have any prior knowledge about the technology of augmented reality. Additionally, a rather small percentage has tried AR applications. As a consequence, this research has to be considered in the foreground of these aspects.

One has to be aware that the positive affects evoked through the mobile AR application might be due to the surprise effect of the rather unknown and new technology. As an implication for marketers this means that when considering mobile AR applications for marketing purposes, one has to be aware that the positively influenced brand experience might occur due to the innovativeness and uniqueness of the technology. As soon as many brands would make use of this technology it could appear boring or not that fascinating anymore to consumers.

Nevertheless, since a very high percentage of the experimental group as well as the control group assed the mobile AR application as innovative, it can be concluded that such a mobile AR application is widely seen as an innovative product and as a consequence, marketers who make use of this innovative technology transfer this effect to their brand. Consumers then might recognize the brand as very innovative and ahead of the competition. This implication is supported by the results of this study since over 90 % of the experimental group and over 70 % of the control group indicated the importance of innovativeness regarding fashion brands.

However, as mentioned before, the respondents still pointed out that there are more app features missing. Due to the simple fact that this experiment was only carried out with one prototype of an AR application, it has to be discussed that the presented results may differ according to the application design and environment in which the app was tested in. One can argue that the brand experience might have been even more positive for the experimental group when being tested in a stationary environment where further brand stimuli have an effect on the consumer. Nonetheless, it can be argued that the results now simply depend on the mobile AR application and are not irritated by other disturbing factors.

Additionally, a further limitation of this study is, that respondents who had a strong prior attitude or a former experience with the fashion brand Zara might have been influenced in their answers for the survey and in their experience with the brand. Lastly, the framework of this study has to be discussed. The investigated dimensions of brand experience were solely researched in relation to the mobile AR application of Zara. Certainly, other reference objects who play a role for the brand experience such as the logo, design elements, slogans but also the concepts of brand attitude, brand attachment and brand personality were not part particularly part of this research but might have had an

influence on the participants. Studying how design elements of an AR application influence the brand experience or whether a prior brand attitude can be changed with the usage of mobile AR applications, are new approaches for future research. To not exceed the theoretical as well as time framework of this study, the focus was narrowed on the four dimensions of brand experience and the research of whether they are evoked through the actual usage of a mobile AR application in order to create a brand experience, which influences the purchase intention and the brand loyalty.

7 Conclusion

In the course of the technological process and the digitalization in all areas of life, fashion brands are under pressure to create new and innovative ways for enhancing the brand experience of consumers. On the one hand, the needs and wants of consumers in relation to shopping strongly shifted towards a cross-device strategy with a strong focus on the mobile device, enabling customers to access information as well as online shops everywhere and at any time. On the other hand, the competition and the need for action for fashion brands has become very strong in times of today's diverse e-commerce offer and the disappearance of the stationary fashion retail in provincial towns. This is leading to an increased need to gain competitive advantage through innovative technologies, meeting the digital demands of the consumers, as well as to withstand the pressure of relevant share- and stakeholders.

To cope with the just mentioned market developments in the fashion retail industry, the technology of augmented reality and especially mobile AR applications, represent an efficient and innovative way for fashion brands to enhance the brand experience at the point of sale in stationary stores but also for creating memorable experiences for online shopping purposes. The results of this research study underline that mobile augmented reality can be seen as a possible solution for fashion brands to innovate their marketing from a brand perspective as well as providing added value in form of enhanced brand experiences for their customers. In comparison to traditional marketing activities, the usage of a mobile AR application can be seen as a more difficile task for the consumer. The affinity towards technology and the openness regarding the digital transformation can make it difficult for fashion brands to reach all potential customer segments with mobile augmented reality applications.

Nonetheless, the research results of this study revealed that generally all participants demonstrated a positive impression of the AR application even though most respondents had not tried such an application before. Moreover, the experiment revealed that actually

making use of a mobile AR application impacts the brand experience more positively than just receiving information and pictures about it. This was tested by researching the dimensions of a brand experience and to investigate whether these dimensions were stimulated through using a mobile AR application.

Since the vast majority of the hypotheses could statistically be verified and only one hypothesis regarding the behavioral /escapist dimension was falsified, the influence of a mobile AR application on the brand experience of fashion brands could be proven. The analysis of the results especially revealed that there is no significant difference between the respondents who indicated that mobile AR applications would positively influence their brand experience and their affinity towards technology. As a result, it was concluded that an increased affinity towards technology would only favor the AR experience. Furthermore, the probability of having a positive brand experience evoked through mobile AR was independent from the age groups and therefore lead to the conclusion that mobile AR can be seen as an efficient marketing tool for brand communication purposes across age groups.

Additionally, this research study showed that a positive brand experience, evoked through mobile AR, has a relevant effect on the purchase intention of fashion brands as well as on the brand loyalty. Consequently, this supports the conclusion that fashion brands can not only make use of augmented reality in order to enhance the experiences for their customers but also to increase sales and to attach the customer to the brand from a long-term perspective. Creating memorable experiences therefore, should be one priority for marketers and mobile augmented reality a technology to consider when planning such experiences. Since this research also revealed that the prototype AR application used for this experiment lacks many beneficial features and therefore, marketers should pay extra attention to additional features to enhance the added value for customers. Regular user experience tests could help marketers as to create the best experience possible and to communicate the brand in the most effective way. Next to the entertaining factor of such an AR application, the informational character should always be in the focus as well. As this research study demonstrated it is of high importance to incorporate other relevant trends of the digital e-commerce landscape, such as outfit combination proposals and online customer evaluations.

All in all, mobile augmented reality applications provide the chance to support the shopping experience of consumers and to enhance the brand experience of fashion brands in a favorable way. However, even if augmented reality depicts to be a rather old technology but its application in a fashion retail environment is seen as brand-new, further

63

research has to be conducted in order to investigate the impact potential on other brand related concepts and to see whether AR has potential to provide consumers with memorable experiences on a long run. Nevertheless, since mobile AR applications have an impact on the brand experience of fashion brands, marketers should strongly consider incorporating it in their marketing strategy as to support the corporate success of fashion companies.

List of References

Ambler, T., Bhattacharya, C. B., Edell, J., Keller, K. L., Lemon, K. N., & Mittal, V. (2002). Relating brandand customer perspectives on marketing management. *Journal of Service Research*, *5*(1), 13-25.

Arnoldy, S. (2017, April 18). Augmented Reality im Einzelhandel: Kundenerlebis auf einem neuen Niveau. Retrieved from https://www.pwc.de/de/handel-und-konsum-guter/augmented-reality-im-einzelhandel-kundenerlebnis-auf-einem-neue-niveau.html.

Augmented and Mixed Reality: Macro-Trend (2018). Retrieved from https://www.trendone.com/trends/macro-trends/macro-trend-detail/augmented-andmixed-reality.html.

Azuma, R., Baillot, Y., Behringer, R., Feiner, S., Julier, S., & MacIntyre, B. (2001). Recent advances in augmented reality. *IEEE computer graphics and applications*, 21(6), 34-47.

Bortz, J., & Schuster, C. (2011). Statistik für Human-und Sozialwissenschaftler: Limitierte Sonderausgabe. Berlin, Heidelberg: Springer-Verlag.

Brakus, J. J., Schmitt, B. H., & Zarantonello, L. (2009). Brand experience: what is it? How is it measured? Does it affect loyalty?. *Journal of marketing*, 73(3), 52-68.

Bruner II, G. (2009). *Marketing Scales Handbook: A Compilation of Multi-Item Measures for Consumer Behaviour & Advertising Research Vol. 5.* Carbondale, Illinois: GCBII Production.

Calder, B., Phillips, L., Tybout, A. (1981, September). Designing Research for Application, *Journal of Consumer Research*, 8 (2), 197–207.

Cambridge University Press (2014). Cambridge Dictionary – experience. Retrieved Retrieved on 08th of May 2018, from https://dictionary.cambridge.org/de/worter-buch/englisch/experience

Carbone, L. P., & Haeckel, S. H. (1994). Engineering customer experiences. *Market-ing Management*, *3*(3), 8.

Dennis, C., Brakus, J. J., Gupta, S., & Alamanos, E. (2014). The effect of digital signage on shoppers' behavior: The role of the evoked experience. *Journal of Business research*, 67(11), 2250-2257.

Deutsches Institut für Vertrauen und Sicherheit im Internet (2012). DIVSI Milieu-Studie zu Vertrauen und Sicherheit im Internet PDF. Retrieved from https://www.divsi.de/wp-content/uploads/2013/07/DIVSI-Milieu-Studie_Gesamtfassung.pdf.

Euromonitor (2018). Marktvolumen im Segment Bekleidung und Schuhe in Deutschland in den Jahren 2013 bis 2018 (in Millionen Euro). Retrieved from https://de.statista.com/statistik/daten/studie/493317/umfrage/marktvolumen-im-segment-bekleidungund-schuhe-in-deutschland/.

Field, A. (2009). *Discovering Statistics using SPSS 3rd Edition*. London: Sage Publications.
Furht, B. (2011). Handbook of augmented reality. New York: Springer Science & Business Media.

Gentile, C., Spiller, N., Noci, G. (2007). How to Sustain the Customer Experience: An Overview of Experience Components that Co-create Value With the Customer. *European Management Journal*, 25 (5), 395-410.

Greving, B. (2006). Skalieren von Sachverhalten. In: Albers, S., Klapper, D., Konradt, U., Walter, A., Wolf, J. (Hrsg.): *Methodik der empirischen Forschung* (p.73-88). Wiesbaden: Deutscher Universitäts-Verlag.

Goldman Sachs (2016). Forecast user base of the augmented and virtual reality (VR) software market worldwide in 2020 and 2025, by segment (in millions). Retrieved from https://www.statista.com/statistics/610126/worldwide-forecast-augmented-and-mixed-reality-software-users-by-segment/.

Hoellerer, T., Feiner, S. (2004). Mobile Augmented Reality. *Telegeoinformatics: Location-Based Computing and Services. Taylor and Francis Books Ltd, 1,* 1-39.

Horizont (2014). Was sind aus Ihrer Sicht aktuelle Herausforderungen bei der Markenführung? Retrieved from https://de.statista.com/statistik/daten/studie/284918/umfrage/umfrage-unter-markenverantwortlichen-zuherausforderungen-bei-der-markenfuehrung/ on 19.06.2018.

IDC (2017, November 29). Forecast augmented (AR) and virtual reality (VR) market size worldwide from 2016 to 2021 (in billion U.S. \$). Retrieved from https://www.sta-tista.com/statistics/591181/global-augmented-virtual-reality-market-size/.

Iglesias, O., Singh, J. J., & Batista-Foguet, J. M. (2011). The role of brand experience and affective commitment in determining brand loyalty. *Journal of Brand Management, 18*(8), 570-582.

Jausen, M. (2014). Markenbildung im digitalen Zeitalter: Alles neu, nichts anders?. In *Marke und digitale Medien* (pp. 187-206). Wiesbaden: Springer Fachmedien.

Javornik, A. (2016). Augmented reality: Research agenda for studying the impact of its media characteristics on consumer behaviour. *Journal of Retailing and Consumer Services*, *30*, 252-261.

KMPG Fashion 2025 – Studie zur Zukunft des Fashion-Markts (2015). Retrieved from http://www.mitteldeutschland.com/sites/default/files/uploads/2016/01/28/kpmg-fashion2025-studiezurzunkunftdesfashion-marktsindeutschland.pdf.

Korte, C. (2018). Wie Zara mit Augmented Reality das Shopping revolutioniert. Retrieved from https://www.harpersbazaar.de/fashion/zara-app.

Matera, A. (2018). Zara introduces Augmented Reality Shopping App. Retrieved from https://www.teenvogue.com/story/zara-augmented-reality-shopping-app

Mascarenhas, O. A., Kesavan, R., & Bernacchi, M. (2006). Lasting customer loyalty: a total customer experience approach. *Journal of consumer marketing*, 23(7), 397-405.

McDonald, S. (2018, May 14). These 10 Retailers Are Leading the Way in Augmented Reality. Retrieved from https://footwearnews.com/2018/business/technology/aug-mented-reality-retail-shopping-shoes-fashion-1202561189/

McKinsey & Company, The Business of Fashion (2017). The State of Fashion 2018. Retrieved from https://cdn.businessoffashion.com/reports/The_State_of_Fashion_2018_v2.pdf.

Merrilees, B. (2016). Interactive brand experience pathways to customer-brand engagement and value co-creation. *Journal of Product & Brand Management*, *25*(5), 402-408.

Merten, J. (2014). Basisemotionen. Lexikon der Psychologie. Bern: Hogrefe Verlag,

Milgram, P., Takemura, H., Utsumi, A., & Kishino, F. (1995, December). Augmented reality: A class of displays on the reality-virtuality continuum. *Telemanipulator and telepresence technologies*. 2351, 282-293.

Moreira, A. C., Fortes, N., & Santiago, R. (2017). Influence of sensory stimuli on brand experience, brand equity and purchase intention. *Journal of Business Economics and Management*, *18*(1), 68-83.

Morrisson, S., Crane, F.G. (2007, January 15). Building the service brand by creating and managing an emotional brand experience. *Journal of Brand Management, 14*(5), 410-421.

Nysveen, H., Pedersen, P. E., & Skard, S. (2013). Brand experiences in service organizations: Exploring the individual effects of brand experience dimensions. *Journal of Brand Management*, 20(5), 404-423.

Olsson, T., Lagerstam, E., Kärkkäinen, T., & Väänänen-Vainio-Mattila, K. (2013). Expected user experience of mobile augmented reality services: a user study in the context of shopping centres. *Personal and ubiquitous computing*, *17*(2), 287-304.

Olsson, T., Salo, M. (2011). Online User Survey on Current Mobile Augmented Reality Applications. *Mixed and Augmented Reality (ISMAR), 2011 10th IEEE International Symposium.* 75-84

Oxford University Press (2018). English Oxford Living Dictionaries – experience. Retrieved on 08th of May 2018, from https://en.oxforddictionaries.com/definition/experience.

Palmer, A. (2010). Customer experience management: a critical review of an emerging idea. *Journal of Services marketing*, 24(3), 196-208.

Pine II, B. J., Gilmore, J. H. (1998). Welcome to the experience economy. *Harvard business review*, *76*, 97-105.

Pine II, B.J., Gilmore, J. H. (1999). The experience economy. *Work is theatre and every business a stage*.

Pine II, B. J., & Gilmore, J. H. (2007). *Authenticity: What consumers really want.* Boston: Harvard Business Press.

Ramaseshan, B. Stein, A. (2014). Connecting the dots between brand experience and brand loyalty: The mediating role of brand personality and brand relationships. *Journal of Brand Management*, 21 (7/8), 664-683.

Saunders, M., Lewis, P., Thornhill, A. (2007). *Research Methods for Business Students (4th Ed.)*. Harlow: Pearson Education Limited. **Schmitt, B. H. & Zarantonello, L. (2010).** Using the brand experience scale to profile consumers and predict consumer behaviour. *Journal of Brand Management*, *17*(7), 532-540.

Scholz, J., & Smith, A. N. (2016). Augmented reality: Designing immersive experiences that maximize consumer engagement. *Business Horizons*, *59*(2), 149-161.

Shocker, A., Srivastava, R., & Ruekert, R. (1994). Challenges and opportunities facing brand management: An introduction to the special issue. *Journal of marketing research*, *31*(2), 149-158.

Spreer, P., Kallweit, K. Gutknecht, K. (2012). Improving the In-Store Customer Information Process using Mobile Augmented Reality. *Proceedings of the 11th International Conference on Research in Advertising.* 1-11

Statista (2017 A). E-Commerce-Markt für Bekleidung in Deutschland. Retrieved from https://de.statista.com/statistik/studie/id/31481/dokument/e-commerce-markt-fuer-be-kleidung-in-deutschland-statista-dmo-statista-dossier/.

Statista (2017 B). Handel: Offline vs. Online: Entwicklung-Vergleiche-Konsumenten. Retrieved from https://de.statista.com/statistik/studie/id/43363/dokument/handel-offline-vs-online-entwicklung-vergleiche-konsumenten/.

Statista (2018). Vertriebskanäle im Markt für Bekleidung. Retrieved from https://de.sta-tista.com/outlook/9000000/137/bekleidung/deutschland#market-arpu.

Tractica (2017). Mobile augmented Reality Market Reach 1.9 Billion Unique Monthly Active Users by 2022. Retrieved from https://www.tractica.com/newsroom/press-re-leases/mobile-augmented-reality-market-to-reach-1-9-billion-unique-monthly-active-us-ers-by-2022-according-to-tractica/, on 17.04.2018

Trends & Innovations Fashion Retail (2015, December 14). Die Tailorit Branchenstudie. Retrieved from https://tailorit.de/sites/default/files/file_downloads/TAILO-RIT_Studie_TrendsInnovationsFashionRetail_082013.pdf.

Van Krevelen, D.W.F., Poelman, R. (2010). A survey of augmented reality technologies, applications and limitations. *International journal of virtual reality*, 9(2), 1-2.

Varadarajan, R., Srinivasan, R., Vadakkepatt, G. G., Yadav, M. S., Pavlou, P. A., Krishnamurthy, S., & Krause, T. (2010). Interactive technologies and retailing strategy: A review, conceptual framework and future research directions. *Journal of Interactive Marketing*, 24(2), 96-110.

Välkkynen, P., Boyer, A., Urhemaa, T., & Nieminen, R. (2011). Mobile augmented reality for retail environments. In *Mobile HCI 2011 Workshop on Mobile Interaction in Retail Environments*.

Verschuren, P., Doorewaard, H., & Mellion, M. J. (2010). *Designing a research project* (Vol. 2). The Hague: Eleven International publishing house.

Appendix

Appendix 1: Online questionnaire - experimental group	.70
Appendix 2: Online questionnaire - control group	.76
Appendix 3: Results - experimental group	.84
Appendix 4: Results - control group	.91
Appendix 5: SPSS outputs	.98
Appendix 6: Prototype Zara AR App1	12

Appendix 1: Online questionnaire - experimental group

Augmented Reality Apps in der Modebranche

Seite 1

Liebe Teilnehmer/innen,

vielen Dank, dass Sie an meinem Versuch teilgenommen haben. Im Rahmen meiner Masterarbeit führe ich eine Befragung zum Thema Augmented Reality Apps* in der Modebranche durch. Wie solch eine Augmented Reality (AR) App funktionieren kann, haben Sie soeben gesehen. Ich bitte Sie nun die folgenden Fragen zu beantworten.

Die Umfrage nimmt ca. 8-10 Minuten in Anspruch. Die Daten werden selbstverständlich vertraulich behandelt.

Vielen Dank für die Unterstützung! Katharina Höfler

* Augmented Reality Apps = Eine Software Applikation, welche digitalen visuellen Inhalt in das reale Umfeld des Nutzers integriert. Bekanntes Beispiel ist die Pokémon GO App.

Seite 2

Sind Sie männlich oder weiblich? *

Bitte wählen... 💌

Wie alt sind Sie? *

\bigcirc	Unter 20 Jahre
\bigcirc	20-29 Jahre
\bigcirc	30-39 Jahre
\bigcirc	40-49 Jahre
\bigcirc	Über 50 Jahre
Was	ist Ihr Beruf? *
Was	ist Ihr Beruf? * Schüler/in
Was	ist Ihr Beruf? * Schüler/in Auszubildene/r
Was	ist Ihr Beruf? * Schüler/in Auszubildene/r Student/in

Sonstiges:

Wie lange nutzen Sie Apps durchschnittlich am Tag? *



Kennen Sie sich mit Augmented Reality aus?

Ich kenne mich sehr gut aus		Ich kenne mich überhaupt nicht
		aus

Haben Sie schon mal Augmented Reality Apps angewendet? *

\bigcirc	Ja
\bigcirc	Nein
\bigcirc	Weiß ich nicht

Bitte beantworten Sie die folgenden Aussagen zu Ihrer Nutzung von Apps und Technologie im Alltag *

	Stimme voll und ganz zu	Stimme zu	Stimme eher zu	Stimme eher nicht zu	Stimme nicht zu	Stimme überhaupt nicht zu
lch kann neue Apps sehr schnell anwenden	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Ich habe keine Angst davor unbekannte Apps zu benutzen	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
lch empfinde Technologie im Alltag als sehr hilfreich	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
lch bin Technologien, die den Alltag vereinfachen gegenüber positiv eingestellt	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Ich empfinde es als hilfreich, wenn meine Freunde sehen was ich gerade mache und wo ich bin	0	\bigcirc	0	\bigcirc	0	0

Sie haben soeben die Augmented Reality (AR) App der Marke ZARA angewendet. Ich bitte Sie nun die folgenden Fragen unter Berücksichtigung dieser Erfahrung zu beantworten. Hierbei können Sie keine Fehler machen, geben Sie lediglich Ihre ganz persönliche Einschätzung an.

Wie bewerten Sie den ersten Eindruck der AR App? *

\bigcirc	Sehr positiv
\bigcirc	Positiv
\bigcirc	Neutral
\bigcirc	Weniger positiv
\bigcirc	Negativ

Wie bewerten Sie den Innovationsgrad der AR App? *

\bigcirc	Sehr innovativ
\bigcirc	Innovativ
\bigcirc	Neutral
\bigcirc	Weniger innovativ

Überhaupt nicht innovativ

Sind Ihnen neue Innovationen bei Modemarken wichtig? *

\bigcirc	Ja
\bigcirc	Nein
\sim	

Weiß ich nicht

Bitte beurteilen Sie, ob und welche Affekte die Nutzung der App in Ihnen hervorgerufen hat *

Mehrfachauswahl möglich

Freude		Aufregung
Furcht		Inspiration
Zorn		Entschlossenheit
Trauer		Belustigung
Ekel		Unterhaltung
Überraschung		Irritation
Euphorie	\Box	Überforderung
Interesse	\Box	Gar keine Affekte
Sonstige]	

Bitte beantworten Sie die folgenden Aussagen zu Ihrer Nutzung der AR App von ZARA:

	Stimme voll und ganz zu	Stimme zu	stimme eher zu	Stimme eher nicht zu	Stimme nicht zu	Stimme überhaupt nicht zu
Durch die Nutzung der AR App wird meine visuelle Wahrnehmung der Marke ZARA gestärkt (Positive Beeinflussung der Sinne)	0	0	\bigcirc	\bigcirc	\bigcirc	0
Durch die manuelle Nutzung der AR App wird meine Wahrnehmung der Marke ZARA gestärkt (Positive Beeinflussung der Sensorik)	0	0	\bigcirc	\bigcirc	\bigcirc	0
Mein Wissen über die Marke ZARA wurde durch die Nutzung der AR App erhöht	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Durch die Nutzung der AR App wurde ich angeregt, mich mit der Marke ZARA auseinanderzusetzen	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Meine Neugierde für die gezeigten Produkte der Marke ZARA wurde durch die Nutzung der AR App geweckt	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Mein Bedürfnis das gezeigte Outfit zu shoppen wurde durch die Nutzung der AR App geweckt	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Durch die Nutzung der AR App wurde mein Bedürfnis den ZARA Store oder Onlineshop zu besuchen geweckt	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Durch die Nutzung der AR App hat sich meine Verbundenheit zu der Marke ZARA positiv verändert	t O	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc

Bitte bewerten Sie die Wahrscheinlichkeit der folgenden Aussagen: *

1= Sehr wahrscheinlich

5	Cohr		broohoi	nlioh
D =	Sem	unwa	nischer	men

	1	2	3	4	5
Die Nutzung der AR App wird mein Markenerlebnis (online oder offline) in Zukunft positiv beeinflussen	\bigcirc	0	\bigcirc	\bigcirc	\bigcirc
Ich werde die AR App auch in Zukunft verwenden (Im Store oder für Online Shopping)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Die langfristige Einführung der AR App bei ZARA wird mich dazu bewegen, häufiger im ZARA Store oder im ZARA Online Shop zu stöbern	0	0	0	0	\bigcirc

In welchem Shopping Umfeld würden Sie eine AR App eher anwenden? *

Mehrfachauswahl möglich					
	Im Onlineshop				
	Im stationären Store				
	Zuhause - bei bestelltem Paket				
	Weder noch				

Letzte Frage! Welche der folgenden Funktionen würden die Wahrscheinlichkeit einer Nutzung der AR App erhöhen?*

Mehrfachauswahl möglich

Mehr Informationen zu der Marke
Mehr Informationen zu den gezeigten Produkten (Passform, Materialien)
Vorschläge für Kombinationsmöglichkeiten der Outfits
Kaufbewertungen von Kunden
Die Möglichkeit einen eigenen 3D Avatar mit den eigenen Maßen anzulegen
Informationen zum Onlineshop oder zum stationären Store (Wegweiser im Store, Verfügbarkeiten der Produkte)
Es haben keine zusätzlichen Funktionen gefehlt
Sonstiges:



Appendix 2: Online questionnaire - control group

Augmented Reality Apps in der Modebranche

Seite 1

Liebe Teilnehmer/innen,

mein Name ist Katharina Höfler und ich studiere im letzten Mastersemester Brand Management an der Macromedia, University of Applied Sciences in Hamburg. Im Rahmen meiner Masterarbeit führe ich eine Befragung zum Thema Augmented Reality Apps in der Modebranche durch. Was eine Augmented Reality App ist, wird Ihnen im Laufe der Umfrage erklärt.

Die Umfrage nimmt ca. 8-10 Minuten in Anspruch. Die Daten werden selbstverständlich vertraulich behandelt.

Vielen Dank für die Unterstützung!

Seite 2

Sind Sie männlich oder weiblich? *

Bitte wählen... 💌

Wie alt sind Sie? *

- Unter 20 Jahre
- 20-29 Jahre
-) 30-39 Jahre
- 0 40-49 Jahre
- Über 50 Jahre

Was ist Ihr Beruf? *

Schüler/in Auszubildene/r Student/in Berufstätige/r Sonstiges:

Wie lange nutzen Sie Apps durchschnittlich am Tag? *



Kennen Sie sich mit Augmented Reality aus?

Ich kenne mich sehr gut aus	Ich kenne mich überhaupt nicht
	aus

Haben Sie schon mal Augmented Reality Apps angewendet? *

\bigcirc	Ja
\bigcirc	Nein
\bigcirc	Weiß ich nicht

Bitte beantworten Sie die folgenden Aussagen zu Ihrer Nutzung von Apps und Technologie im Alltag *

	Stimme voll und ganz zu	Stimme zu	stimme eher zu	Stimme eher nicht zu	Stimme nicht zu	Stimme überhaupt nicht zu
lch kann neue Apps sehr schnell anwenden	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
lch habe keine Angst davor unbekannte Apps zu benutzen	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
lch empfinde Technologie im Alltag als sehr hilfreich	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
lch bin Technologien, die den Alltag vereinfachen, gegenüber positiv eingestellt	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Ich empfinde es als hilfreich, wenn meine Freunde sehen was ich gerade mache und wo ich bin	0	\bigcirc	0	\bigcirc	\bigcirc	0

Im Folgenden erkläre ich Ihnen was eine Augmented Reality (AR) App ist und zeige Ihnen ein aktuelles Beispiel. Es ist wichtig, dass Sie sich die Bilder des Beispiels gewissenhaft anschauen, um die darauf folgenden Fragen beantworten zu können.

Generell,ist eine Augmented Reality App eine Software Applikation, welche digitalen visuellen Inhalt in 3D in das reale Umfeld des Nutzers integriert. Ein bekanntes Beispiel dafür ist die Pokémon GO App.

Auf den Bildern unten können Sie ein Beispiel einer AR App der Modemarke ZARA sehen. Diese AR App ist momentan in der Testphase und zeigt daher nur Looks der aktuellen Studio Kollektion für Frauen. Männer, die an dieser Umfrage teilnehmen, bitte ich daher sich vorzustellen, dass die Anwendung auch mit einem männlichen Model gestaltet werden kann.

In diesem Beispiel wird die App eingesetzt nachdem man ein Online Paket von ZARA erhalten hat. Es besteht dann die Möglichkeit mit der AR App sich die aktuelle Studio Kollektion anhand eines virtuellen Models und somit in echter Bewegung ansehen. Im Folgenden zeige ich Ihnen Schritt für Schritt wie die AR App genutzt werden kann. Im Anschluss dazu möchte ich Sie gerne zu Ihrem Eindruck bezüglich der App befragen.

Schritt 1



ZARA AR App öffnen: Anzeigebild beim Öffnen der AR App.

Schritt 2



Die Kamera Funktion des Smartphones öffnet sich in der App. ZARA AR Logo scannen.

Schritt 3



Das virtuelle Model erscheint auf dem Display des Smartphones.

Bild 4



Das Model präsentiert auf dem virtuellen Laufsteg (das Online Paket) ein aktuelles Outfit aus der ZARA Kollektion.

Schritt 5

🕻 Zara AR 🔐 🗢	09:35	93 %
\times		0



SEE PRODUCTS

Das gezeigt Outfit kann direkt über die "Shop the Look" Funktion im Onlineshop von ZARA gekauft werden.

Wie bewerten Sie den ersten Eindruck der AR App?*



Wie bewerten Sie den Innovationsgrad der AR App? *

\bigcirc	Sehr innovativ
\bigcirc	Innovativ
\bigcirc	Neutral
\bigcirc	Weniger innovativ
\bigcirc	Überhaupt nicht innovativ

Sind Ihnen neue Innovationen bei Modemarken wichtig? *

\bigcirc	Ja
\bigcirc	Nein
\bigcirc	Weiß ich nicht

Bitte beurteilen Sie, ob und welche Affekte die Nutzung der App in Ihnen hervorrufen würde *



	Freude		Aufregung
	Furcht	\Box	Inspiration
\Box	Zorn	\Box	Entschlossenheit
\Box	Trauer	\Box	Belustigung
	Ekel	\Box	Unterhaltung
	Überraschung		Irritation
	Euphorie		Überforderung
	Interesse	\Box	Gar keine Affekte
	Sonstige]	

Bitte stellen Sie sich vor, e	die AR App von ZARA	angewendet zu haben und	bewerten Sie die folgenden	Aussagen:
-------------------------------	---------------------	-------------------------	----------------------------	-----------

	Stimme voll und ganz zu	Stimme zu	Stimme eher zu	Stimme eher nicht zu	Stimme nicht zu	Stimme überhaupt nicht zu	Weiß ich nicht
Durch die Nutzung der AR App würde meine visuelle Wahrnehmung der Marke ZARA gestärkt werden (Positive Beeinflussung der Sinne)	0	\bigcirc	0	\bigcirc	\bigcirc	0	0
Durch die manuelle Nutzung der AR App würde meine Wahrnehmung der Marke ZARA gestärkt werden (Positive Beeinflussung der Sensorik)	0	\bigcirc	0	\bigcirc	\bigcirc	\bigcirc	0
Mein Wissen über die Marke ZARA würde durch die Nutzung der AR App erhöht werden	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Durch die Nutzung der AR App würde ich dazu angeregt werden, mich mit der Marke ZARA auseinanderzusetzen	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	0
Meine Neugierde für die gezeigten Produkte der Marke ZARA würde durch die Nutzung der AR App geweckt werden	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	0
Mein Bedürfnis das gezeigte Outfit zu shoppen würde durch die Nutzung der AR App geweckt werden	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	0
Durch die Nutzung der AR App würde mein Bedürfnis den ZARA Store oder Onlineshop zu besuchen geweckt werden	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	0
Durch die Nutzung der AR App würde sich meine Verbundenheit zu der Marke ZARA positiv verändern	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	0

Bitte bewerten Sie die Wahrscheinlichkeit der folgenden Aussagen: *

- 1= Sehr wahrscheinlich
- 5= Sehr unwahrscheinlich

	1	2	3	4	5
Die Nutzung der AR App würde mein Markenerlebnis (online oder offline) in Zukunft positiv beeinflussen	0	0	0	0	\bigcirc
lch würde die AR App in Zukunft anwenden (Im Store oder für Online Shopping)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Die langfristige Einführung der AR App bei ZARA würde mich dazu bewegen, häufiger im ZARA Store oder im Online Shop zu stöbern	0	0	0	0	\bigcirc

In welchem Shopping Umfeld würden Sie eine AR App eher anwenden? *

Mehrfachauswahl möglich

	Im Onlineshop
	Im stationären Store
	Zuhause - bei bestelltem Paket
\square	Weder noch

Letzte Frage! Welche der folgenden Funktionen würden die Wahrscheinlichkeit einer Nutzung der AR App erhöhen?*

Mehrfac	hauswahl möglich
	Mehr Informationen zu der Marke
	Mehr Informationen zu den gezeigten Produkten (Passform, Materialien)
	Vorschläge für Kombinationsmöglichkeiten der Outfits
	Kaufbewertungen von Kunden
	Die Möglichkeit einen eigenen 3D Avatar mit den eigenen Maßen anzulegen
	Informationen zum Onlineshop oder zum stationären Store (Wegweiser im Store, Verfügbarkeiten der Produkte)
	Es haben keine zusätzlichen Funktionen gefehlt
	Sonstiges:



Appendix 3: Results - experimental group

Augmented Reality Apps in der Modebranche

- 1. Sind Sie männlich oder weiblich? *
 - Anzahl Teilnehmer: 78
 - 56 (71.8%): Weiblich
 - 22 (28.2%): Männlich



 Wie alt sind Sie? * Anzahl Teilnehmer: 78
 3 (3.8%): Unter 20 Jahre
 43 (55.1%): 20-29 Jahre
 17 (21.8%): 30-39 Jahre
 11 (14.1%): 40-49 Jahre
 4 (5.1%): Über 50 Jahre



3. Was ist Ihr Beruf? *

Anzahl Teilnehmer: 78



4. Wie lange nutzen Sie Apps durchschnittlich am Tag? *



5. Kennen Sie sich mit Augmented Reality aus?



Standardabweichung: 27,25

6. Haben Sie schon mal Augmented Reality Apps angewendet? *

Anzahl Teilnehmer: 78

31 (39.7%): Ja



1 (1.3%): Weiß ich nicht



 Bitte beantworten Sie die folgenden Aussagen zu Ihrer Nutzung von Apps und Technologie im Alltag * Anzahl Teilnehmer: 78

	St vo ga	imme Il und nz zu (1)	Sti	imme zu (2)	St eh	imme er zu (3)	Sti e nic	imme her ht zu (4)	St: nic	imme :ht zu (5)	Sti über nic	mme haupt ht zu (6)			[Arith	ımetisc ıdardat	hes Mit weichu	ttel (Ø) ung (±)	
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±	1	2	3	4	5	6
lch kann neue Apps sehr	28x	35,90	27x	34,62	11x	14,10	9x	11,54	2x	2,56	1x	1,28	2,14	1,18		Ŷ				
Ich habe keine Angst dav	33x	42,31	19x	24,36	15x	19,23	7x	8,97	3x	3,85	1x	1,28	2,12	1,24	j	4				
Ich empfinde Technologi	34x	43,59	25x	32,05	12x	15,38	5x	6,41	2x	2,56	-		1,92	1,04	Ì					
Ich bin Technologien, die.	.30 x	38,46	24x	30,77	20x	25,64	3x	3,85	1x	1,28	-	-	1,99	0,96		Į				
Ich empfinde es als hilfre.	9x	11,54	8x	10,26	19x	24,36	22x	28,21	18x	23,08	2x	2,56	3,49	1,34				0		

- 8. Wie bewerten Sie den ersten Eindruck der AR App? *
 - Anzahl Teilnehmer: 78
 - 13 (16.7%): Sehr positiv
 - 54 (69.2%): Positiv
 - 9 (11.5%): Neutral
 - 2 (2.6%): Weniger positiv
 - (0.0%): Negativ



9. Wie bewerten Sie den Innovationsgrad der AR App? *

Anzahl Teilnehmer: 78

29 (37.2%): Sehr innovativ

- 40 (51.3%): Innovativ
- 4 (5.1%): Neutral
- 5 (6.4%): Weniger innovativ

- (0.0%): Überhaupt nicht innovativ



10. Sind Ihnen neue Innovationen bei Modemarken wichtig? *

Anzahl Teilnehmer: 78

72 (92.3%): Ja

2 (2.6%): Nein

4 (5.1%): Weiß ich nicht



11. Bitte beurteilen Sie, ob und welche Affekte die Nutzung der App in Ihnen hervorgerufen hat *



Antwort(en) aus dem Zusatzfeld:

- Spielerei

12. Bitte beantworten Sie die folgenden Aussagen zu Ihrer Nutzung der AR App von ZARA:

Anzahl Teilnehmer: 78

	Sti vol gar	mme l und nz zu (1)	Sti	mme zu (2)	Sti eh	mme er zu (3)	Sti e nic	imme her ht zu (4)	Sti nic	imme :ht zu (5)	Sti übe nic	mme rhaupt ht zu (6)				Arithr	netis darda	ches N bweich	littel (Ø nung (±	ð) ±)
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±	1	2	3	4	5	
Durch die Nutzung der AR.	. 3x	3,85	44x	56,41	20x	25,64	9x	11,54	2x	2,56	-	-	2,53	0,85			Ŷ			
Durch die manuelle Nutz	2x	2,60	46x	59,74	19x	24,68	8x	10,39	2x	2,60	•	-	2,51	0,82		(2			
Mein Wissen über die Ma	3x	3,85	15x	19,23	24x	30,77	23x	29,49	12x	15,38	1x	1,28	3,37	1,12				6		
Durch die Nutzung der AR.	4x	5,13	28x	35,90	23x	29,49	11x	14,10	12x	15,38	•	-	2,99	1,16			d			
Meine Neugierde für die	6x	7,69	36x	46,15	16x	20,51	12x	15,38	6x	7,69	2x	2,56	2,77	1,19			4			
Mein Bedürfnis das gezei	4x	5,13	20x	25,64	26x	33,33	12x	15,38	11x	14,10	5x	6,41	3,27	1,31				þ		
Durch die Nutzung der AR.	6x	7,69	28x	35,90	24x	30,77	14x	17,95	4x	5,13	2x	2,56	2,85	1,13						
Durch die Nutzung der AR.	. 1x	1,28	19x	24,36	30 x	38,46	15x	19,23	9x	11,54	4x	5,13	3,31	1,15				5		

13. Bitte bewerten Sie die Wahrscheinlichkeit der folgenden Aussagen: *

Anzahl Teilnehmer: 78

		1		2		з		4		5				A	vrithmeti	sches I	Vittel (Ø))
		(1)	,	(2)		(3)	,	(4)		(5)				S	Standard	labweic	hung (±))
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±	1		2	3	4	ę
Die Nutzung der AR App wir	8x	10,26	43x	55,13	16x	20,51	10x	12,82	1x	1,28	2,40	0,89			٩			
Ich werde die AR App auch i	9x	11,54	29x	37,18	22x	28,21	10x	12,82	8x	10,26	2,73	1,15				6		
Die langfristige Einführung	9x	11,54	27x	34,62	22x	28,21	14x	17,95	6x	7,69	2,76	1,12				6		

14. In welchem Shopping Umfeld würden Sie eine AR App eher anwenden? *



2 (2.6%): Weder noch

15. Letzte Frage! Welche der folgenden Funktionen würden die Wahrscheinlichkeit einer Nutzung der AR App erhöhen? *



64 (82.1%): Die Möglichkeit einen eigenen 3D Avatar mit den eigenen Maßen anzulegen

40 (51.3%): Informationen zum Onlineshop oder zum stationären Store (Wegweiser im Store, Verfügbarkeiten der Produkte)

1 (1.3%): Es haben keine zusätzlichen Funktionen gefehlt

- (0.0%): Andere

Appendix 4: Results - control group

Augmented Reality Apps in der Modebranche

- 1. Sind Sie männlich oder weiblich? *
 - Anzahl Teilnehmer: 100

82 (82.0%): Weiblich

18 (18.0%): Männlich



- 2. Wie alt sind Sie? *
 - Anzahl Teilnehmer: 103 1 (1.0%): Unter 20 Jahre 67 (65.0%): 20-29 Jahre 11 (10.7%): 30-39 Jahre

8 (7.8%): 40-49 Jahre

16 (15.5%): Über 50 Jahre



3. Was ist Ihr Beruf? *

Anzahl Teilnehmer: 103

1 (1.0%): Schüler/in

- (0.0%): Auszubildene/r

45 (43.7%): Student/in

46 (44.7%): Berufstätige/r

11 (10.7%): Andere

Antwort(en) aus dem Zusatzfeld:

- Selbstständig Arbeitslos
- Referendarin Sekretärin
- Gewährleistet
- Rentnerin - Rentnerin

- Rentner - Rentner - RUHESTAND - Rentner



4. Wie lange nutzen Sie Apps durchschnittlich am Tag? *

Anzahl Teilnehmer: 103

- (0.0%): Weniger als 5 Minuten

- 21 (20.4%): 5-10 Minuten
- 8 (7.8%): 10-20 Minuten

12 (11.7%): 20-30 Minuten

62 (60.2%): Mehr als 30 Minuten







- 6. Haben Sie schon mal Augmented Reality Apps angewendet? *

 Anzahl Teilnehmer: 103
 30 (29.1%): Ja
 45 (43.7%): Nein
 28 (27.2%): Weiß ich nicht

 Weiß ich nicht: 27.18%

 Ja: 29.13%

 Nein: 43.69% –
- Bitte beantworten Sie die folgenden Aussagen zu Ihrer Nutzung von Apps und Technologie im Alltag * Anzahl Teilnehmer: 103

	Sti	mme					Sti	mme			Sti	mme		
	vo	l und	Sti	mme	Sti	mme	e	her	Sti	mme	über	rhaupt		
	ga	nz zu		zu	eh	er zu	nic	ht zu	nic	ht zu	nic	ht zu		
		(1)		(2)		(3)	(4)		(5)		(6)		
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±
lch kann neue Apps sehr	23x	22,33	46x	44,66	23x	22,33	9x	8,74	2x	1,94		-	2,23	0,96
lch habe keine Angst dav	32x	31,07	33x	32,04	17x	16,50	16x	15,53	3x	2,91	2x	1,94	2,33	1,26
Ich empfinde Technologi	33x	32,04	49x	47,57	17x	16,50	4x	3,88	-	-		-	1,92	0,80
Ich bin Technologien, die.	31x	30,10	45x	43,69	22x	21,36	5x	4,85		-		-	2,01	0,85
Ich empfinde es als hilfre.	4x	3,88	16x	15,53	21x	20,39	36x	34,95	11x	10,68	15x	14,56	3,77	1,35



8. Wie bewerten Sie den ersten Eindruck der AR App? *



- 9. Wie bewerten Sie den Innovationsgrad der AR App? *
 - Anzahl Teilnehmer: 103

32 (31.1%): Sehr innovativ

- 45 (43.7%): Innovativ
- 20 (19.4%): Neutral
- 5 (4.9%): Weniger innovativ
- 1 (1.0%): Überhaupt nicht innovativ



- 10. Sind Ihnen neue Innovationen bei Modemarken wichtig? *
 - Anzahl Teilnehmer: 103
 - 75 (72.8%): Ja
 - 11 (10.7%): Nein
 - 17 (16.5%): Weiß ich nicht



11. Bitte beurteilen Sie, ob und welche Affekte die Nutzung der App in Ihnen hervorrufen würde *



5 (4.9%): Andere

Antwort(en) aus dem Zusatzfeld:

- Unnützlich

- Desinteresse - Spannung

- Spannung

- Spannung - Aber vielleicht auch hier Unsicherheit, ob die Kleidung dann im realen Leben auch so aussieht. Cool wäre es, wenn man die Kleidergröße den Models verändern könnte. Das wäre n ticken realistischer.

Bitte stellen Sie sich vor, die AR App von ZARA angewendet zu haben und bewerten Sie die folgenden Aussagen: Anzahl Teilnehmer: 103

	Sti vo ga	imme Il und nz zu (1)	Sti	imme zu (2)	Sti eh	imme er zu (3)	Sti e nic	mme her ht zu (4)	Sti nic	mme ht zu (5)	Stir über nicl (mme haupt nt zu 6)	W i ni (eiß ch cht 7)				Ar Sta	ithme1 andar	isches dabwe	Mittel	(Ø) g (±)	
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±	1	2	3	4	5	6	7
Durch die Nutzung der AR.	4x	3,88	39x	37,86	22x	21,36	20x	19,42	13x	12,62	3x	2,91	2x	1,94	3,16	1,34			q)			
Durch die manuelle Nutz	3x	2,91	36 x	34,95	32 x	31,07	15x	14,56	11x	10,68	3x	2,91	3x	2,91	3,16	1,33			ł				
Mein Wissen über die Ma	6x	5,83	25x	24,27	22x	21,36	24x	23,30	14x	13,59	9x	8,74	3x	2,91	3,52	1,50		ľ		þ			
Durch die Nutzung der AR.	. 3x	2,91	34 x	33,01	23x	22,33	15x	14,56	15x	14,56	10x	9,71	3x	2,91	3,46	1,53				9			
Meine Neugierde für die	8x	7,77	36 x	34,95	25x	24,27	13x	12,62	11x	10,68	7x	6,80	3x	2,91	3,16	1,51			¢				
Mein Bedürfnis das gezei	. 5x	4,85	28x	27,18	27x	26,21	16x	15,53	11x	10,68	9x	8,74	7x	6,80	3,53	1,63				þ			
Durch die Nutzung der AR.	4x	3,88	43x	41,75	28x	27,18	10x	9,71	9x	8,74	7x	6,80	2x	1,94	3,06	1,40			d				
Durch die Nutzung der AR.		-	22x	21,36	25x	24,27	23x	22,33	15x	14,56	10x	9,71	8x	7,77	3,90	1,53				8			

13. Bitte bewerten Sie die Wahrscheinlichkeit der folgenden Aussagen: *

Anzahl Teilnehmer: 102

		1		2		3		4		5		
		(1)		(2)		(3)		(4)		(5)		
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±
Die Nutzung der AR App wür.	. 11x	10,78	32x	31,37	31x	30,39	20x	19,61	8x	7,84	2,82	1,11
Ich würde die AR App in Zuk	. 11x	10,78	36x	35,29	23x	22,55	23x	22,55	9x	8,82	2,83	1,16
Die langfristige Einführung	. 8x	7,84	25x	24,51	33x	32,35	24x	23,53	12x	11,76	3,07	1,13

14. In welchem Shopping Umfeld würden Sie eine AR App eher anwenden?*

Anzahl Teilnehmer: 103						
73 (70.9%): Im Onlineshop	Im Onlineshop -					
23 (22 3%): Im stationären Store	Im stationären Store -					
	Zuhause - bei bestelltem Paket -					
41 (39.8%): Zuhause - bei bestelltem Paket	Weder noch -					_
16 (15.5%): Weder noch	C	2	0 4	0 6	0	80

15. Letzte Frage! Welche der folgenden Funktionen würden die Wahrscheinlichkeit einer Nutzung der AR App erhöhen? *

Anzahl Teilnehmer: 103



38 (36.9%): Informationen zum Onlineshop oder zum stationären Store (Wegweiser im Store, Verfügbarkeiten der Produkte)

eigenen 3D Avatar mit den eigenen

5 (4.9%): Es haben keine zusätzlichen Funktionen gefehlt

3 (2.9%): Andere

Maßen anzulegen

Antwort(en) aus dem Zusatzfeld:

- Kleider an einem selbst sehen zu können, wäre spannender als an einem Model - Generell fehlt es dieser App an vielen Features. Sie stellt in Kombination mit AR leider keinen Mehrwert gegenüber einem klassischem Produktvideo oder Konfigurator mit 3D Ansicht dar. - der 3D Avatar wäre genial + Zoomfunktion

Appendix 5: SPSS outputs

1. SPSS Analysis of technology affinity variable:

t-test:

T-Test

	Gruppenstatistiken												
	Gruppenzuordnung	N	Mittelwert	Std.– Abweichung									
scoretechnologyaffinity	Experimentalgruppe	78	5,8269	2,23436									
	Kontrollgruppe	103	6,1311	1,87078									
	Gruppe	nstatistik	en										
		Standardfe	hler										
	Gruppenzuordnung	Mittelwer	tes										
scoretechnologyaffinity	Experimentalgruppe	,252	99										
	Kontrollgruppe	,184	33										

Test bei unabhängigen Stichproben

		Levene- Varianz	Test der gleichheit	T–Test für die
		F	Signifikanz	т
scoretechnologyaffinity	Varianzen sind gleich	1,537	,217	-,996
	Varianzen sind nicht gleich			-,972

Test bei unabhängigen Stichproben

		T–Test für die Mittelwertgleichheit			
		df	Sig. (2- <u>seitig)</u>	Mittlere Differenz	
scoretechnologyaffinity	Varianzen sind gleich	179	(,321) -,30414	
	Varianzen sind nicht gleich	148,798	,333	-,30414	

Univariate Varianzanalyse

Zwischensubjektfaktoren

		Wertelabel	N
Gruppenzuordnung	1,00	Experimental gruppe	78
	2,00	Kontrollgrup pe	103
Alter	1	Unter 20 Jahre	4
	2	20-29 Jahre	110
	3	30-39 Jahre	28
	4	40-49 Jahre	19
	5	Über 50 Jahre	20

Deskriptive Statistiken

Abhängige Variable:	scoretechnologyaffinity				
Gruppenzuordnung	Alter	Mittelwert	Std.– Abweichung	N	
Experimentalgruppe	Unter 20 Jahre	5,0000	1,00000	3	
	20-29 Jahre	4,8256	1,36662	43	
	30-39 Jahre	5,7647	2,20169	17	
	40-49 Jahre	8,8182	1,20981	11	
	Über 50 Jahre	9,2500	2,66145	4	
	Gesamt	5,8269	2,23436	78	
Kontrollgruppe	Unter 20 Jahre	6,5000		1	
	20-29 Jahre	5,4925	1,61549	67	
	30-39 Jahre	5,9545	1,72416	11	
	40-49 Jahre	8,5625	1,34795	8	
	Über 50 Jahre	7,6875	1,37689	16	
	Gesamt	6,1311	1,87078	103	
Gesamt	Unter 20 Jahre	5,3750	1,10868	4	
	20-29 Jahre	5,2318	1,55138	110	
	30-39 Jahre	5,8393	1,99561	28	
	40-49 Jahre	8,7105	1,23958	19	
	Über 50 Jahre	8,0000	1,73963	20	
	Gesamt	6,0000	2,03511	181	

Levene-Test auf Gleichheit der Fehlervarianzen^{a,b}

		Levene– Statistik	df1	df2	Sig.
scoretechnologyaffinity	Basiert auf dem Mittelwert	1,260	8	171	,268
	Basiert auf dem Median	1,029	8	171	,416
	Basierend auf dem Median und mit angepaßten df	1,029	8	147,327	,417
	Basiert auf dem getrimmten Mittel	1,234	8	171	,282

Prüft die Nullhypothese, daß die Fehlervarianz der abhängigen Variablen über Gruppen hinweg gleich ist.

a. Abhängige Variable: scoretechnologyaffinity

b. Design: Konstanter Term + Gruppenzuordnung + Alter + Gruppenzuordnung * Alter

Tests der Zwischensubjekteffekte

Abhängige Variable: scoretechnologyaffinity

Quelle	Quadratsum me vom Typ III	df	Mittel der Quadrate	F	Sig.	Partielles Eta-Quadrat
Korrigiertes Modell	308,483 ^a	9	34,276	13,412	,000	,414
Konstanter Term	2246,414	1	2246,414	878,998	,000	,837
Gruppenzuordnung	,142	1	,142	,055	.814	,000
Alter	286,155	4	71,539	27,992	,000	,396
Gruppenzuordnung * Alter	17,181	4	4,295	1,681	,157	,038
Fehler	437,017	171	2,556			
Gesamt	7261,500	181				
Korrigierte Gesamtvariation	745,500	180				

a. R-Quadrat = ,414 (korrigiertes R-Quadrat = ,383)

Post-Hoc-Tests

Alter

Multiple Comparisons

Abhängige Variable: scoretechnologyaffinity

				Mittlere Differenz (I–	Standard		95%-Konfide	enzintervall
		(I)Alter	(J)Alter	J)	Fehler	Sig.	Untergrenze	Obergrenze
	Gabriel	Unter 20 Jahre	20-29 Jahre	,1432	,81372	1,000	-1,7643	2,0507
			30-39 Jahre	-,4643	,85451	1,000	-2,6718	1,7433
			40-49 Jahre	-3,3355*	,87944	,001	-5,6726	-,9984
			Über 50 Jahre	-2,6250*	,87561	,016	-4,9435	-,3065
		20-29 Jahre	Unter 20 Jahre	-,1432	,81372	1,000	-2,0507	1,7643
			30-39 Jahre	-,6075	,33839	,459	-1,5185	,3035
			40-49 Jahre	-3,4787*	,39717	,000	-4,5193	-2,4382
			Über 50 Jahre	-2,7682*	,38861	,000	-3,7901	-1,7462
		30-39 Jahre	Unter 20 Jahre	,4643	,85451	1,000	-1,7433	2,6718
			20-29 Jahre	,6075	,33839	,459	-,3035	1,5185
			40-49 Jahre	-2,8712*	,47516	,000	-4,2118	-1,5307
			Über 50 Jahre	-2,1607*	,46803	,000	-3,4827	-,8388
		40-49 Jahre	Unter 20 Jahre	3,3355*	,87944	,001	,9984	5,6726
			20-29 Jahre	3,4787*	,39717	,000	2,4382	4,5193
			30-39 Jahre	2,8712*	,47516	,000	1,5307	4,2118
			Über 50 Jahre	,7105	,51214	,834	-,7410	2,1620
		Über 50 Jahre	Unter 20 Jahre	2,6250*	,87561	,016	,3065	4,9435
			20-29 Jahre	2,7682*	,38861	,000	1,7462	3,7901
			30-39 Jahre	2,1607*	,46803	,000	,8388	3,4827
			40-49 Jahre	-,7105	,51214	,834	-2,1620	,7410

Univariate variance analysis: Technology affinity & positive brand experience

Univariate Varianzanalyse

		Wertelabel	Ν
Gruppenzuordnung	1,00	Experimental gruppe	78
	2,00	Kontrollgrup pe	102
MarkenerlebPos	1	Sehr wahrscheinlic h	19
	2	Wahrscheinlic h	75
	3	Neutral	47
	4	Unwahrschei nlich	30
	5	Sehr Unwahrschei nlich	9

Zwischensubjektfaktoren

Deskriptive Statistiken

Abhängige Variable:	scoretechnologyaffinity			
Gruppenzuordnung	MarkenerlebPos	Mittelwert	Std.– Abweichung	N
Experimentalgruppe	Sehr wahrscheinlich	4,8125	2,32897	8
	Wahrscheinlich	5,7907	2,35087	43
	Neutral	5,8125	1,64190	16
	Unwahrscheinlich	6,8500	2,47263	10
	Sehr Unwahrscheinlich	5,5000		1
	Gesamt	5,8269	2,23436	78
Kontrollgruppe	Sehr wahrscheinlich	5,6818	1,30906	11
	Wahrscheinlich	5,6094	1,79486	32
	Neutral	6,6452	1,92870	31
	Unwahrscheinlich	6,5250	1,80988	20
	Sehr Unwahrscheinlich	5,6250	2,34140	8
	Gesamt	6,1127	1,87071	102
Gesamt	Sehr wahrscheinlich	5,3158	1,80440	19
	Wahrscheinlich	5,7133	2,12000	75
	Neutral	6,3617	1,86122	47
	Unwahrscheinlich	6,6333	2,01688	30
	Sehr Unwahrscheinlich	5,6111	2,19057	9
	Gesamt	5,9889	2,03527	180
Levene-Test au	f Gleichheit der	Fehlervarianzen ^{a,b}		
----------------	------------------	--------------------------------		
----------------	------------------	--------------------------------		

		Levene– Statistik	df1	df2	Sig.
scoretechnologyaffinity	Basiert auf dem Mittelwert	,851	8	170	(,559)
	Basiert auf dem Median	,829	8	170	,578
	Basierend auf dem Median und mit angepaßten df	,829	8	142,133	,578
	Basiert auf dem getrimmten Mittel	,844	8	170	,565

Prüft die Nullhypothese, daß die Fehlervarianz der abhängigen Variablen über Gruppen hinweg gleich ist.

a. Abhängige Variable: scoretechnologyaffinity

b. Design: Konstanter Term + Gruppenzuordnung + MarkenerlebPos + Gruppenzuordnung * MarkenerlebPos

Tests der Zwischensubjekteffekte

Abhängige Variable: scor	retechnologyaffini	ity				
Quelle	Quadratsum me vom Typ III	df	Mittel der Quadrate	F	Sig.	Partielles Eta-Quadrat
Korrigiertes Modell	46,717 ^a	9	5,191	1,270	,256	,063
Konstanter Term	2111,707	1	2111,707	516,711	,000	,752
Gruppenzuordnung	1,063	1	1,063	,260	.611	,002
MarkenerlebPos	32,047	4	8,012	1,960	(,103)	,044
Gruppenzuordnung * MarkenerlebPos	10,794	4	2,699	,660	,620	,015
Fehler	694,760	170	4,087			
Gesamt	7197,500	180				
Korrigierte Gesamtvariation	741,478	179				

a. R-Quadrat = ,063 (korrigiertes R-Quadrat = ,013)

2. SPSS Analysis of hypothesis H1:

Kolmogorov-Smirnov test:

Tests auf Normalverteilung

		Koln	nogorov-Sm	irnov ^a	Shapiro-Wilk			
	ExperimentalGruppe	Statistik	df	Signifikanz	Statistik	df	Signifikanz	
scoresensory	,00	,170	103	,000	,913	103	,000	
	1,00	,275	77	,000	,834	77	,000	
C: :CI	1 1. 1. 1.1.111.7							

a. Signifikanzkorrektur nach Lilliefors

t-test:

T-Test

Gruppenstatistiken										
	Gruppenzuordnung	N	Mittelwert	Std.– Abweichung	Standardfehl er des Mittelwertes					
scoresensory	Experimentalgruppe	77	2,5130	,78629	,08961					
	Kontrollgruppe	103	3,1553	1,26806	,12495					

		Levene-T Varianzg	T-Test für die Mittelwertgleichheit							
							Mittlere	Standardfehl er der	95% Konfiden Diffe	zintervall der renz
		F	Signifikanz	Т	df	Sig. (2-seitig)	Differenz	Differenz	Untere	Obere
scoresensory	Varianzen sind gleich	22,963	,000	-3,916	178	,000	-,64235	,16402	-,96603	-,31867
	Varianzen sind nicht gleich		\subseteq	-4,178	172,619	,000	-,64235	,15376	-,94584	-,33887
	scoresensory	scoresensory Varianzen sind gleich Varianzen sind nicht gleich	scoresensory Varianzen sind gleich 22,963 Varianzen sind nicht gleich	scoresensory Varianzen sind gleich 22,963 ,000 Varianzen sind nicht gleich	Levene-Test der Varianzgleichheit scoresensory Varianzen sind gleich 22,963 ,000 3,916 Varianzen sind nicht gleich 4,178	Levene-Test der Varianzgleichheit scoresensory Varianzen sind gleich 22,963 ,000 3,916 178 Varianzen sind nicht gleich 4,178 172,619	Eevene-Test der Varianzgleichheit T-T F Signifikanz T df Sig. (2-seitig) scoresensory Varianzen sind gleich 22,963 ,000 -3,916 178 ,000 Varianzen sind nicht gleich 000 -4,178 172,619 ,000	Levene-Test der Varianzgleichheit T-Test für die Mittele Mittlere Differenz scoresensory Varianzen sind gleich 22,963 ,000 3,916 178 ,000 -,64235 Varianzen sind nicht gleich varianzen sind nicht 000 -4,178 172,619 ,000 -,64235	Levene-Test der Varianzgleichheit T-Test für die Mittelwertgleichheit F Signifikanz T df Sig. (2-seitig) Mittlere Differenz Standardfehl er der Differenz scoresensory Varianzen sind gleich 22,963 ,000 -3,916 178 ,000 -,64235 ,16402 Varianzen sind nicht gleich varianzen sind nicht -4,178 172,619 ,000 -,64235 ,15376	Levene-Test der Varianzgleichheit T-Test für die Mittelwertgleichheit F Signifikanz T df Sig. (2-seitig) Mittlere Differenz Standardfehl er der Differenz 95% Konfiden Diffe scoresensory Varianzen sind gleich 22,963 ,000 -3,916 178 ,000 -,64235 ,16402 -,96603 Varianzen sind nicht gleich Varianzen sind nicht -4,178 172,619 ,000 -,64235 ,15376 -,94584

3. SPSS Analysis of hypothesis H3:

Kolmogorov-Smirnov test:

Tests auf Normalverteilung

		Koln	nogorov-Sm	irnov ^a	Shapiro-Wilk			
	Kontrollgruppe	Statistik	df	Signifikanz	Statistik	df	Signifikanz	
scoreknowledge	,00	,171 78		,000	,958	78	,012	
	2,00	,139	103	,000	,939	103	,000	

a. Signifikanzkorrektur nach Lilliefors

t- test:

T-Test

Gruppenstatistiken											
	Gruppenzuordnung	N	Mittelwert	Std.– Abweichung	Standardfehl er des Mittelwertes						
scoreknowledge	Experimentalgruppe	78	4,5641	1,46243	,16559						
	Kontrollgruppe	103	5,0680	1,95168	,19230						

Levene–Test der Varianzgleichheit					T-Test für die Mittelwertgleichheit							
+								Mittlere	Standardfehl er der	95% Konfiden Diffe	zintervall der renz	
			F	Signifikanz	Т	df	Sig. (2-seitig)	Differenz	Differenz	Untere	Obere	
	scoreknowledge	Varianzen sind gleich	11,595	,001	-1,909	179	,058	-,50386	,26387	-1,02455	,01684	
		Varianzen sind nicht gleich			-1,985	178,986	,049	-,50386	,25377	-1,00463	-,00309	

4. SPSS Analysis of hypothesis H4:

Kolmogorov-Smirnov test:

Tests auf Normalverteilung

		Koln	nogorov-Sm	irnov ^a	Shapiro-Wilk			
	Kontrollgruppe	Statistik	df	Signifikanz	Statistik	df	Signifikanz	
scorebehaviroal	,00	,127	78	,003	,941	78	,001	
	2,00	,157	103	000	,927	103	,000	
		-						

a. Signifikanzkorrektur nach Lilliefors

t- test:

T–Test

[DataSet1] /Users/KatharinaHoefler/Desktop/Macromedia /3.Semester/Masterarbeit /SPSS/GesamteDaten.sav

Gruppenstatistiken											
	Gruppenzuordnung	N	Mittelwert	Std Abweichung	Standardfehl er des Mittelwertes						
scorebehaviroal	Experimentalgruppe	78	3,0577	1,11069	,12576						
	Kontrollgruppe	103	3,2961	1,39051	,13701						

		Levene-Test der Varianzgleichheit			T-Test für die Mittelwertgleichheit					
		F	Signifikanz	т	df	Sig. (2–seitig)	Mittlere Differenz	Standardfehl er der Differenz	95% Konfiden Diffe Untere	zintervall der renz Obere
scorebehaviroal	Varianzen sind gleich	5,766	,017	-1,243	179	,215	-,23842	,19178	-,61686	,14001
	Varianzen sind nicht gleich			-1,282	178,465	,202	-,23842	,18598	-,60542	,12858

5. SPSS Analysis of hypothesis H5:

Kolmogorov-Smirnov test:

Tests auf Normalverteilung

		Koln	nogorov-Sm	irnov ^a	Shapiro-Wilk		
	Kontrollgruppe	Statistik	df	Signifikanz	Statistik	df	Signifikanz
scorepurchaseintention	,00	,170	78	,000	,940	78	,001
	2,00	,144	102	,000	,950	102	,001
	1						

a. Signifikanzkorrektur nach Lilliefors

Univariate variance analysis: positive brand experience & purchase intention

Deskriptive Statistiken

Abhangige variable.	scoreparenasemeendom			
Gruppenzuordnung	MarkenerlebPos	Mittelwert	Std.– Abweichung	N
Experimentalgruppe	Sehr wahrscheinlich	1,4375	,67810	8
	Wahrscheinlich	2,4186	,70652	43
	Neutral	3,6563	,97841	16
	Unwahrscheinlich	3,5000	,74536	10
	Sehr Unwahrscheinlich	5,0000		1
	Gesamt	2,7436	1,05604	78
Kontrollgruppe	Sehr wahrscheinlich	2,0455	,68755	11
	Wahrscheinlich	2,2969	,80181	32
	Neutral	2,9194	,70825	31
	Unwahrscheinlich	3,7500	,67862	20
	Sehr Unwahrscheinlich	4,9375	,17678	8
	Gesamt	2,9510	1,07056	102
Gesamt	Sehr wahrscheinlich	1,7895	,73250	19
	Wahrscheinlich	2,3667	,74586	75
	Neutral	3,1702	,87400	47
	Unwahrscheinlich	3,6667	,69893	30
	Sehr Unwahrscheinlich	4,9444	,16667	9
	Gesamt	2,8611	1,06631	180

Abhängige Variable: scorepurchaseintention

Levene-Test auf Gleichheit der Fehlervarianzen^{a,b}

		Levene– Statistik	df1	df2	Sig.
scorepurchaseintention	Basiert auf dem Mittelwert	1,838	8	170	,073
	Basiert auf dem Median	1,326	8	170	,234
	Basierend auf dem Median und mit angepaßten df	1,326	8	156,359	,234
	Basiert auf dem getrimmten Mittel	1,906	8	170	,062

Prüft die Nullhypothese, daß die Fehlervarianz der abhängigen Variablen über Gruppen hinweg gleich ist.

a. Abhängige Variable: scorepurchaseintention

 b. Design: Konstanter Term + Gruppenzuordnung + MarkenerlebPos + Gruppenzuordnung * MarkenerlebPos

Tests der Zwischensubjekteffekte

Abhängige Variable: scorepurchaseintention

Quelle	Quadratsum me vom Typ III	df	Mittel der Quadrate	F	Sig.	Partielles Eta-Quadrat
Korrigiertes Modell	111,310 ^a	9	12,368	22,800	,000	,547
Konstanter Term	622,825	1	622,825	1148,159	,000	,871
Gruppenzuordnung	,002	1	,002	,004	,947	,000
MarkenerlebPos	80,011	4	20,003	36,875	000	(,465)
Gruppenzuordnung * MarkenerlebPos	7,376	4	1,844	3,399	,011	,074
Fehler	92,217	170	,542			
Gesamt	1677,000	180				
Korrigierte Gesamtvariation	203,528	179	<u> </u>			

a. R-Quadrat = ,547 (korrigiertes R-Quadrat 🗲 ,523)

6. SPSS Analysis of hypothesis H6:

Kolmogorov-Smirnov test:

Tests auf Normalverteilung

		Koln	nogorov-Sm	irnov ^a	Shapiro-Wilk			
	Kontrollgruppe	Statistik	df	Signifikanz	Statistik	df	Signifikanz	
VerbundMarke	,00	,246	78	,000	,895	78	,000	
	2,00	,179	103	,000	,904	103	,000	

a. Signifikanzkorrektur nach Lilliefors

Univariate variance analysis: positive brand experience & brand loyalty

Abhängige Variable:	VerbundMarke							
Gruppenzuordnung	MarkenerlebPos	Mittelwert	Std.– Abweichung	N				
Experimentalgruppe	Sehr wahrscheinlich	2,75	1,282	8				
	Wahrscheinlich	2,95	,950	43				
	Neutral	4,00	1,095	16				
	Unwahrscheinlich	4,00	1,155	10				
	Sehr Unwahrscheinlich	5,00		1				
	Gesamt	3,31	1,154	78				
Kontrollgruppe	Sehr wahrscheinlich	3,09	1,514	11				
	Wahrscheinlich	3,22	1,338	32				
	Neutral	3,77	1,383	31				
	Unwahrscheinlich	4,75	1,209	20				
	Sehr Unwahrscheinlich	5,75	,463	8				
	Gesamt	3,87	1,507	102				
Gesamt	Sehr wahrscheinlich	2,95	1,393	19				
	Wahrscheinlich	3,07	1,131	75				
	Neutral	3,85	1,285	47				
	Unwahrscheinlich	4,50	1,225	30				
	Sehr Unwahrscheinlich	5,67	,500	9				
	Gesamt	3,63	1,390	180				

Deskriptive Statistiken

Levene-Test auf Gleichheit der Fehlervarianzen^{a,b}

		Levene– Statistik	df1	df2	Sig.
VerbundMarke	Basiert auf dem Mittelwert	1,242	8	170	,278
	Basiert auf dem Median	1,181	8	170	,313
	Basierend auf dem Median und mit angepaßten df	1,181	8	149,788	,314
	Basiert auf dem getrimmten Mittel	1,050	8	170	,400

Prüft die Nullhypothese, daß die Fehlervarianz der abhängigen Variablen über Gruppen hinweg gleich ist.

a. Abhängige Variable: VerbundMarke

 b. Design: Konstanter Term + Gruppenzuordnung + MarkenerlebPos + Gruppenzuordnung * MarkenerlebPos

Tests der Zwischensubjekteffekte

Abhängige Variable: VerbundMarke										
Quelle	Quadratsum me vom Typ III	df	Mittel der Quadrate	F	Sig.	Partielles Eta-Quadrat				
Korrigiertes Modell	101,607 ^a	9	11,290	7,851	(,000)	,294				
Konstanter Term	941,056	1	941,056	654,436	,000	,794				
Gruppenzuordnung	2,156	1	2,156	1,499	,222	.009				
MarkenerlebPos	57,869	4	14,467	10,061	(,000)	(,191)				
Gruppenzuordnung * MarkenerlebPos	4,313	4	1,078	,750	,559	,017				
Fehler	244,454	170	1,438							
Gesamt	2715,000	180								
Korrigierte Gesamtvariation	346,061	179	<u></u>							

a. R-Quadrat = ,294 (korrigiertes R-Quadrat (,256)

7. SPSS Analysis of additional relevant results:

Kolmogorov-Smirnov test:

Tests auf Normalverteilung

		Koln	nogorov-Sm	irnov ^a	Shapiro-Wilk			
	Kontrollgruppe	Statistik	df	Signifikanz	Statistik	df	Signifikanz	
MarkenerlebPos	,00	,327	78	,000	,834	78	,000	
	2,00	,192 102 ,00			,912	102	,000	

a. Signifikanzkorrektur nach Lilliefors

t- test:

T-Test

Gruppenstatistiken										
Gruppenzuordnung N Mittelwret Abweichung N Mittel										
MarkenerlebPos	Experimentalgruppe	78	2,40	,888	,101					
	Kontrollgruppe 102 2,82 1,112 ,110									

		Levene-T Varianzg	Fest der leichheit	T-Test für die Mittelwertgleichheit						
							Mittlere	Standardfehl er der	95% Konfiden Diffe	zintervall der renz
		F	Signifikanz	т	df	df Sig. (2-seitig)	Differenz Differenz	Differenz	Untere	Obere
MarkenerlebPos	Varianzen sind gleich	4,493	,035	-2,775	178	,006	-,426	,154	-,729	-,123
	Varianzen sind nicht gleich		\bigcirc	-2,858	177,646	,005	-,426	,149	-,720	-,132

T-Test

Gruppenstatistiken

	Gruppenzuordnung	N	Mittelwert	Std Abweichung	Standardfehl er des Mittelwertes
MarkenerlebPos	Experimentalgruppe	78	2,40	,888	,101
	Kontrollgruppe	102	2,82	1,112	,110

		Levene-Test der Varianzgleichheit		T–Test für die Mittelwertgleichheit						
		F	Signifikanz	т	df	Sig. (2-seitig)	Mittlere Differenz	Standardfehl er der Differenz	95% Konfidenzintervall der Differenz	
									Untere	Obere
MarkenerlebPos	Varianzen sind gleich	4,493	,035	-2,775	178	,006	-,426	,154	-,729	-,123
	Varianzen sind nicht gleich			-2,858	177,646	,005	-,426	,149	-,720	-,132

Appendix 6: Prototype Zara AR App







🕻 Zara AR 📶 🗢 0 \times

@ 93 % 🔳

93 %

0





LEATHER SLIDES WITH GEOMETRIC DETAIL

09:35

LONG STRIPED DRESS

SEE PRODUCTS

Eidesstattliche Erklärung

lab	

geboren am _____

erkläre hiermit, die vorliegende Masterarbeit selbständig und ohne fremde Hilfe angefertigt zu haben. Dabei habe ich mich keiner anderen Hilfsmittel bedient als derjenigen, die im beigefügten Quellenverzeichnis genannt sind.

Alle Stellen, die wörtlich oder sinngemäß aus Veröffentlichungen entnommen wurden, sind von mir als solche kenntlich gemacht.

....., den