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Immersive Virtual Reality in Destination Marketing

Evidence From Lab and Field Experiments

MASTER THESIS - MARKETING AND BRAND MANAGEMENT

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Supervised by

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This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible — through the approval of this thesis — for the theories and methods used, or results and conclusions drawn in this work.

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Abstract

Although the concept of virtual reality (VR) has been studied and used for many years, recent technological development has led to the commercial availability of immersive VR, specifically head-mounted displays. Little research has been conducted on the potential for immersive VR to influence consumer behavior. The aim of this thesis is to give insight into how immersive VR can be utilized in destination marketing, through investigating its effect on consumer outcomes directly, as well as the underlying processing mechanisms. Through two studies, one lab experiment and one field experiment, we find that immersive VR technology (vs. 2D pictures) does not have a significant total effect on the consumer outcome variables (destination attitude, behavioral intentions and purchasing decision). However, mediation analyses show that there are indirect effects through telepresence, enjoyment, mental imagery, predicted emotions, and predicted experiences, and that perceived picture quality acts as a moderator of some of the relationships. This suggests that immersive VR content, when developed specifically to stimulate the factors we find to be important, and used with high-quality equipment, can have a strong impact on destination attitude, behavioral intentions, and ultimately actual purchase.

Key words: Immersive VR, Virtual Reality, Telepresence, Enjoyment, Mental Imagery, Predicted Emotions, Predicted Experiences, Consumer Outcomes, Destination Marketing, Tourism.

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Chapter 1: Introduction

1.1 Background

Technology is becoming an increasingly important part of people's everyday lives. It's estimated that people in the US spend 5,6 hours engaged with digital media every day (Chaffey 2016). Modern computers and hand held devices such as smart phones and tablets can process enormous amounts of data and have become an important way for companies to communicate with the consumers. The proliferation of advanced technologies has led companies to search for new ways to utilize their potential, and one of the latest trends is the implementation of virtual reality (VR) in marketing.

Imagine that you want to book a hotel room for your upcoming vacation, but you don't know which hotel to choose. They all look the same in the pictures, and you have been unlucky with your choice of accommodation on several occasions in the past. Imagine that you could put on a head mounted display that lets you embark on a virtual tour around the hotel facilities, investigate the different rooms in 3D, and look at the view from the hotel room window. What effect would this have on your attitudes towards the hotel and your choice of hotels. Furthermore, could this virtual experience influence how satisfied you will be with your choice after you get back from your vacation? In order to answer these questions, one needs to understand the concept of VR.

Steuer (1992) argues that virtual reality should be defined in terms of human experiences, and that the key to do this is the concept of telepresence, which refers to the sense of "being there" in a computer-mediated environment. Hence, Steuer (1992, p. 7) defines VR as "a real or simulated environment in which a perceiver experiences telepresence".

Web-based stores have adapted VR elements by making vivid and interactive VR interfaces that can generate virtual product experiences, which is defined as "the psychological and emotional states that consumers undergo while interacting with products in a 3D environment" (Dobrowolski

et al. 2014, p. 1). Research has shown that virtual experiences with brands positively influence product knowledge, brand attitudes, and purchasing intentions (Dobrowolski et al. 2014). The use of VR in tourism and destination marketing has also been studied. Tourism products are experientially demanding, and experiential product attributes are best evaluated through actual use of the product (Hyun, S. Lee, and Hu 2009). Traditionally, the most effective information channels regarding tourism marketing have been word-of-mouth and previous travel experiences, because they are based on direct experience (Gartner 1994). Since actual product trial of a tourism product is impossible, a virtual destination experience can provide a substitute for direct destination experience, because it enables consumers to vividly imagine a destination (W. Lee and Gretzel 2012). Furthermore, virtual destination experiences can provide potential consumers with a tool to translate experiential attributes into “objective” evaluation criteria (Cho, Wang, and Fesenmaier 2002). In addition, Suh and Y. E. Lee (2005) found that VR exposure has more impact on consumers’ brand attitudes, purchasing intentions, and brand knowledge when used to promote products whose most salient attributes are experiential.

The implications are clear – virtual reality in marketing has great potential, and marketers should learn how to utilize its full potential by understanding the psychological mechanisms involved in VR exposure of marketing material.

1.2 Purpose

The purpose of this study is to investigate how virtual reality technology can be used as a marketing tool to promote tourist destinations more effectively than the prevailing tools commonly used today. In order to make a significant contribution to the literature on VR in marketing and consumer behavior, this thesis examines how the use of VR influences potential tourists’ attitude towards destinations, intention to travel and purchasing decision, both directly and indirectly. This means that it also examines the processing mechanisms behind these relationships. Previous research has studied how VR can influence consumers in different ways (e.g. Nah, Eschenbrenner, and DeWester 2011), but the impact on the actual purchasing decision is relatively unexplored. Furthermore, investigating the mediated relationship between VR exposure and consumer outcomes should be

of great value to marketers. Virtual reality hardware is now commercially available, and the technology is advancing rapidly (Terdiman 2016). Hence, a clear understanding of the underlying effects and processes that occur when exposed to VR could help marketers utilize the full potential of the technology by uncovering what is important to keep in mind when developing VR related marketing material. Thus, both study 1 and study 2 were designed to capture as much data as possible related to potential mediating and moderating variables. Although some of the data collected in our experiments are concerned with theoretical constructs that are beyond the scope of this thesis, they can be used in future research, making the data collection a valuable contribution in in itself.

Moreover, it would be interesting to investigate how the use of VR in marketing can influence consumers' predicted emotions and experiences prior to direct product experience, and how this would affect their actual product experience. Despite the great value of such knowledge, this has been largely ignored in the literature, and hence, we will examine these relationships. Furthermore, we will examine how the relationship between immersive VR exposure and consumer outcomes is mediated by predicted emotions and experiences.

The majority of previous research related to VR in marketing focuses on the use of *non-immersive VR*, which refers to a VR experience in which the user is exposed to the virtual environment on a monitor, meaning that their vision is not completely enclosed in the virtual environment (Mills and Noyes 1999). In the current study, we will examine how destination attitude, behavioral intentions and purchasing decision are influenced by *immersive VR*, which involves the use of a head-mounted display where the user is completely enclosed in a virtual environment (Mills and Noyes 1999).

1.3 Structure

This master thesis starts with a review of the literature related to VR in marketing and consumer behavior. We will present the literature search process and identify the main areas of VR related research. Furthermore, the review will examine what is the main focus of the research by investigating the dependent, independent, and mediating variables commonly studied in the experiments.

We will present important findings, in addition to theories related to the underlying mechanisms and processes involved in the research. This is followed by a discussion of the research field in order to reveal gaps in the literature. Secondly, the proposed research model and the development of hypotheses used in this thesis are described. After this, the methodology and findings of study 1 and study 2 are presented and discussed. Finally, a general discussion will present implications of our findings, the limitations of our research and suggestions for further research in the field of VR in marketing and consumer behavior.

Chapter 2: Literature Review

There is a lot of theory and research related to different aspects of virtual reality (VR). Although the literature covers a wide range of topics such as the technical aspects of VR hardware, and the use of this technology in the field of medicine, this review will focus on the use of VR in marketing, and how this affects consumer behavior. In this context, three major themes emerged repeatedly throughout the literature reviewed, namely the application and effects of virtual reality in *tourism marketing*, *virtual product experience*, and *online shopping*. The literature review is summarized in appendix A.

We start by presenting a short description of the literature search process, followed by an overview of the main areas of research related to VR in marketing and consumer behavior. In order to gain insight into the mechanisms and processes involved in VR exposure, we proceed by examining what is typically the focus of the research. Furthermore, we will investigate the results of relevant research, before discussing our contribution by uncovering gaps in the existing literature.

2.1 Literature Search Process

In order to get an overview of the literature related to VR in marketing and consumer behavior, we started out by searching for articles in the *Business Source Complete* database. Our first search, which contained the words “Virtual Reality” and “Marketing”, gave 899 results, whereof 266 were peer reviewed. In the second search, we used the words “Virtual Reality” and “Consumer Behavior”. This gave 94 results, whereof 67 were peer reviewed. Finally we combined the two previous searches by using the words “Virtual Reality”, “Marketing”, and “Consumer Behavior”. This gave 53 results, and 42 of these were peer reviewed articles. Based on these three searches, we had a broad overview of the field. We later conducted several more searches with more specific targets, but they were all based on what we found during the first search session.

We proceeded by working through all of the articles that were categorized as *Peer Reviewed* by systematically reading the abstracts while taking notes.

2.2 Main Focus of Previous Research

Based on the three first literature searches, we found that the literature related to VR in marketing and consumer behavior can be divided into three contextual themes: *online shopping*, *virtual product experience*, and *tourism marketing*. Out of these, VR related research in the context of online shopping has received the most attention (Suh and Chang 2006; Tomaseti, Ruiz, and Reynolds 2009; Jin 2009). The effects of implementing VR elements in web-stores, such as interactive and vivid 3D advertising, are also frequently studied (Li, Daugherty, and Biocca 2002; Suh and Y. E. Lee 2005; Klein 2003). Furthermore, VR related research in the context of tourism marketing and virtual product experiences are somewhat overlapping. In tourism marketing, research is often related to the effects of virtual tours and virtual destinations (Cho, Wang, and Fesenmaier 2002). Research related to virtual product experiences is more concerned with the effects of virtual product trial in VR interfaces and virtual environments (Daugherty, Li, and Biocca 2008; Dobrowolski et al. 2014). This means that much of the VR related research in both of these contexts is related to virtual experiences, which can be defined as “a psychological and emotional state consumers undergo while interacting with 3D visual products in a computer-mediated environment” (Daugherty, Li, and Biocca 2008, p. 570).

Though some of the relevant literature is of a descriptive nature, the vast majority is based upon experiments. The experimental designs vary, but the most common design is *between-subject lab experiments*. This experimental design is suitable to identify and measure direct and indirect effects of stimuli because it’s conducted in a controlled environment. This means that other possible explanations can more easily be ruled out, because contamination by extraneous factors are minimized. Only two of the studies in the literature are based upon immersive VR technology (Schubert, Friedmann, and Regenbrecht 2001; Ahn and Bailenson 2011), which involves the use of a head-mounted display (HMD) where the user is completely enclosed in a virtual environment (Mills and Noyes 1999). This means that most of the relevant research is based upon non-immersive

VR technology, which refers to a more limited VR experience in which the user is exposed to the virtual environment on a monitor, meaning that their vision is not completely enclosed in the virtual environment.

The context of the research varies, but the mechanisms involved and the dependent variables are surprisingly similar across the different studies. The majority of the literature is concerned with how non-immersive VR can influence brand attitudes, behavioral intentions and brand knowledge both directly and indirectly. The most striking similarity across the literature is that most of the research is based upon, or integrates, the concept of telepresence.

2.2.1 The Concept of Telepresence

According to Steuer (1992), telepresence can be defined as the sense of “being there” in a mediated environment. Furthermore, the Transparent Telepresence Research Group defines telepresence as “the experience or impression of being present at a location remote from one’s own immediate environment” (Suh and Chang 2006, p. 100). The level of telepresence an individual experiences when exposed to a virtual reality environment is determined by two major factors, *vividness* and *interactivity* (Steuer 1992).

Vividness refers to a technology’s ability to produce sensory rich mediated environments. In other words, telepresence is affected by how a mediated environment presents information to the senses. Furthermore, the vividness of a mediated environment is affected by a number of different factors, but the two most important ones are *sensory breadth* and *sensory depth*. Sensory breadth commonly refers to the number of sensory dimensions simultaneously presented by a communication medium (visual, auditory, touch, taste and smell), and sensory depth is defined as “the resolution within each of these perceptual channels” (Steuer 1992, p. 11).

Interactivity is defined as “the extent to which users can participate in modifying the form and content of a mediated environment in real-time” (Steuer 1992, p. 14). The level of interactivity can be examined by three components, namely *speed*, *range*, and *mapping* (Steuer 1992). Speed refers to the rate at which input can be assimilated into the mediated environment. Real-time

interaction provides the shortest response time and is therefore the most valuable representation. Range refers to the number of possibilities for actions at any given time. The third component of interactivity is mapping, which is defined as “the ability of a system to map its controls to changes in the mediated environment in a natural and predictable manner” (Steuer 1992, p. 15). Figure 2.1 summarizes the construct of telepresence based on (Steuer 1992).

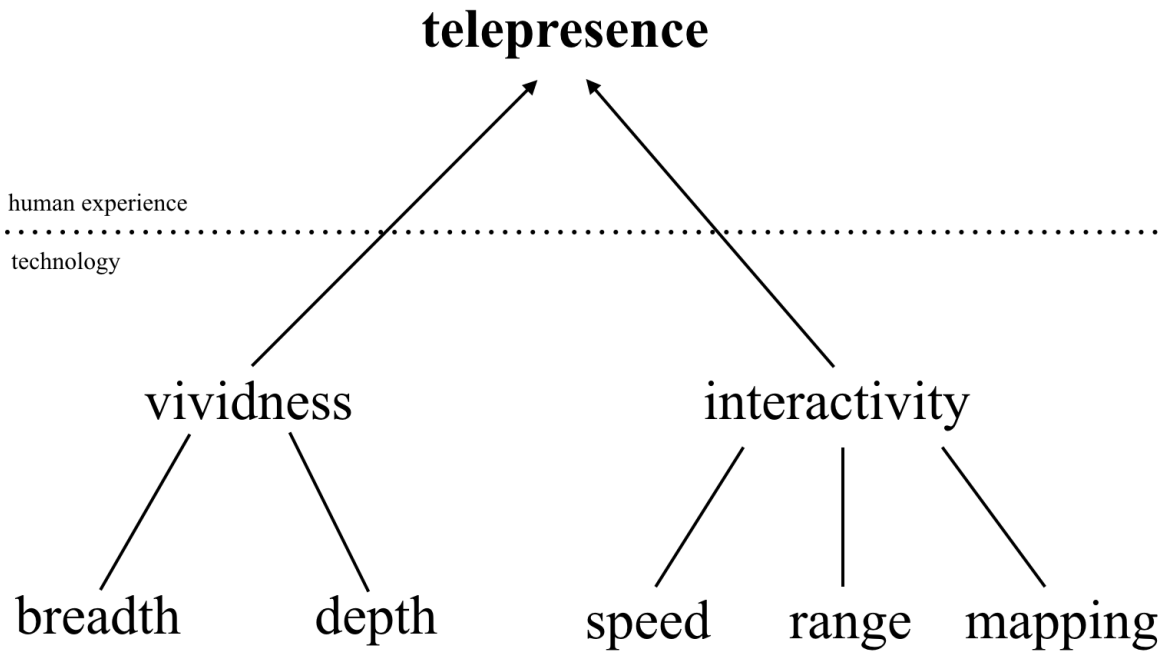


Figure 2.1: The construct of telepresence (Steuer 1992)

2.2.2 Research on Virtual Reality and Telepresence

Several studies are concerned with the relationship between VR and telepresence. Nah, Eschenbrenner, and DeWester (2011) investigate whether the immersive and vivid qualities of VR induce telepresence. They conducted an experiment to examine the effects of exposing people to 2D versus 3D virtual environments on telepresence. The participants that were exposed to the 3D virtual environment were able to move around and interact directly with 3D objects in the vir-

tual environment, whereas the people in the 2D condition were exposed to static pictures of the same virtual environment. The higher number of sensory inputs and outputs in the 3D virtual environment made it more vivid and interactive than the 2D environment. Increased vividness and interactivity in turn led to higher levels of telepresence. Furthermore, Li, Daugherty, and Biocca (2002) studied the impact of 3D advertising. They found that consumers exposed to a VR interface, specifically 3D advertising in an online store, experienced higher levels of telepresence than consumers exposed to 2D advertising of the same product. These findings are in line with Steuer's model of telepresence.

The level of telepresence increases when people are engaged with a medium that's both vivid and interactive (Suh and Chang 2006). However, previous research related to telepresence proposes that both vividness and interactivity are necessary to generate high levels of telepresence, meaning that one of the elements alone is not enough (Klein 2003). Suh and Chang (2006), further investigate this proposition. By manipulating different features related to interactivity and vividness for a web interface, they were able to compare a VR interface (highly vivid and interactive) with a highly vivid (but not interactive) web interface, and a highly interactive (but not vivid) web interface. They found that the VR interface generated significantly higher levels of telepresence than the two other web interfaces, which were equal to each other.

2.2.3 The Consumer Outcomes of Virtual Reality

Due to its highly vivid and interactive qualities, virtual reality can be a valuable marketing tool. The concept of VR has gained a lot of attention in marketing related research, and the most frequently studied effects are related to how VR can influence consumer outcomes like brand attitudes, brand knowledge, and purchasing intentions. Furthermore, the indirect effects of VR on consumer outcomes are frequently investigated in the literature, and the three most important mediators are telepresence, mental imagery and enjoyment (Suh and Y. E. Lee 2005; Suh and Chang 2006; Schlosser 2003; Li, Daugherty, and Biocca 2002).

The technological advances of the 21st century make it possible to provide consumers with highly vivid and interactive 3D images of products, thus facilitating telepresence (Klein 2003; Steuer

1992). Li, Daugherty, and Biocca (2002) investigate whether 3D advertising (vivid and interactive) has a stronger impact on consumers' brand attitudes, brand knowledge, and purchasing intentions than 2D advertising (not vivid and interactive). The experiment was based upon a website and designed as a between-subject lab experiment. Participants exposed to 3D advertising were able to interact with the advertised product by zooming in and out, and moving it in all directions for detailed inspection. In the 2D condition, participants were exposed to static pictures, meaning that they were unable to interact with the product. The results were that 3D advertising led to more positive brand attitudes and product knowledge than did 2D advertising. However, there were no significant difference in purchasing intention between 2D and 3D advertising.

Suh and Y. E. Lee (2005) also investigate how VR interfaces in online stores influence consumers' product knowledge, attitudes towards products, and purchasing intentions. Furthermore, the study examines whether the impact of VR is different for *virtually high experiential (VHE) products* than for *virtually low experiential (VLE) products*. Suh and Y. E. Lee (2005, p. 680-681) define VHE products as "products whose attributes are mainly virtually experiential" and VLE products as "products whose salient attributes are not mainly virtually experiential". They found that participants exposed to the VR interface reported significantly more positive attitudes towards the product than those exposed to the static interface. Furthermore, participants also reported significantly higher scores for both perceived and actual product knowledge in the VR treatment. These results are in line with previous research (Li, Daugherty, and Biocca 2002). However, purchasing intentions for VHE products were also significantly higher in the VR treatment. The same was not true for VLE products. This contradicts the results of Li, Daugherty, and Biocca (2002). Furthermore, Suh and Y. E. Lee (2005) found that the VR interface more effectively influenced perceived product knowledge, product attitudes, and purchasing intentions for VHE products. This implies *product type* has an important impact on the effectiveness of the interface designs.

2.2.4 The Indirect Effects of Virtual Reality

A lot of studies in the literature are related to the indirect effects of non-immersive VR on brand attitudes, product knowledge, and purchasing intentions. In addition to telepresence, two mediating variables emerge repeatedly in the literature, namely *mental imagery* and *enjoyment*.

Mental Imagery

Mental imagery processing is related to high elaboration processing that involves the representation of nonverbal information in working memory (D. J. MacInnis and Price 1987). Furthermore, K. A. Lutz and R. J. Lutz (1978, p. 611) define mental imagery processing as “a mental event involving visualization of a concept or relationship”. Mental imagery theory suggests that when people mentally imagine something, the mental images are based on previous experiences and/or available information (W. Lee and Gretzel 2012). Mental images vary in terms of vividness and quality, and are often an important source of information. Research has shown that mental imagery processing has the potential to influence consumers decision making process (L. A. Babin and Burns 1997). Due to the high elaboration processing involved, attitudes that are based on mental imagery tend to be stronger and more stable, last longer, and be more resistant to persuasion (Petty, Haugtvedt, and Smith 1995).

According to Gartner (1994), the components of mental images, specifically *virtual destination images*, are cognition, affect and conation. Hyun and O’Keefe (2012) argue that the formation of cognitive images can facilitate the formation of affective images, which in turn influence conation or the intention to act according to mental images. Furthermore, Hyun and O’Keefe (2012) find in an study related to mental images and telepresence that there is a direct relationship between telepresence and conation, and an indirect relationship through cognitive images.

VR related research in the context of tourism marketing suggests that a virtual destination in a 3D virtual world (3DVW) environment can affect tourists’ trip planning, destination image, and attitudes towards the destination if the 3D virtual world is equipped with the appropriate visualization components necessary to make the virtual experience interactive and vivid (Williams and Hobson 1995). This means that a virtual tourist destination in a 3DVW environment has the potential to

attract real-world tourists, and that the attraction potential of the virtual destination is related to telepresence. Cho, Wang, and Fesenmaier (2002) point out that virtual destination experiences, such as virtual tours in a web-mediated virtual environment, make it easier for potential travellers to efficiently search for information, resulting in increased confidence of expectation and increased satisfaction with their destination of choice. Virtual destination experiences also provide extensive and rich information for the consumers, resulting in better quality of their destination image (Cho, Wang, and Fesenmaier 2002). A strong and recognizable destination image can help potential travelers to differentiate between different destinations. If the destination image is favorable, it will have a positive effect on the probability of a destination being chosen (Hyun and O’Keefe 2012).

Enjoyment

Enjoyment is closely related to telepresence. Heeter (1995) found that the users of a virtual reality system who experienced high levels of telepresence also reported significantly higher levels of enjoyment. Furthermore, Chen (2006) found that the illusion of “being there” in a virtual environment can trigger a sense of engagement, which leads to enjoyment. In a study related to consumers’ intention to shop in a virtual environment, Domina, S.-E. Lee, and MacGillivray (2012) found that perceived enjoyment positively influenced their shopping intentions. Furthermore, Pantano and Naccarato (2010) found that an engaging and exciting shopping experience can positively influence consumers shopping behavior. In addition, studies related to acceptance of new technologies confirm the significant role that enjoyment plays in influencing the users’ attitudes and behavioral intentions (Kim, Jin Ma, and J. Park 2009).

Telepresence and enjoyment are also closely related to research on virtual experiences. Dobrowolski et al. (2014) found that virtual experiences, specifically virtual test drives of cars, had a positive effect on the consumers’ attitudes towards the car brand if the virtual experience, or test drive, was perceived as easy. The easy driving condition also scored significantly higher on enjoyment. Furthermore, Daugherty, Li, and Biocca (2008) found that a virtual product experience, namely being able to interact with a 3D product in a website, exceeded indirect product experiences (magazine ad) in affecting brand knowledge, attitudes and purchasing intentions. The virtual product experience also worked well together with both direct and indirect product experiences, when the

exposure happened in the right order. The brand knowledge was highest when a direct product experience was followed by the virtual one, whereas the brand attitudes and intentions were most favorable when the virtual product experience was followed by a direct product experience. However, for the virtual product experience to lead to real world purchasing intentions, there needs to be channel congruence, which directly affects purchasing intentions, but is also mediated through brand attitudes (Gabisch and Gwebu 2011).

Huang et al. (2016) investigate the effects of offering potential travellers the opportunity to visit and explore tourist destinations in the 3DVW environment. The study examines how perceived ease of use and usefulness influence potential travellers' enjoyment of visiting the virtual destination, and their behavioral intentions related to visiting the destination in real life. They found that perceived ease of use and usefulness of the 3DVW environment positively influenced the potential travellers' experience of enjoyment and their behavioral intentions to visit the destination in real life. This indicates that enjoyment has a mediating effect on the relationship between the use of VR interfaces and behavioral intentions.

2.2.5 Summing Up

This review reveals that literature and research related to virtual reality in marketing and consumer behavior can be divided into three contextual themes, namely online shopping, virtual experiences, and tourism marketing. Studies have established that VR can facilitate telepresence due to its vivid and interactive qualities. Vivid and interactive websites, online stores, virtual destinations, virtual product experiences, and virtual tours have been shown to have a positive effect on brand/destination attitudes, and brand knowledge. The impact of VR on purchasing intention has yielded contradicting results in the literature. However, research suggests that VR positively influences purchasing intentions for VHE products (Suh and Chang 2006). Some of the research investigates how VR can influence behavior, but most of these are theoretical and descriptive. Whether or not VR can influence purchasing behavior is relatively unexplored in the literature.

Several mediators have been shown to impact the relationship between VR and consumer outcomes. The most frequently studied is the mediating effect of telepresence, closely followed by *enjoyment*

and *mental imagery*.

In summary, we see that VR can have a significant impact on brand knowledge, brand attitudes and purchasing intention, through many different mediators. This goes to show that there are many ways to influence consumers through the implementation of VR elements in marketing, and makes it interesting to explore which are the most efficient.

2.2.6 Our Contribution to the Literature

In the previous sections, we have examined the relevant literature related to VR in marketing and consumer behavior. We have investigated the findings and gained insight into some of the underlying mechanisms that make VR such a valuable marketing tool. Several studies have established that the use of VR in marketing can influence consumers' attitudes towards brands, purchasing intentions, and brand knowledge. However, apart from the mediating effects of mental imagery, enjoyment, and telepresence, the indirect effects and the processing mechanisms involved in the use of VR in marketing are relatively unknown. Furthermore, the effect VR exposure has on actual purchasing decision is also fairly unexplored. This implies that there are some gaps in the existing literature. In order to make a significant contribution to the literature we will investigate these gaps.

Our study investigates the effects of using immersive VR in tourism and destination marketing. Tourism products are experientially demanding, meaning that they are evaluated based on their experiential attributes. The best way to evaluate products whose attributes are mainly experiential, such as a tourist destination, is by actually going there (Hyun, S. Lee, and Hu 2009). Suh and Y. E. Lee (2005) found that VR exposure has more impact on consumers' brand attitudes, purchasing intentions, and brand knowledge when used to promote products whose most salient attributes are experiential. Furthermore, the affective dimension of a tourism product, meaning the feelings that are generated by visiting a destination, is an important part of how tourists evaluate their vacation after visiting a tourist destination (Sanchez et al. 2006). This implies that consumers' predicted emotions (affective forecasts) could play a vital role when deciding where to travel. *Affective forecasting* (or *predicted emotions*) theory has not been granted much attention in the literature.

Considering the high relevance of affective forecasts in consumer behavior and marketing, this is somewhat surprising.

Affective forecasting can be defined as the prediction of one's emotional state (affect) in the future (V. M. Patrick and D. J. MacInnis 2006). Research suggests that affective forecasts influence consumers' decision making process (V. M. Patrick and D. J. MacInnis 2006). Furthermore, affective forecasts can be a predictor of choice because people often make decisions based on the affect they think will arise from a specific choice (V. M. Patrick and D. J. MacInnis 2006). Affective forecasting involves that people mentally imagine a future event and their affective response to this event (D. J. MacInnis and Price 1987). D. J. MacInnis (1987) Argues that affective forecasts may be influenced by peoples individual ability to generate mental images. Seeing as how VR can aid the formation of mental images, affective forecasting theory is highly relevant for VR related research. By investigating how the relationship between immersive VR exposure and consumer outcomes is mediated by affective forecasts (predicted emotions), we provide a valuable contribution to the literature. Moreover, we will examine whether immersive VR can influence how tourists evaluate their actual emotions after experiencing a destination in real life.

The rationale behind affective forecasting theory can also be applied to predicted experiences. If affective forecasts have the ability to influence choice (V. M. Patrick and D. J. MacInnis 2006), the same should be true for other dimensions of predicted experiences. Every choice we make is, to a varying degree, based on the expected outcomes of that choice. For example, standard economic theory involves that people choose the alternative that yields the highest predicted value (DellaVigna 2009). A student chooses to prepare for an exam because he predicts that this will result in a better grade. When a tourist predicts that a certain destination will result in a better vacation (experience) than another destination, it's natural to assume that this prediction influences his choice of destination.

Predicted experiences are also related to emotions, in that one of the four dimensions of brand experiences presented by Brakus, Schmitt, and Zarantonello (2009) is the affective dimension. The other dimensions are the sensory, intellectual and behavioral dimensions. However, none of these focus on specific emotions or thoughts, but rather the valence of the different dimensions, meaning to what degree the consumer experiences emotions, thoughts etc.. Seeing as how tourism

products are experiential goods, it's interesting not only to look at predicted emotions, but also include other experience dimensions. Product experiences can be direct or indirect. A direct product experience refers to actual consumption of a product. An indirect product experience, however, refers to how consumers experience products through advertising, commercials and other marketing material (Brakus, Schmitt, and Zarantonello 2009). Thus, indirect product experiences can provide consumers with information that helps them predict direct product experiences. For example, seeing a commercial that shows the softness of a bed sheet (indirect product experience) can help consumers predict the actual softness of the bed sheet. VR technology can provide indirect product experiences in the form of vivid and interactive marketing material that simulates direct product experiences. This is referred to as *virtual product experience* (Daugherty, Li, and Biocca 2008). We contribute to the literature by investigating how immersive VR exposure of a tourist destination affects travellers predicted experiences of actually going there. Furthermore, we examine how immersive VR affects their actual experience with the destination. In addition, we will investigate whether predicted experiences have a mediating effect on the relationship between immersive VR exposure and the consumer outcomes.

Previous studies related to VR in marketing and consumer behavior have firmly established that VR leads to telepresence because of its vivid and interactive qualities. Furthermore, the use of VR in marketing can influence consumers' attitudes towards brands, behavioral intentions and brand knowledge both directly and indirectly. As previously stated, most of the existing literature is concerned with how non-immersive VR affects consumer outcomes. However, the technological advances of the 21st century have given rise to the commercial availability of VR hardware such as head-mounted displays. We contribute to the literature by investigating the effects of this new and advanced technology on consumer outcomes. Furthermore, most previous research investigates the consumer outcomes of VR by comparing highly interactive and vivid 3D material with static pictures, or traditional print media. In recent years however, handheld devices such as smartphones and tablets have become one of the main marketing channels for many companies (Chaffey 2016). These devices are capable of delivering ads in the form of high quality pictures. Even though these pictures may be static, users can easily switch between them, zoom in and out on them and manipulate them by changing colors, contrast, brightness etc.. From a marketing perspective it is therefore valuable to gain insight into how immersive VR compares to these technologies in terms

of influencing brand attitudes, brand knowledge, and behavioral intentions.

In relation to this, one of our most important contributions to the literature is that, unlike most research related to VR in marketing, we not only investigate how VR influences consumers' behavioral intentions, but also how it affects the actual purchasing decision. With little research on whether behavioral intentions actually lead to actions in the relevant literature, it's important to investigate this as well, as the relationship should not be taken for granted.

Finally, most of the relevant studies are based upon lab experiments, thus ensuring the internal validity of the results. However, this often comes at the cost of external validity, because the mechanisms aren't studied in a real-life environment, with a sample representative of the entire relevant population. In order to ensure a more accurate representation of how VR can influence the consumer outcomes, we will conduct both a lab experiment and a field experiment.

Chapter 3: Research Model and Hypotheses

Hypotheses

In this section we will present the proposed research model and hypotheses we will use to answer our research question, which is derived from the main purpose of this study. Our research question is as follows:

***RQ:** How does the use of immersive VR in destination marketing affect consumers' destination attitude, behavioral intentions, and purchasing decision, and what are the mechanisms involved in this process?*

3.1 Proposed Model

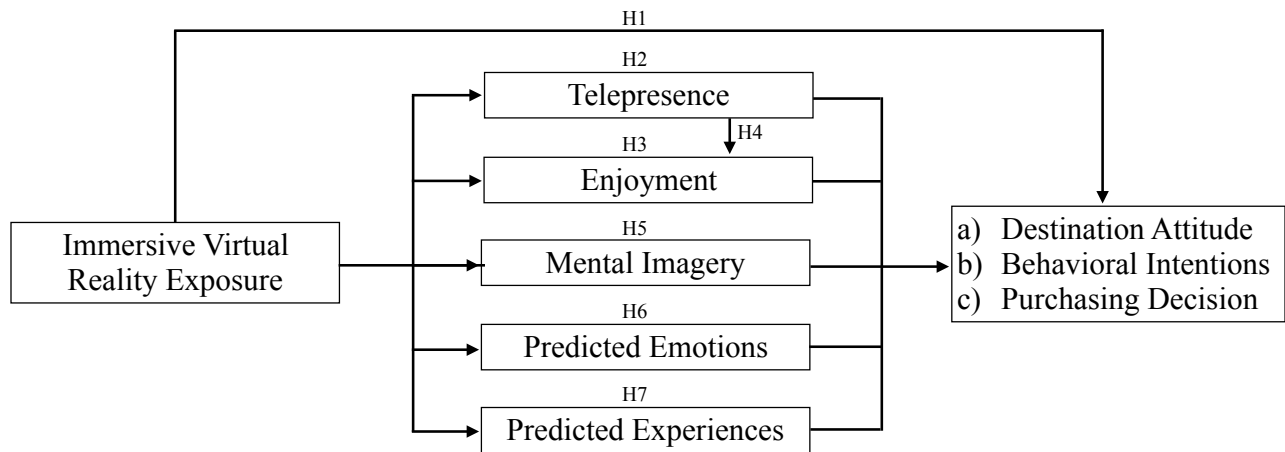


Figure 3.1: Proposed model of effects

In this thesis, we will investigate the established processing mechanisms from the literature in the context of immersive VR in destination marketing. Hence, we will examine how telepresence,

mental imagery and enjoyment affect the relationship between immersive VR and the consumer outcomes stated in the research question. In addition, we will look into two new processing mechanisms, not previously investigated, namely predicted emotions and predicted experiences.

Figure 3.1 is a visual representation of our hypotheses, aiming to investigate the aforementioned relationships. It shows the hypothesized effects from the independent variable on the dependent variables, both directly and indirectly through five mediators. We propose that exposure to immersive VR will have a positive influence on the consumer outcomes a) destination attitude, b) behavioral intentions and c) purchasing decision. We believe this effect to be direct, as well as mediated through *telepresence*, *mental imagery*, *enjoyment*, *predicted emotions* and *predicted experiences*. Furthermore, we propose that the effect of immersive VR exposure on the consumer outcomes is serially mediated, first through telepresence, followed by enjoyment.

3.2 Hypotheses

In order to answer our research question, we propose seven hypotheses. The first hypothesis (H1) aims to test the direct effects of immersive VR exposure on destination attitude, behavioral intentions, and purchasing decision, which will be referred to as consumer outcomes. The following six hypotheses (H2-H7) are related to the second part of our decision problem, namely how the relationship between immersive VR exposure and consumer outcomes is mediated.

With these seven hypotheses, we should be able to answer our decision problem, and get new insight into the use of immersive VR in marketing.

3.2.1 Consumer Outcomes

As previously mentioned, consumer outcomes refers to our three dependent variables, namely destination attitude, behavioral intentions and purchasing decision.

Previous research related to virtual reality has established that different types of virtual experiences

can lead to more favorable brand attitudes and purchasing intentions (e.g. Nah, Eschenbrenner, and DeWester 2011; Li, Daugherty, and Biocca 2002; Suh and Y. E. Lee 2005). Though most of this research is related to the exposure of non-immersive VR, the results should be similar when exposed to immersive VR. This is because both immersive and non-immersive VR technology is able to provide vividness and interactivity, which are the two main components of a successful virtual experience (Steuer 1992).

We will investigate how the use of immersive VR technology, specifically a head-mounted display (HMD), fits into the already established literature. Specifically we want to look at how a tourist destination can be promoted using this technology. Because of the high levels of interactivity and vividness we expect to achieve with the immersive VR headset, there is reason to believe that the findings will be in line with previous research, namely that VR exposure positively influences attitudes towards the destination and behavioral intentions. Seeing as how immersive VR exposure could potentially facilitate an even more vivid and interactive virtual experience than non-immersive VR exposure, we believe that using a head-mounted display could also lead to an increase in actual purchasing decision, not only purchasing intention.

This leads us to our first hypothesis:

H1: Immersive VR exposure of tourist destinations will have a positive impact on a) destination attitude, b) behavioral intentions and c) purchasing decision compared with 2D exposure.

3.2.2 Telepresence

Research has firmly established that vivid and interactive VR exposure, such as virtual experiences and virtual tours, can induce telepresence (Hyun and O’Keefe 2012; Li, Daugherty, and Biocca 2002; Nah, Eschenbrenner, and DeWester 2011). Furthermore, telepresence, or the sense of “being there” in a virtual environment, can influence both brand attitudes and behavioral intentions (Cho, Wang, and Fesenmaier 2002). The mediating effect of telepresence has been investigated in previous research, but with varying results. Nevertheless, telepresence is commonly believed to

have a mediating effect on the relationship between VR exposure on one side, and brand attitudes and behavioral intentions on the other (Hyun and O’Keefe 2012).

Telepresence as a mediator between VR exposure and purchasing decision is relatively unexplored. One reason for this may be the increased complexity of conducting an experiment on actual decision making compared to attitudes and intentions. Alternately, the mediating role of telepresence on the relationship between VR exposure and decision making, might simply be taken for granted. Nevertheless, there is a logical connection between purchasing intention and purchasing decision. We therefore hypothesize the following:

*H2: The impact of immersive VR exposure on a) destination attitude, b) behavioral intentions, and c) purchasing decision is mediated by **telepresence**.*

3.2.3 Enjoyment

According to Huang et al. (2016), the construct of perceived enjoyment is useful to understand users experience when exposed to computer-mediated virtual environments. Venkatesh (2000, p. 351) defines perceived enjoyment as “the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequence resulting from system use”. Domina, S.-E. Lee, and MacGillivray (2012) found that perceived enjoyment positively influenced consumers’ intention to shop in a virtual environment. Therefore, it’s natural to believe that immersive VR exposure indirectly influences the consumer outcomes through enjoyment. Thus, we hypothesize the following.

*H3: The impact of immersive VR exposure on a) destination attitude, b) behavioral intentions, and c) purchasing decision is mediated by **enjoyment**.*

Telepresence and Enjoyment

Lombard and Ditton (1997) argue that telepresence can be considered as a psychological process where enjoyment is one of the outcomes. Seeing as how a vivid and interactive VR experience induces telepresence (Nah, Eschenbrenner, and DeWester 2011), we hypothesize that the relationship

between immersive VR exposure and consumer outcomes is serially mediated through telepresence, followed by enjoyment.

*H4: The impact of immersive VR exposure on a) destination attitude, b) behavioral intentions, and c) purchasing decision is serially mediated through **telepresence** (M1), followed by **enjoyment** (M2).*

3.2.4 Mental Imagery

When mental imagery is encouraged through vivid product information, it significantly influences consumers attitudes towards the brand (McGill and Anand 1989). Furthermore, research has shown that attitudes that are formed based on mental imagery processing tend to be stronger, more stable, and more resistant (Petty, Haugtvedt, and Smith 1995). It has also been shown in previous research that mental imagery processing can influence consumers' decision making process (L. A. Babin and Burns 1997). Immersive VR technology is able to provide vivid and interactive virtual experiences such as virtual tours, virtual destinations and virtual product trial, thus facilitating mental imagery processing for consumers. We therefore hypothesize the following:

*H5: The impact of immersive VR exposure on a) destination attitude, b) behavioral intentions, and c) purchasing decision is mediated by **mental imagery**.*

3.2.5 Predicted Emotions and Experiences

According to D. J. MacInnis, V. M. Patrick, and C. W. Park (2006), predicted emotions (affective forecasts) can be a predictor of choice. Furthermore, predicted emotions involves that people mentally imagine a future event and their affective response to this event. It's fair to assume that there is causality between anticipating positive emotions in experiencing a tourist destination, and positive attitudes and intentions to travel to the destination, which again could lead to a purchasing decision (Gilbert, Gill, and Wilson 2002; Hsee and Hastie 2006).

V. Patrick and D. MacInnis (2003) find in their study that people tend to overestimate their predicted emotions when they focus only on one specific event, in this case the vacation they were supposed to imagine. Participants who also considered the consequences of going on the vacation, had more accurate predictions. This is consistent with the results of Wilson et al. (2000), who find that making subjects think about how much time they would spend on other future activities, makes predictions about one specific event more accurate. Since the marketing material we will expose our subjects to focuses on beautiful nature, we believe that the more immersive VR condition will make people focus less on consequences of going on this trip than the less immersive 2D condition will, and that they will therefore anticipate more positive emotions in the immersive VR condition.

Thus, the vivid and interactive qualities of immersive VR may help facilitate peoples predicted emotions, and this way, influence their attitudes towards the destination, intentions to travel, and purchasing decision. These findings are the basis of our sixth hypothesis:

*H6: The impact of immersive VR exposure on a) destination attitude, b) behavioral intentions, and c) purchasing decision is mediated by **predicted emotions**.*

Predicted experiences are similar to predicted emotions in that both are related to a prediction of the future. However, predicted experiences also include other experiential dimensions in addition to emotions. According to Brakus, Schmitt, and Zarantonello (2009), a product experience, or in our case a destination experience involves *sensory, intellectual, and behavioral* dimensions in addition to affect. These dimensions do not focus on specific emotions or thoughts, but rather to what extent people experience emotions, thoughts etc.. Furthermore, this implies that product experiences don't measure whether the affective, sensory, intellectual and behavioral experiences are positive or negative. However, in the context of our study, we believe that the participants predicted experiences will be positive because they are exposed to immersive VR material of beautiful Norwegian nature. Brakus, Schmitt, and Zarantonello (2009) also find in their study that consumer satisfaction and loyalty are positively affected by brand experiences.

We will focus on the affective, sensory and intellectual dimensions in our research. The behavioral dimension is not as relevant for our type of product, seeing as how this would concern itself with

which specific activities travelers will do on the trip, not the view of the destination itself. The construct of predicted experiences will thus consist of the first three dimensions, although it is referred to simply as predicted experiences when this is possible.

Product experiences don't only have to be direct, in the form of actually consuming the product, but can also be indirect, in the form of advertising and other marketing material (Brakus, Schmitt, and Zarantonello 2009). This means that the participants in our study should be able to use the experience they are having while being exposed to the destinations to predict how the experience would be if they actually traveled to the destinations. Seeing as how telepresence should be higher with a more interactive and vivid medium (Steuer 1992), we also believe that the immersive VR condition will lead to a higher degree of predicted experiences, making this a mediator for the impact of immersive VR exposure on consumer outcomes. This is also in line with the findings of Daugherty, Li, and Biocca (2008), who state that virtual product experiences are better than other indirect product experiences when it comes to influencing consumer attitudes and intentions.

Hence, we hypothesize the following:

*H7: The impact of immersive VR exposure on a) destination attitude, b) behavioral intentions, and c) purchasing decision is mediated by **predicted experiences**.*

Chapter 4: Study 1

Study 1 was designed to test the proposed research hypotheses. In order to do this, a five day lab experiment was conducted at The Norwegian School of Economics (NHH) in September 2016. A team of four researchers were responsible for conducting the experiment, with the counsel of two associate professors and a PhD candidate at NHH.

4.1 Methodology

4.1.1 Experimental Design

The experiment was designed as a between-subject lab experiment. This experimental design is suitable to identify and measure direct and indirect effects of stimuli because it's conducted in a controlled environment. This means that other possible explanations can more easily be ruled out, because contamination by extraneous factors is minimized.

The independent variable used was exposure to pictures of destinations either on a smartphone screen in 2D, or with an immersive VR headset in 3D. The dependent variables were destination attitude, behavioral intentions and purchasing decision.

The participants were randomly assigned to the different experimental conditions. The experiment sessions started with a briefing, followed by the exposure. After that, the participants filled out a questionnaire, and were in turn offered to buy tickets to the destinations they had been exposed to at a discounted price. Finally, they were debriefed. The details of the experimental procedure will be covered later in this section.

4.1.2 Participants

In total, 136 subjects took part in the experiment. All participants were students at The Norwegian School of Economics (NHH). As the experiment was carried out in Norwegian, all the participants were either Norwegian or Norwegian speakers. There were both master students and bachelor students, with a majority being bachelor students.

33 observations were omitted from the final data, changing the number of observations from $n = 136$ to $n = 103$. There were two reasons for doing this. First, the order of the pictures shown to the participants in the 2D condition was changed temporarily, halfway through conducting the experiment. The order was changed back the same day, but seeing as how we could not be certain that this didn't have any impact on how the participants reacted, we had to omit these observations. Second, because of illness among the experimenters the same day, some of the participants had to wait around 10-15 minutes before they could take part in the experiment, seeing as how three experimenters had to handle four participants at times. There is a possibility that having to wait could have affected the participants' mood, changing how they reacted to the pictures they were shown. For this reason, all observations that day were omitted from the data.

4.1.3 Stimulus Development

The two different stimuli, namely 2D versus immersive VR exposure of the tourist destination, had to satisfy three important criteria. First, since the study aims to investigate the effect of using an immersive VR experience in destination marketing, the stimulus in the treatment group had to provide this. Second, the two stimuli had to be as similar as possible, except for the one difference that we were testing the effects of. Third, the stimulus used in the control group had to be a realistic representation of the actual alternative to the stimulus in the treatment group. This means that the stimulus in the control group had to be representative of what is actually used to view advertisements today. This last criterion serves as a way to make the findings in the experiment more applicable to the real world, which increases the external validity of the experiment.

We decided to use the *Samsung Gear VR* headset as the stimulus in the treatment group, and the *Samsung Galaxy S7 edge* smart phone as the stimulus in the control group. Together, these devices satisfy all the criteria mentioned. Samsung Gear VR is a mobile immersive VR headset, that let's users see vivid 3D images. It also provides interactivity, by enabling them to maneuver freely in the virtual environment, by moving their heads in all directions. Samsung Gear VR uses a Samsung smart phone as the screen, and optic lenses to create the 3D effect (Samsung n.d.(b)). Thus, it works well to create an immersive VR experience, stated in the first criterion. Samsung Galaxy S7 edge is a smartphone with a 5,5 inch screen, stretching to the very edges on the side of the phone, whereas the Samsung Galaxy S7 has a 5,1 inch screen, without these edges (Samsung n.d.(a)). We used a Samsung Galaxy S7 in the VR headset in the treatment group, and a Samsung Galaxy S7 edge in the control group. The reason that we didn't use the exact same model was simply that the phones that Samsung lent us were different from the ones we had bought, but as they were only different versions of the same model, we didn't see this as a problem. Seeing as how we used almost the same phone in the VR headset and in the control group, the vividness and interactivity of the VR headset were the only real equipment differences between the two groups, satisfying the second criterion. When it comes to the third criterion, this was also satisfied by using the Samsung Galaxy S7 edge in the control group, as this is a popular phone, and because many ads are now viewed on a smart phone (Mawston 2016; Blair 2016).

The pictures shown to the participants also had to meet these three criteria. In the treatment group, we used pictures produced by *Making View*, a company that produces 360 degree pictures and videos, which can be used with a VR headset (Making View n.d.). There were three 360-pictures, each depicting a destination in Western Norway, specifically *Nærøyfjorden*, *Flåmsbana* and *Aurlandsfjorden*. These destinations are all part of the same day-trip called *Norway In A Nutshell*, organized by *Fjordtours* (Fjordtours n.d.). As these pictures were marketing material for the trip, and could be viewed with the immersive VR headset, the first criterion was satisfied. Using these pictures also made it possible to connect the exposure to the purchasing decision, as participants were later given the opportunity to buy tickets for the Norway In A Nutshell-trip. For the control group, we needed to convert these 360-pictures into regular pictures. We divided them into three pictures each, that combined showed the same main motives as the 360-pictures. This way both the second and third criteria were also satisfied. For examples of the pictures used

in the experiment, see appendix B.

4.1.4 Procedure

In this section, we describe the procedure of conducting the experiment in study 1. In order to make the experiment replicable, every step will be described in detail. Furthermore, we will explain the reasoning behind the different measures that were taken, as this pertains to the internal validity of the experiment.

Price Pretest

In order to avoid any floor- or ceiling effects, we conducted a pretest to ensure the right price level for the offer to purchase tickets. We used a convenience sample consisting of master students at NHH, who answered a short survey, where they were asked if they were willing to buy tickets for the Norway In A Nutshell-trip at different price levels. The survey contained information regarding the original price, which was NOK 1.320 for one ticket and NOK 2.640 for two tickets. Based on the results from the pretest, we set the price to NOK 440 for one ticket and NOK 880 for two tickets as the discounted price in the experiment.

In order to prevent that the validity of the experiment was contaminated by pre-experimental knowledge, the people who participated in the pretest were not allowed to take part in the actual experiment.

Test of Equipment and Rehearsal

It was also important to test the equipment prior to the experiment, in order to prevent any technical difficulties during the experiment sessions. In addition, we had to adjust and rehearse our experiment manuscript, so that we were certain not to say anything that could influence the results or lead to any significant differences in how the four experimenters conducted the sessions. Furthermore, this would also minimize the occurrence of any differences between how the experiment was conducted at the beginning and end of the week, because of practice.

The tests were conducted with employees at The Department of Strategy and Management, at NHH. Practicing with the equipment also gave us a chance to calibrate the scales between the experimenters, reporting how much the participants moved and talked, and how enthusiastic they were. Hence, we ensured that the reporting would be similar across all experimenters.

Recruitment

To recruit participants we wrote an invitation (see appendix C.1) explaining the general topic of the experiment, without giving away information that could prime the subjects, like specifically what we were testing. The invitation was first distributed on the internal web pages for two different courses at NHH, where every student participating in that course would see it. In addition, a short presentation was given during a lecture in both courses, inviting participants. Seeing as how this only reached out to a small part of the students, we also collaborated with the administration at NHH, to send an e-mail with the invitation to every student at NHH. Several reasons were given as incentives for students to take part in the study, like the fact that they would help the research and teaching at NHH, among others. In addition, the students were informed that participants could take part in a draw, where the prize was two universal gift certificates that could be used in stores all over Bergen, with a value of NOK 3000 each. Seeing as how most students have restricted financial budgets, NOK 3000 should be enough to serve as an incentive. It should also counteract any selection bias, because it makes the experiment appealing to those who weren't intrinsically motivated to participate as well, and the fact that they are universal gift certificates make them equally appealing to everyone.

Students who wanted to take part in the study could register in a system designed for experiment registration, called Expmotor. With this system, they were able to see a list of available time slots, and could easily select a day and time that worked for them, during the five days we conducted the experiment. They would then receive an e-mail telling them to confirm by clicking on a link, at which point they would receive a final e-mail with the time and place the experiment would take place. Seeing as how we were four experimenters conducting the experiment, there were also four participant spots in each time slot. The experimenters could see a list of participants at the different times, but the participants themselves could only see how many of the four available spots in each time slot were filled. After a time slot was completely filled, that option disappeared from

the registration form, so there was no possibility of double booking.

After some of the registered participants didn't show up the first day, we started sending out text messages to all the participants who were scheduled the following day, reminding them of their appointment. This was repeated every day, which led to an increase in the attendance rate from day one.

Randomization

In order to ensure that the participants were randomly assigned to either the immersive VR condition or the 2D condition, they were instructed to choose one of four cards. Each of these cards contained a number (1-4) written on the back, and the participants were guided to the room with the corresponding number. Due to the fact that the four rooms were not identical, we made sure that the "atmosphere" of each room did not affect the results, by switching the condition conducted in that room daily. This means that if a room was assigned to the immersive VR condition one day, it would be assigned to the 2D condition the following day. Furthermore, we also switched condition for the experimenters each day. This way we ensured that the experimenters personality and the "atmosphere" of the rooms did not systematically affect the result, thus strengthening the internal validity of the experiment. Exceptions to the randomization were made only if a particular participant knew one of the experimenters personally. That experimenter would then remove his number from the draw, and the participant would be randomly assigned to one of the other experimenters. Each experimenter had approximately the same number of sessions in each room and with each condition. By randomizing the participants, any observable and unobservable differences between the two conditions should be eliminated, meaning that the only difference was the treatment the participants received. This gives us the opportunity to prove causal effects, instead of just correlations.

Anonymization

In a study like ours, where the participants need to be face to face with the experimenter, some participants might feel that the experiment isn't completely anonymous. This is hard to counteract, but because the problem applies to the participants in both conditions, it shouldn't change the

results between the two conditions. The recruitment system, with which the participants could sign up for the experiment, did only contain information about available time slots, meaning that participants were unable to see who else had signed up. Information, such as name, telephone number, email address, and scheduled time could only be seen by the experimenters.

The questionnaire that the participants had to fill out, was completed without the participants needing to register any identifying information. Afterwards, the participants had to write their email address on the consent form, if they wanted to be part of the draw to win the gift certificates. It was, however, made clear to the participants that this piece of paper would not be paired with the answers in the questionnaire, as the two were stored separately.

Because the experimenters had to be in the room during the experiment, divisive screens were put up in two of the rooms, between the experimenter and the participants filling out the questionnaire. In the other two rooms, the participants and the experimenter sat on opposite sides of a table. Both layouts made it impossible for the experimenter to see what the participants answered while completing the questionnaire.

Briefing

Throughout the experiment, everything the experimenters said was from a manuscript, to make sure that there were no discrepancies in what the different experimenters said (see appendix C.2). The experimenters started by explaining that the experiment was completely voluntary and anonymous. The participants then had to sign a consent form, acknowledging that they had understood this (see appendix C.3). The experimenters then explained that the participants would see some pictures, either on the smart phone in the control group, or with the VR headset in the treatment group. Instructions were given as to how to use the different devices, and although the instructions had to be slightly more detailed for the VR headset, the differences were kept to a minimum, to make the two conditions as similar as possible. The rest of the manuscript was identical across the two conditions.

The participants were told that they did not have to memorize anything or focus on anything specific, as there would be no questions about this. The reason for this was that the pretest had

revealed that the subjects were likely to try to memorize different things in the pictures, because they thought that there would be some sort of test of their abilities afterwards. We discussed the possibility that telling the participants not to focus on this would in fact make them focus more on it, if they hadn't thought about it before. However, the feedback from the pretest made it clear that it was more likely that this information made the participants relax and look at the pictures without focusing on anything in particular.

Exposure

In order to ensure interactivity in the immersive VR condition, the participants sat in a rotatable chair with the VR headset on. The chair was placed in such a way that the participants could turn freely in all directions. The participants were instructed to say "next" when they wanted to switch between the pictures. The experimenter would then switch to the next picture and ask "did a new picture appear?". Ideally, they should be able to do this themselves, but the "next"-button on the headset was made in such a way that it could easily cause the participants to quit the slideshow application if not used correctly. This would interrupt the exposure and could potentially contaminate the data. For the same reason, the participants were asked not to touch the side of the headset with the button during the session. Furthermore, the participants were instructed to let the experimenter know when they were finished.

During the exposure, the experimenters took notes, on a scale from 1-5, as to how much the participants talked about the technology and what they saw, and the level of movement, enthusiasm and technical problems. The experimenters also registered whether or not the participants normally wore eye glasses, and if they were wearing them during the exposure, as we wanted to make sure that the results weren't impacted by participants' eyesight. In addition, the VR headset could be perceived as uncomfortable when used with eye glasses underneath, which could also affect the results.

In the 2D condition, the participants were instructed to look at nine different pictures. As mentioned, the pictures were screenshots made from the VR material. This way we ensured that the participants in both conditions were exposed to the same photo material, and that the only difference was whether or not they saw the pictures with an HMD or on a smartphone. The exper-

imenters did not talk, if not talked to, during the exposure in both the immersive VR condition and the 2D condition, to not distract the participants or affect the experience in any way.

It was important for the internal validity of the experiment that participants did not see each other during the exposure, seeing as how they were assigned to different treatments. It's likely that the participants in the control group would be less excited to see pictures on a smartphone if they knew that another participant was seeing pictures with a VR headset, especially if they had not tried this technology yet. Conversely, participants in the treatment group could have experienced more joy of getting to see pictures with the VR headset if they knew that other participants were not getting the same opportunity. There could also be other effects that we didn't predict, and thus couldn't control for. Because of this, the glass walls in the rooms that were used for the experiment were covered, so it was impossible to see what was happening inside. This also strengthened anonymity.

Questionnaire

After the exposure, the participants had to complete a questionnaire (see appendix C.4). They were told that they were going to answer some questions regarding what they had just seen, and that there were no right or wrong answers to the questions. The questionnaire was based on questions from previous research, and the measurements will be discussed in more detail later. The participants filled out the questionnaire on a computer, and were encouraged to ask if they had any questions or if anything was unclear. This turned out not to be an issue, as there were not many questions asked. As mentioned, in two of the rooms the questionnaire was filled out behind a divisive screen, whereas the experimenter and participants were sitting on different sides of a table in the two other rooms.

The questionnaire consisted of two parts, namely one for the participant and one for the experimenter. After the participants had completed their part, and eventually left the room, the experimenters filled out their part, plotting the things they had registered during the exposure, regarding movement etc.. The two parts were separated by two messages, telling the participants that they had completed the questionnaire, to make sure that they would not see that we were registering their behavior. This was to prevent any kind of impact on the rest of the experiment.

Offer to Purchase Tickets

After the participants had completed the questionnaire, they were offered to buy up to two tickets to the Norway In A Nutshell-trip at a discounted price (see appendix C.5). The price for one ticket was NOK 440 (originally NOK 1.320), and NOK 880 (originally NOK 2.640) for two tickets. The offer was binding and the participants had to decide before the session was concluded. If they decided to purchase the ticket(s) they could choose freely when to use them. If one ticket was purchased, it could only be used by the participant that bought it. If two tickets were purchased, both had to be used on the same tour, and one had to be used by the participant that purchased it. The reason for this was to avoid that the ticket(s) were bought as a gift because of the discounted price, thus contaminating the results due to deviant purchasing decision motives. The participants who accepted the offer were given a form that contained information about the Norway In A Nutshell-trip and payment instructions. The tickets had to be paid before the end of the week.

Debriefing

Before the session was concluded, the participants were told not to talk about what they had experienced, and the offer they had received before the the following week. The reason for this was ensure the internal validity of the experiment by avoiding that participants scheduled for later sessions could form expectations or consider the offer to purchase tickets prior to the session.

4.1.5 Measurements

The questionnaire that the participants answered was designed to give a nuanced picture of how the participants experienced the exposure, and how it affected them. The different items used in the questionnaire, and their theoretical basis, are presented in the following section.

Dependent Variables

Destination attitude. To test the attitudes toward the destinations the participants were exposed to, a five-item, 11-point Likert scale was used. The questions were based on Li, Daugherty, and Biocca (2002), and measured the attitudes by letting the participants choose a point on the scale

between “very bad/very good”, “not appealing/very appealing”, “very unpleasant/very pleasant”, “very unattractive/very attractive” and “very boring/very interesting”.

Behavioral intentions. The behavioral intentions we wanted to test were related to the participants’ intention to visit the destinations and to recommend them. This was done with a three-item, 11-point Likert scale, with questions based on Nah, Eschenbrenner, and DeWester (2011), and the wording of the scale was “completely disagree/completely agree”.

Purchasing decision. The purchasing decision was measured simply with an ordinal scale, were the participants answered verbally to the experimenters after receiving the offer. The experimenters later registered the response in the second part of the questionnaire.

Mediating Variables

Telepresence. A three-item, 11-point Likert scale with the extremes “completely disagree/completely agree” was used to measure the participants’ experienced level of telepresence. The first item was based on Hyun and O’Keefe (2012), whereas the second and third item was based on Klein (2003) and Nah, Eschenbrenner, and DeWester (2011).

Enjoyment. The degree of enjoyment while looking at the pictures was measured using a three-item, 11-point Likert scale, with questions based on Nah, Eschenbrenner, and DeWester (2011). The extremes on the scales were “completely disagree/completely agree”.

Mental imagery. When it comes to mental imagery, W. Lee and Gretzel (2012) was the basis for the three-item, 11-point Likert scale used to measure it. The questions were answered on a scale with the extremes “not at all/to a high degree”.

Predicted emotions. The participants were asked to imagine that they traveled to the destinations in the pictures, and their predicted emotions were measured using a five-item, 11-point Likert scale based on Gilbert, Gill, and Wilson (2002) and Wilson et al. (2000). The extremes on the scales were “not happy/very happy”, “no admiration/strong admiration”, “not meaningful/very meaningful”, “little impression/strong impression” and “not satisfied/very satisfied”.

Predicted experiences. The participants' predictions regarding three different experiential dimensions based on Brakus, Schmitt, and Zarantonello (2009), were measured using a nine-item, 11-point Likert scale. These dimensions were the sensory, affective and intellectual dimension, and the extremes on the scales were "completely disagree/completely agree".

Control Variables

In addition to the dependent variables and mediating variables, a number of control variables were measured, for use in the analyses. By controlling for different effects that aren't the focus of this study, we can perhaps better establish the relationships we are interested in looking at.

Optimum Stimulation Level (OSL). The Optimum Stimulation Level (OSL) is a term that describes the preferred level of stimulation of an organism (Zuckerman 1971). This can be measured by using a self-report scale called AST-II (Mehrabian 1978), from which we used some items to be able to assess our participants' OSL. Specifically, we used a five-item, 11-point Likert scale to measure this, with the anchors of the scale being "to a very small degree/to a very high degree". This measurement was used to control for personality traits in the analyses, in case this had an impact on the results.

Prior travel experience. We wanted to control for previous experience with the destinations, as well as existing plans to visit them and knowledge about them. The first two were measured using a two-item scale, with the answers "Yes", "No" and "Don't know". The latter was measured with a single-item, 11-point Likert scale with the scale anchors "no knowledge/a lot of knowledge".

Prior VR experience. We also wanted to control for previous experience with, and knowledge about, VR technology. The first was done with items asking if participants had tried a VR headset before and if they had seen an advertisement with one. The answers were in the form of "Yes", "No" and "Don't know". To test knowledge about VR technology, the participants indicated their level of knowledge on a single-item, 11-point Likert scale, with the scale anchors again being "very little knowledge/a lot of knowledge". These measurements were only done in the immersive VR condition, as we did not want to reveal to the control group that we were using a VR headset.

Experience with the VR headset. An important control variable was the participants' experience

with the exposure itself, namely with using the VR headset. This was measured by asking if they felt nauseated, uncomfortable and dizzy, with answers on a three-item, 11-point Likert scale, and the wording “not at all/to a very high degree”. We also measured the participants’ perceived quality of the pictures they had seen, on a single-item, 11-point Likert scale with the wording “very poor quality/very good quality”. The three first items were only measured in the immersive VR condition, whereas the perceived quality item was measured in both groups.

Demographic variables. Being a relatively homogeneous sample of students at NHH, the only demographic variables we needed were age, gender and whether they were bachelor students or master students.

Hypothesis guessing. We asked the participants what they thought we were testing in the experiment. This way we could control for hypothesis guessing, if that were to be an issue.

Other Variables

Several other variables related to the participants’ behavior during the exposure were also registered in both conditions. This was done to see if there were differences in how the two technologies were used during the exposure, and if this had an impact on the results of the experiment.

Time spent. The experimenters registered how much time the participants spent viewing pictures. The measurements were made in 30 second intervals.

Movement. This was registered on a single-item, 5-point Likert scale, with the scale anchors being “very little/very much”. This variable was registered only in the immersive VR condition.

Talking and enthusiasm. The degree to which the participants talked about both the technology and what they saw in the pictures was also registered, as was their degree of enthusiasm. Again, this was measured on a three-item, 5-point Likert scale, with the scale anchors being “very little/very much” and “very little enthusiastic/very much enthusiastic”. The degree to which they talked about the technology was only registered in the immersive VR condition, whereas the two others were measured in both.

Technical issues. Seeing as how the VR headset was more complicated to use than the smartphone, we also registered whether there were any technical issues during the exposure in both conditions. This was done using a single-item, 3-point scale, with the answers being “no issues”, “some issues” and “significant issues”.

Eye Glasses. We also registered if the participants were using eye glasses on a regular basis, and if they were wearing them during the exposure. The variable was measured using a single-item, 3-point scale, with the answers “yes, wearing them during exposure”, “yes, but not wearing them during exposure” and “no”.

Other reasons for omission from data. Finally, the experimenters registered whether there were any other reasons that a particular observation should be omitted from the data.

Factor Analysis and Scale Reliability Check

It’s fair to assume that the theoretical constructs in our model are correlated, and hence, we performed a factor analysis with oblimin rotation, which is an oblique rotation method that allows correlated factors (Hair et al. 2006). By performing the factor analysis, we can look for underlying patterns for the variables, and possibly condense the information into a smaller set of factors (Hair et al. 2006), which also gives us an image of how the variables fit the data (Pett, Lackey, and Sullivan 2003). When performing the factor analysis, we considered factor loadings above .50 to be significant, and did not include factors with factor loadings below this in the factor solution. According to Hair et al. (2006), an appropriate acceptance level for a sample size around 100, like ours, would be .55, but seeing as how we had a reasonably high number of variables (31), we decided to lower this threshold.

We extracted eight factors with an eigenvalue > 1 . After reviewing the data, we split one of the proposed factors into two, namely the grouping of items measuring the affective and intellectual dimension of Brakus, Schmitt, and Zarantonello (2009)’s brand experience scale. The reason for doing this, was that these are theoretical constructs that are linked, and therefore expected to be interrelated, but still are shown to measure different things (Brakus, Schmitt, and Zarantonello 2009). Thus, we ended up with nine factors. The second item in the predicted emotions scale

was excluded due to cross loading, as well as the third item in the intellectual experiences scale and the first two items in the attitude scale. Of the remaining factors, there were 4/27 items with factor loadings $< .60$, which according to Hair et al. (2006) is the level at which a factor loading is considered to be high, whereas the rest had factor loadings $> .60$. This result indicates that the variables are an acceptable fit with the data.

Furthermore, we performed a scale reliability check to control the internal consistency of the scales, using the reliability coefficient, Cronbach's alpha (α). All the extracted factors reached values $> .70$, which is the generally agreed upon lower limit for Cronbach's alpha (Hair et al. 2006). In fact only the *intention* measurement reached a value $< .80$, which is considered to be a preferable value (Pallant 2010). In addition, none of the scales have more than four items, which makes it clear that there is no problem of higher Cronbach's alpha values because of many items in the scale (Hair et al. 2006). Although several of the scales would have reached a higher Cronbach's alpha if one of the items in the scale were to be deleted, most of the scales we use are already established scales, and removing items would make it harder to compare findings to the previous research (Pallant 2010). We have reported detailed results from the factor analysis and scale reliability check in tables E.1 and E.2 in appendix E.

4.1.6 Data Analysis

Main Effect

To test the hypothesis regarding main effects from immersive VR on consumer outcomes, we used independent-samples t-tests. The reason for this, is that we have one independent variable with two levels (treatments), and therefore wanted to compare the means between these two groups of participants for three different dependent variables. However, seeing as how *purchasing decision* is an ordinal variable, we needed to use a Mann-Whitney U test on this particular variable (Pallant 2010).

Mediated Effects

Preacher and Hayes (2008) state that the most common method of testing hypotheses about mediation is the *causal step strategy* by Baron and Kenny (1986). In recent times, it has, however, been questioned whether this method is really the best one for assessing mediated effects, and several weaknesses of the method have been brought up (Preacher and Hayes 2004; Preacher and Hayes 2008; Hayes 2009). Besides the method being among the lowest in statistical power, Hayes (2009) also mentions the fact that this method claims that there can't be any indirect effects between the independent variable and the dependent variable unless there is a direct effect between them. According to Hayes (2009), this does not have to be the case, because the direct effect could be non-significant due to indirect effects working in opposite directions. Instead of using the *causal step strategy*, we therefore used a *bootstrapping* procedure with 5000 bootstrap samples to test the mediated effects of immersive VR on consumer outcomes. This method has no assumption of normality, being a non-parametric resampling procedure, which makes it an appropriate method for our analysis, as the distribution of scores in the measurements of the indirect effects might not be normal (Preacher and Hayes 2008). The procedure samples from the data set repeatedly, and estimates the indirect effect in each resampled data set (Preacher and Hayes 2008).

4.2 Results

Descriptive Statistics

Descriptive statistics for the nine factors can be seen in table F.1 in appendix F, and frequencies for the ordinal variable *purchasing decision* can be seen in table F.2 in appendix F. There were 52 observations in the immersive VR condition and 51 observations in the 2D condition.

4.2.1 Test of Assumptions

Parametric tests make a number of assumptions that need to be satisfied in order not to influence the results, namely random samples, independence of observation, normality and homogeneity of

variance (Hair et al. 2006; Pallant 2010). Although some techniques are more robust, meaning that they are less affected by violating assumptions, some of the assumptions have to be satisfied, making it important to ensure that they are (Hair et al. 2006). We also used a non-parametric technique on the *purchasing decision* variable. Non-parametric techniques only assume random samples and independent observations, but we have to control this as well (Pallant 2010).

Independence of Observations

The need for independence of observations means that no observation or measurement can be influenced by another observation. Seeing as how we randomized the participants into treatments, and that they didn't have contact with anyone but the experimenter during the experiment, this shouldn't be a problem. The experiment was also anonymous, and the participants were given clear instructions not to speak to anyone about what they had done in the experiment before it was concluded.

Normal Distribution

In order to assess the normality of the distribution of the sample data, we used the descriptive statistics to check the skewness and kurtosis values (see descriptive statistics in table F.1 in appendix F). The skewness value indicates whether the scores are clustered to either side of the distribution, whereas the kurtosis value indicates how peaked the distribution is, meaning if it's concentrated around one score (Pallant 2010). A negative skewness value indicates scores clustered at the low levels, whereas positive skewness values indicate the opposite. Positive kurtosis values indicate a peaked distribution, and vice versa for negative kurtosis values (Pallant 2010). Values between -1 and 1 indicate that the scores are normally distributed. In total, four of our nine factors had kurtosis values above $|1|$, all of them positive. Three of these factors also had a skewness value above $|1|$, all of these negative. This means that our scores do not satisfy the assumption of normality, as some scores are peaked and clustered around the high levels of the scales. However, according to Pallant (2010, p. 206), "most of the techniques are reasonably 'robust' or tolerant of violations of this assumption. With large enough sample sizes (e.g. 30+), the violation of this assumption should not cause any major problems". Seeing as how we have a sample size of $n = 103$, the lack of normality should not be a big problem, but to be certain, we

conducted non-parametric tests to control the results of the parametric tests.

Homogeneity of Variance

We conducted Levene’s test to see if the assumption of homogeneity of variance was satisfied. In this test, a significant result is unwanted, as this shows that the assumption is not satisfied, because the variances of the two groups are not equal (Pallant 2010). The results of the tests were that none of the test values were significant, meaning that there is homogeneity of variance in all the factors. The results of the test are shown in table F.3 in appendix F.

4.2.2 Test of Main Effects (H1)

The aim of our first hypothesis (H1) was to investigate the main effects of immersive VR on a) destination attitude, b) behavioral intentions and c) purchasing decision, predicting that there was a positive effect on all three consumer outcomes. H1a and H1b were tested using independent-samples t-tests, whereas H1c was tested with the non-parametric Mann-Whitney U test. The results of H1a and H1b were also confirmed with this test. The results can be seen in table 4.1, which presents mean scores for destination attitude and behavioral intentions in both conditions and corresponding p-values. For purchasing decision it only shows whether or not to reject the null hypothesis – which was that the distribution of purchasing decision scores was the same for both conditions – and the corresponding p-value.

The results show that there were no significant differences in means for destination attitude, behavioral intentions or purchasing decision between the two conditions. This means that we were not able to show any direct effects of being exposed to a destination in immersive VR compared to 2D. The independent-samples t-test showed that H1a and H1b were not supported. The Mann-Whitney U test also confirmed this, in addition to retaining the null hypothesis in H1c, meaning that there were no significant differences between the two conditions for any of the dependent variables. The results regarding main effects on the dependent variables can be seen in table 4.1.

Control Variables

We have suggested several control variables to be used as covariates in the analyses. However, the dependent variables and the covariates must be correlated as a requirement for covariance analysis (Hair et al. 2006). This is not the case for most of our control variables. Only four of the control variables were correlated with two of the dependent variables. The participants' gender and one of the personality traits were correlated with destination attitude, and type of study (bachelor/master) and experience with VR was correlated with purchasing decision. After repeating the analyses while controlling for these, the results remained the same.

4.2.3 Test of Mediation Effects (H2-H7)

Main effects of immersive VR were also tested for the five mediators, although these are not specifically hypothesized. However, for there to be indirect effects through these variables, there must also be a main effect from immersive VR on them. The results show that there was a significant difference between the two conditions for *Telepresence* (diff. = 2.24233, $p = .000$), *Enjoyment* (diff. = 1.84842, $p = .000$) and *Mental Imagery* (diff. = 1.04387, $p = .002$). Mean scores in both conditions and p-values for the five proposed mediators are included in table 4.1.

Table 4.1: Main Effects of Immersive VR

Main Effect on Dependent Variable:	Mean - VR:	Mean - 2D:	Difference:	P-value:
Destination Attitude (H1a)	8.6026	8.5294	.07315	.819
Behavioral Intentions (H1b)	8.4167	8.4248	-.00817	.983
Purchasing Decision (H1c)	–	–	Retain H0	.837
Main Effect on Mediator:	Mean - VR:	Mean - 2D:	Difference:	P-value:
Telepresence	6.9744	4.7320	2.24233**	.000
Enjoyment	9.3974	7.5490	1.84842**	.000
Mental Imagery	8.7628	7.7190	1.04387**	.002
Predicted Emotions	8.6587	8.3088	.34983	.185
Sensory Experiences	8.3205	8.3268	-.00628	.985
Affective Experiences	6.4679	6.1503	.31762	.401
Intellectual Experiences	6.1250	6.5000	-.37500	.359

Significance level: * 5%; ** 1%

As previously discussed, the lack of significant direct effects on the dependent variables does not necessarily mean that there are no indirect effects (Preacher and Hayes 2008). Hypotheses H2-H7 were all aimed at investigating these possible indirect effects between the independent and dependent variables. H2 predicted that the effect of immersive VR on consumer outcomes was mediated by telepresence. H3 predicted that the effect was mediated by enjoyment, whereas H4 predicted a serial mediation starting with telepresence, followed by enjoyment. H5 predicted that the effect of immersive VR on consumer outcomes was mediated by mental imagery, H6 predicted that the effect was mediated by predicted emotions, and H7 predicted that the effect was mediated by predicted experiences. Predicted experiences consists of three separate factors, representing the affective, sensory and intellectual dimensions of the construct. All six mediation hypotheses were tested using the previously mentioned *bootstrapping* procedure explained by Preacher and Hayes (2008). The results are summarized in tables 4.2 and 4.3, with effect sizes and corresponding 95% confidence intervals (95%CI) for each. The effect is significant if the confidence interval does not include zero. The significant effects are marked with *. Seeing as how there were no direct effects

of immersive VR on consumer outcomes, the mediators discussed in the following are all part of the indirect effects.

There was no significant indirect effect of using immersive VR on any of the consumer outcomes through *telepresence* (H2), nor was there one through *predicted emotions* (H6) or any of the three dimensions of *predicted experiences* (H7). This means that H2, H6 and H7 are all rejected. However, when extracting the item regarding predicted happiness from the predicted emotions factor, there was a significant indirect effect of immersive VR through this item, on both destination attitude (effect = .3816; 95%CI = .1125, .8323) and behavioral intentions (effect = .2975; 95%CI = .0690, .6831). Predicted happiness has been established as an important item in affective forecasting research (Wilson et al. 2000), which is why we tested for this separately.

There was a significant indirect effect on two of the consumer outcomes through *enjoyment*, namely destination attitude (effect = .6222; 95%CI = .3219, 1.0231) and behavioral intentions (effect = .4279; 95%CI = .0601, .9162). This means that H3 is partly supported, seeing as how there was no indirect effect on purchasing decision. In addition, we found a significant serial mediation in accordance with H4a, with an indirect effect of immersive VR on destination attitude, first through *telepresence* (M1) and secondly through *enjoyment* (effect = .2642; 95%CI = .2642, .1122). There was also a significant indirect effect on behavioral intentions, through *mental imagery* (effect = .2697; 95%CI = .0559, .6628), but no significant indirect effect on destination attitude and purchasing decision, which means that H5 is also partly supported.

Table 4.2: Indirect Effects of Immersive VR (1)

<u>Dependent Variable:</u>	a) Destination Attitude	
<u>Mediator:</u>	Effect:	95%CI (LL, UL):
Telepresence (H2)	.0744	(-.2500, .3854)
Enjoyment (H3)	.6222*	(.3219, 1.0231)
M1: Telepresence, M2: Enjoyment (H4)	.2642*	(.1122, .5457)
Mental Imagery (H5)	.1831	(-.0115, .4786)
Predicted Emotions (H6)	.2090	(-.0890, .5838)
Sensory Experiences (H7)	-.0025	(-.2622, .2710)
Affective Experiences (H7)	.0606	(-.0604, .2877)
Intellectual Experiences (H7)	-.0859	(-.3445, .0782)

Table 4.3: Indirect Effects of Immersive VR (2)

<u>Dependent Variable:</u>	b) Behavioral Intentions		c) Purchasing Decision	
<u>Mediator:</u>	Effect:	95%CI (LL, UL):	Effect:	95%CI (LL, UL):
Telepresence (H2)	.3707	(-.0235, .8889)	.0902	(-.4480, .6213)
Enjoyment (H3)	.4279*	(.0601, .9162)	-.0547	(-.7871, .7176)
M1: Telepresence, M2: Enjoyment (H4)	.1168	(-.0374, .3695)	-.0389	(-.3974, .2784)
Mental Imagery (H5)	.2697*	(.0559, .6628)	-.0754	(-.4827, .2300)
Predicted Emotions (H6)	.1931	(-.0738, .5525)	.2140	(-.0874, .6892)
Sensory Experiences (H7)	-.0018	(-.1556, .2452)	-.0031	(-.3996, .3932)
Affective Experiences (H7)	.0705	(-.0583, .3510)	.1398	(-.1668, .6513)
Intellectual Experiences (H7)	-.1034	(-.4041, .0875)	-.1765	(-.6958, .2027)

4.2.4 Summary of Findings

Study 1 showed that there were no direct effects on the dependent variables of using immersive VR compared to 2D. However, there were some indirect effects, namely on destination attitude through *enjoyment* and on behavioral intentions through *mental imagery*. In addition, there was a serial indirect effect on destination attitude, through *telepresence* (M1), followed by *enjoyment* (M2). There were no effects of immersive VR on purchasing decision. As such, the results differed from what the hypotheses predicted for the most part. While there were some significant indirect effects in the simple mediation analyses, these effects disappeared when performing a parallel mediation analysis. This indicates that there could be some causal relationships between mediators, which is also shown to be true for telepresence and enjoyment. Therefore, we will look more into serial indirect effects with further analyses in the next section.

4.3 Discussion and Further Analysis

4.3.1 Similar Stimuli

As plenty of research has previously established a relationship between vivid and interactive stimuli and consumer outcomes, both with and without mediators (e.g. Ahn and Bailenson 2011; Suh and Y. E. Lee 2005; Schlosser 2003), it was surprising not to find any direct effects of immersive VR on consumer outcomes in our study. One reason for this lack of effect could be the similarity of stimuli in our two conditions. Seeing as how we wanted the stimulus in the control group to be representative of what is currently used to view advertisements and information, a Samsung smartphone was a natural choice. However, the Samsung Galaxy S7 edge has a high resolution display with vivid colors, which is evident when comparing perceived picture quality in the two groups, where the control group scored significantly higher. Because the participants were also able to zoom in and out to inspect the pictures, the two conditions perhaps became too similar. This is necessary, however, for the study to have external validity, as the research aims to give insight into possible implications of using immersive VR in marketing. Simply developing a control

stimulus which is artificially primitive to inflate differences between the conditions, would not give an accurate image of the current market, and the insight would thus be less useful.

4.3.2 The Role of the Mediators

As previously discussed, the lack of a significant direct effect does not necessarily mean that there are no indirect effects (Preacher and Hayes 2008). The fact that enjoyment acts as a mediator in the indirect effect from immersive VR on both attitude and intentions, tells us that the experience the participants have while viewing the pictures is important. The participants enjoyed looking at the pictures more with the VR headset than with the smartphone, and enjoyment led to more favorable attitudes towards the destinations, as well as behavioral intentions. This indirect effect, together with the others we have uncovered, indicate that there are other factors that we have not measured, that counteract these effects, explaining the lack of a direct effect. It might be because the dependent variables are not sensitive enough to a one-time exposure like ours, and that other factors thus have too strong of an impact to see any changes.

Predicted happiness is part of a significant indirect effect on both destination attitude and behavioral intentions alone, but predicted emotions as a whole, is not. This shows that consumer happiness is important to keep in mind when developing VR material. Mental imagery is also part of a significant indirect effect on behavioral intentions, meaning that the VR headset led to creation of more mental images, which again led to the destinations seeming like places the participants would like to travel to. It's interesting that this is not the case for telepresence, as these concepts are related. However, telepresence acted as a mediator in the indirect effect when it also went through enjoyment. This indicates that telepresence in itself doesn't lead to more favorable attitudes and intentions, but that it can lead to other effects, which again lead to consumer outcomes. In that regard, telepresence acts like a facilitator for other effects, but does not actually impact consumer outcomes in itself.

4.3.3 Basis for Further Analyses

Seeing as how there were significant indirect effects in simple mediation analyses, but not in a parallel mediation analysis, we believe there to be causal relationships between mediators. We have also shown that telepresence has an effect on enjoyment, which again impacts attitudes, so it's interesting to investigate telepresence as the first mediator in a serial indirect effect further. This way, we can see if there are any other of our initially proposed mediators that have a significant effect on consumer outcomes when they are first affected by telepresence. The two other variables that were directly affected by immersive VR were mental imagery and enjoyment, so these will also be investigated further as first mediators in serial indirect effects. However, telepresence was the variable with the largest difference in means in the two conditions, making it natural to use this as a starting point.

4.3.4 Alternative Indirect Effects - Serial Mediation

To further investigate the relationship between immersive VR and consumer outcomes, we performed several analyses with serial mediation, using the previously mentioned *bootstrapping* procedure. As the only mediators which had a direct effect of immersive VR were telepresence, enjoyment and mental imagery (see table 4.1), we used these respectively as the first mediator (M1) in a number of serial mediation analyses. The second mediators (M2) were the remaining four variables, predicted emotions, sensory experiences, affective experiences and intellectual experiences, respectively. This resulted in four tests of indirect effects on the three different consumer outcomes for each first mediator (M1), meaning 36 different tests. By doing this, we were able to thoroughly map the indirect relationship between immersive VR and consumer outcomes. We will now describe the results for each first mediator (M1) separately, starting with *telepresence*.

Telepresence as the First Mediator (M1)

In testing the indirect sequences $VR \rightarrow Telepresence (M1) \rightarrow M2 \rightarrow Consumer Outcomes$, we found many significant indirect effects. In fact, the only relationship which was not significant was the indirect effect on behavioral intentions with affective experiences as M2. Thus, immersive VR's

indirect effect on destination attitude, behavioral intentions and purchasing decision is sequential, first through telepresence, followed by either predicted emotions, sensory experiences or intellectual experiences. Immersive VR's indirect effect on destination attitude and purchasing decision also goes through telepresence first, followed by affective experiences.

The effects are summarized in table 4.4, with corresponding 95% confidence intervals (95%CI), where the effect is significant if the 95%CI does not include zero. Significant effects are marked with *.

Table 4.4: Serial Indirect Effects with *Telepresence* as M1

Dependent Variable:	a) Destination Attitude		b) Behavioral Intentions		c) Purchasing Decision	
	Effect:	95%CI (LL, UL):	Effect:	95%CI (LL, UL):	Effect:	95%CI (LL, UL):
<u>M2:</u>						
Predicted Emotions	.2616*	(.0863, .5666)	.2144*	(.0652, .5018)	.2711*	(.0580, .7323)
Sensory Experiences	.1497*	(.0146, .4112)	.0950*	(.0076, .3066)	.1906*	(.0037, .6032)
Affective Experiences	.1025*	(.0094, .3178)	.0991	(-.0005, .3458)	.2428*	(.0310, .7726)
Intellectual Experiences	.1616*	(.0481, .3995)	.1662*	(.0394, .4327)	.3378*	(.1117, .8335)

Enjoyment as the First Mediator (M1)

As with telepresence as the first mediator, the indirect sequences $VR \rightarrow \textit{Enjoyment (M1)} \rightarrow M2 \rightarrow \textit{Consumer Outcomes}$ gave many significant results. The only difference between the two, in terms of significant indirect effects, was that the indirect effect on destination attitude with affective experiences as M2 was not significant. Thus, only the indirect effect on purchasing decision went through affective experiences as M2, when enjoyment was M1. The remaining results show that the indirect effect of immersive VR on consumer outcomes is sequential, first through enjoyment, followed by either predicted emotions, sensory experiences or intellectual experiences.

The effects are summarized in table 4.5, with corresponding 95% confidence intervals (95%CI), where the effect is significant if the 95%CI does not include zero. Significant effects are marked with *.

Table 4.5: Serial Indirect Effects with *Enjoyment* as M1

Dependent Variable:	a) Destination Attitude		b) Behavioral Intentions		c) Purchasing Decision	
	Effect:	95%CI (LL, UL):	Effect:	95%CI (LL, UL):	Effect:	95%CI (LL, UL):
Predicted Emotions	.3642*	(.1425, .7368)	.3722*	(.1677, .7387)	.5560*	(.2055, 1.2166)
Sensory Experiences	.2367*	(.0809, .6090)	.1772*	(.0280, .4652)	.4474*	(.0931, 1.2627)
Affective Experiences	.0812	(-.0027, .2868)	.1242	(-.0048, .3966)	.3501*	(.0575, .8945)
Intellectual Experiences	.1464*	(.0118, .4423)	.2341*	(.0544, .5701)	.5305*	(.1914, 1.1849)

Mental Imagery as the First Mediator (M1)

Finally, we tested the serial indirect effects with mental imagery as the first mediator (M1), in the indirect sequences *VR* → *Mental Imagery (M1)* → *M2* → *Consumer Outcomes*. The results from these tests show that all the indirect effects were significant. This means that the indirect effect of immersive VR on consumer outcomes is sequential, first through mental imagery, followed by either predicted emotions, sensory experiences, affective experiences or intellectual experiences.

The effects are summarized in table 4.6, with corresponding 95% confidence intervals (95%CI), where the effect is significant if the 95%CI does not include zero. Significant effects are marked with *.

Table 4.6: Serial Indirect Effects with *Mental Imagery* as M1

Dependent Variable:	a) Destination Attitude		b) Behavioral Intentions		c) Purchasing Decision	
	Effect:	95%CI (LL, UL):	Effect:	95%CI (LL, UL):	Effect:	95%CI (LL, UL):
Predicted Emotions	.1606*	(.0502, .4206)	.1365*	(.0421, .3682)	.2280*	(.0511, .5585)
Sensory Experiences	.1386*	(.0525, .3406)	.0825*	(.0112, .2647)	.2501*	(.0710, .6962)
Affective Experiences	.0514*	(.0059, .1793)	.0555*	(.0014, .2049)	.1583*	(.0367, .4630)
Intellectual Experiences	.0592*	(.0103, .2081)	.0688*	(.0114, .2137)	.1453*	(.0276, .4479.)

4.3.5 Revised Model of Effects

After testing our hypotheses, and conducting these additional analyses, we present the findings in a revised model of effects, shown in figures 4.1, 4.2 and 4.3. Due to the complexity of the relationships, the initial model was divided into three models, one for each first mediator (M1), in the same way as the tables with the effects.

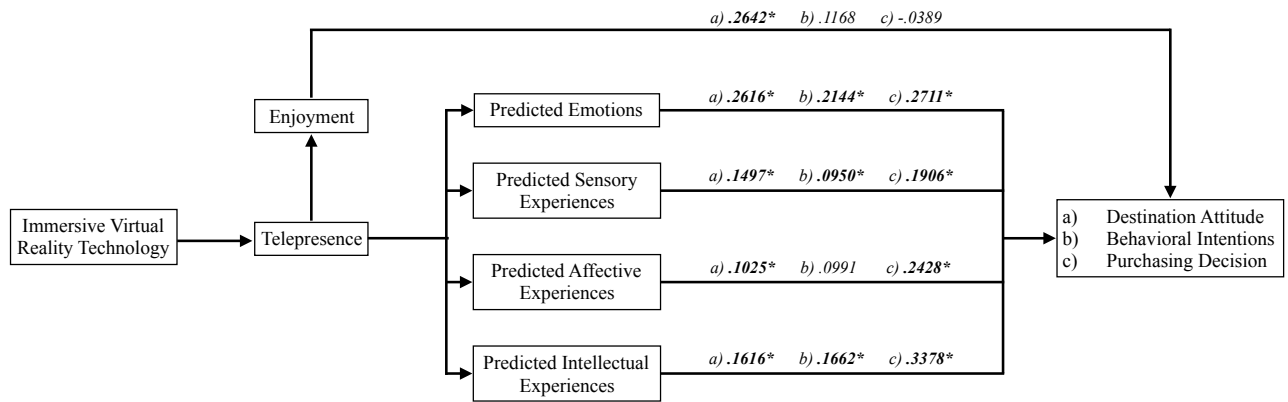


Figure 4.1: Revised model of effects, *Telepresence*

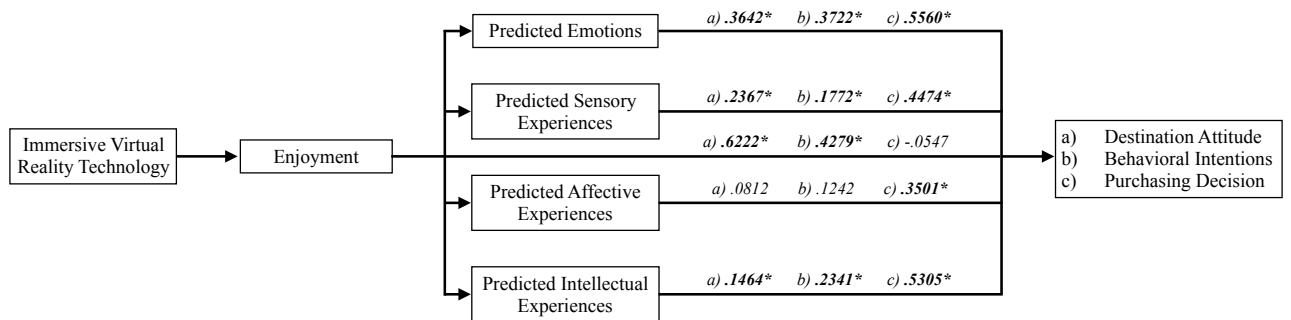


Figure 4.2: Revised model of effects, *Enjoyment*

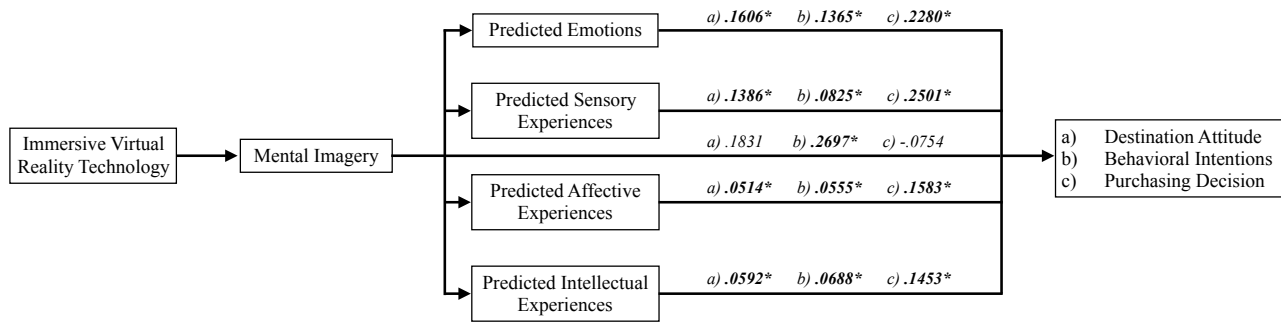


Figure 4.3: Revised model of effects, *Mental Imagery*

Being exposed to destinations with immersive VR does not lead directly to consumer outcomes. The indirect effect, however, goes through a number of mediators. The indirect effect on destination attitude and behavioral intentions goes through enjoyment. The indirect effect on behavioral intentions also goes through mental imagery. As for serial indirect effects, there are several, specifically through telepresence, enjoyment and mental imagery as first mediators (M1) and predicted emotions and predicted experiences as second mediators (M2), as seen in the models.

4.3.6 Discussion of Findings

The results of study 1 bring with them important insights. First of all, they show that compared to the current technology being used to view advertisements and information today, immersive VR technology is not significantly more effective in inducing favorable destination attitudes, behavioral intentions and purchase decisions. However, there are indirect effects through different mediating factors, which give insight into how immersive VR (vs. 2D) is processed.

The way to interpret the indirect effects is that immersive VR leads to participants experiencing telepresence, enjoyment and/or mental imagery, and this leads participants to predict more favorable emotions and experiences, which again leads to more favorable consumer outcomes. For enjoyment and mental imagery, this indirect effect is also significant without any other mediators involved. This means that telepresence in itself does not induce more favorable consumer outcomes, but simply acts as a facilitator for other mechanisms that lead to this. On the other hand, these

mechanisms are not directly affected by the use of immersive VR, making it important to induce a high level of telepresence. To ensure favorable predicted emotions and experiences, the virtual experience needs to be designed in a way that also induces these favorable predictions. We will discuss suggestions for how this can be done, as well as how to possibly induce more telepresence when discussing implications in the general discussion section.

When it comes to enjoyment, the results show that the perception of the virtual experience is important for consumer outcomes, seeing as how there is an indirect effect through enjoyment to both destination attitude and behavioral intentions. This means that the virtual experience has to be enjoyable for the viewer, which should be relatively easy to ensure, e.g. with a VR headset that is comfortable to wear and exciting/pleasurable pictures and music.

It's interesting that the indirect effects of immersive VR on purchasing decision were significant when going serially through the previously mentioned indirect sequences, but not with simple indirect effects through enjoyment, mental imagery or predicted happiness, which had an effect on other consumer outcomes. This shows that simply creating an enjoyable virtual experience which induces mental images and predicted happiness is not enough to make consumers take the extra step from having the intention to purchase tickets for the trip, to actually purchasing tickets. The virtual experience also has to be designed in a way that will suppress predictions of unfavorable emotions and experiences and accentuate predictions of favorable ones.

4.3.7 Suggestions for Study 2

Although our control stimulus is developed to help with the external validity of the findings, resembling the current alternative to immersive VR technology, our experiment sample is not necessarily representative of the target group of advertisements of this kind. Destination marketing is perhaps more aimed at a target group with more money, and to a certain extent more time, than students. This could make the findings in an experiment with only students as participants less generalizable and apt for application in real world circumstances. To see if the results of this experiment apply for participants closer to the target group of destination marketing, study 2 should aim to investigate the same relationships with participants that are perhaps older, have a

more established life and are in the market for traveling. In addition, it would be interesting to see how results might differ in an other setting than in the lab, for participants who have already purchased tickets to a destination. The fact that the participants will already have bought the tickets and are closer to experiencing the destination in real life, might influence how effectively immersive VR exposure can change their destination attitude and behavioral intentions. A final interesting point to explore, is whether the actual experience of traveling to the destination in the pictures is different after seeing pictures of the destinations in either immersive VR or in 2D.

Chapter 5: Study 2

Study 2 was conducted in a more exploratory manner than study 1, as a field experiment. The hypotheses presented in Chapter 3 were still the basis for the research, but they were treated more as research questions than strict hypotheses. However, seeing as how this was a field experiment, some of the measurements were removed, to prevent respondent fatigue. In addition to the existing hypotheses, we also added a research question regarding how the actual experience of traveling to the destination would be affected by whether the participants were exposed to immersive VR or 2D beforehand.

The field experiment was conducted during two trips on board Hurtigruten, with passengers traveling at least from Bergen to Trondheim. Hurtigruten is a cruise line along Norway's western and northern coast between Bergen and Kirkenes, which ships both passengers and freight, and visits famous fjords and other nature sites along the way (Hurtigruten 2015). Conducting the experiment on board Hurtigruten ensured a sample group in the target group for destination marketing, as they had already purchased tickets to a trip to see Norwegian nature. More importantly, this also meant that the situation in which the experiment was conducted was very different from in the lab experiment. The destination that the participants were exposed to was much closer, both physically and psychologically, for participants in this study, which likely impacted how they predicted the emotions and experiences. Because the passengers on this trip were mostly foreign tourists, we sent all the written material that we were going to use to a professional translating service called Allegro, which is the translation service used by The Norwegian School of Economics. The material was translated into English, German and French, which was deemed as sufficient to reach most passengers.

Conducting a field experiment has both benefits and disadvantages, namely in the degree of validity of the experiment. There is no consensus regarding whether field or lab experiments are best suited for extrapolation of findings to other populations. Some state that the controlled environment of the lab gives more reliable results, whereas others argue that the realism of a field experiment makes it more relevant to the real implications of the findings (Falk and Heckman 2009). The

controlled environment of the lab provides more certainty that the manipulation is the only factor that is changed, and the internal validity is its greatest strength. On the other hand, the realism of the field provides insight into what effects apply for a more generalizable sample, making the external validity the greatest strength of the field experiment. One could argue that we in fact conducted a lab experiment in the field, in trying to recreate the lab experiment in a more natural environment, while still ensuring internal validity. However, not everything in the field was possible to control to the same extent as in the lab.

5.1 Methodology

5.1.1 Experimental Design

The experimental design was very similar to that of the experiment in study 1, as a between-subject field experiment, but this time we also had a pre-post design, with a second questionnaire after experiencing the destination in real life. Our independent variable was the same, namely exposure to pictures of a destination either on a smartphone screen in 2D, or with an immersive VR headset, but the pictures were different. There was also no measurement of purchasing decision, seeing as how participants had already purchased tickets for the trip they were on. Destination attitude and behavioral intentions were still the dependent variables.

The participants were assigned to the different experimental conditions depending on available capacity of the given condition, as there were no appointments as to when the participants showed up in this experiment. The experiment started with brief instructions about the equipment, followed by exposure of participants to the pictures of the destinations. After that, participants answered a questionnaire and received information about when and where they could fill out the second part of the questionnaire the next day. The next day, they answered a short second questionnaire. The details of the experimental procedure will be covered later in this section.

5.1.2 Participants

A total of 71 subjects took part in the experiment, all of them passengers on board Hurtigruten, traveling from Bergen to Trondheim or further. The participants were passengers from across the world, with a majority being native German or English speakers, most of them over the age of 50. The experiment was carried out without need for much verbal communication between the experimenters and participants, with written material in Norwegian, English, German and French.

Five observations were omitted from the final data, making the final number of observations $n = 65$. One of these was a young girl who had answered more than one option in several questions. This made us doubt the legitimacy of other children's answers, so we also removed the answers of three more children at the age of 14, 12 and 10, which we deemed to be too young to fully understand what they were answering. Finally, there was one participant in the 2D condition who filled out a questionnaire meant for the immersive VR condition. This included questions regarding the experience with the VR headset, potentially making the participant aware that we were using a VR headset. Hence, we were uncertain if this could have affected the participant's responses, like previously discussed, and therefore excluded the observations from the analysis.

5.1.3 Stimuli

The stimuli used in the different experimental conditions were very similar to those in study 1. The devices used to view the pictures were the same, but the pictures themselves were different. In stead of pictures of *Nærøyfjorden*, *Flåmsbana* and *Aurlandsfjorden*, the pictures were of *Geirangerfjorden* and *Hjørundfjorden*. The reason for changing the pictures was that the relevant destination to test attitudes and intentions towards was different in study 2 than the ones in study 1. In the fall, Hurtigruten's ships sail into Hjørundfjorden on the trip from Bergen to Trondheim, and let the passengers experience this particular fjord. Hence, to test the effects of immersive VR on attitudes and intentions before and after visiting this destination, the pictures had to be changed. For examples of the pictures used in the experiment, see appendix B.

5.1.4 Procedure

As with study 1, we will describe the procedure of conducting the experiment in this section. The steps will be explained in detail, to make the experiment replicable, and the reasoning behind different measures that were taken will also be explained.

Recruitment

The recruitment of participants was done with an invitation that was handed out to passengers of Hurtigruten at the terminal before they entered the ship. On the first trip, the different translations of the invitation were printed in separate versions, making the process of handing them out difficult, as we first had to ask passengers what language they spoke, before handing out the invitation. Learning from this, we redesigned the invitation for the second trip, fitting all four translations on the same piece of paper (see appendix D.1). This enabled us to distribute the invitations by getting the staff at the terminal to include the invitation when handing out the passengers' boarding passes.

The invitation included a brief description of the general purpose of the study, without revealing information that could affect the results. In addition, it included information about when and where the experiment would be conducted, as well as the fact that participants in the study would be included in a draw to win five gift certificates of NOK 500, which could be used on board the ship.

When the experiment itself started, we also tried to recruit passengers who walked past us, to get as many participants as possible, for better statistical power.

Randomization

Randomization was more challenging in the field experiment than in the lab experiment, because we didn't have any scheduled time slots for specific participants to be assigned to. This meant that we didn't have control over when participants would show up, or how many would show up overall. We therefore had to assign participants to whichever condition was vacant at the moment, while simultaneously trying to keep the number of participants in each condition more or less balanced

at all times, in case the participants suddenly stopped coming. However, it seems unlikely that there was any pattern in what order passengers approached us, making the fact that they came at random times a form of randomization in itself. To prevent couples from revealing the details of the different conditions to each other, we also felt it necessary to expose couples to the same condition, although this was at the expense of proper randomization.

Anonymization

On the first trip, the exposure and completion of the two questionnaires were conducted in the ship's conference hall. Unfortunately, this was not possible to close off, but it was divided into two parts, where we kept the 2D and immersive VR conditions separated. We also put up small booths in the corners of the conference hall, where the participants could be exposed to the pictures privately. The questionnaires were answered individually at several tables we had put up in the other end of the conference hall. On the second trip, we were lent two spacious cabins, where we could conduct the experiment. This ensured a higher degree of anonymity in the exposure part. The questionnaires were, however, answered at three tables that we had put up near the ship's lobby, to minimize waiting time for the exposure part.

To be able to draw winners of the gift certificates, and be able to pair participants' questionnaires from the two days, participants had to write their name and cabin number on the front of the questionnaires. However, they were notified that this information would not be paired with their answers in the data, and that these pages would be removed as soon as we had paired the two questionnaires.

In summary, in a field experiment like this, we had more trouble securing full anonymity for the participants than in the lab, which is to be expected. Most importantly, however, was to ensure that the participants could not be identified in the data, which we did by removing their identifying information from the two questionnaires after pairing them.

Briefing

To eliminate problems with language barriers between the experimenters and the participants, short written instructions as to what to do and how to use the equipment were given to the

participants in all four languages previously mentioned (see appendix D.2). The participants could then read the instructions in their preferred language, and look at the pictures themselves. The instructions had to be somewhat shorter than in the lab experiment, to make them easier to understand, but they were efficient in instructing the participants, resulting in few difficulties during the exposure.

Exposure

As previously mentioned, the exposure took place in the conference hall on the first trip, and in two separate cabins on the second trip. The participants in the 2D and immersive VR conditions did not see each other during the exposure, of which the importance has previously been discussed. On the first trip, rotating chairs were not available, so the participants in the immersive VR condition were not able to freely turn around. However, many of them did manage to turn their heads and bodies almost 360 degrees in the chair. Still, there was a visible difference in how much the participants turned around in the two experiments. This could also be due to the less detailed descriptions or the fact that the students in the lab experiment were better at adapting to the new technology used. On the second trip the participants in the immersive VR condition sat in a rotatable chair.

Like in the lab experiment, the participants in the immersive VR condition did not switch between the pictures themselves, so that they didn't press any unwanted buttons that would interrupt the exposure. Instead, the experimenters switched the pictures when prompted.

Questionnaire 1

The first questionnaire was very similar to the one in the lab experiment, with some alterations to fit the field setting better. Some of the items were removed, to prevent respondent fatigue. The measurements will be discussed in detail in a later section.

The questionnaires were printed in the four languages previously mentioned, and were filled out on paper instead of on a computer. The full Norwegian questionnaire is shown in appendix D.3, along with the first page of the English, German and French versions. With the questionnaire, the participants were also given instructions on how to answer the questions, and also the time of the

follow-up questionnaire the next day (see appendix D.4). The participants put the questionnaires in a box on their way out.

Questionnaire 2

After the participants had experienced the destination they had seen pictures of the day before, they were asked to fill out a second questionnaire (see appendix D.5). The aim of these questions was to see how the actual emotions and experiences were compared to the predicted ones. Most importantly we wanted to see if there were any differences in these relationships between those who had been exposed to the pictures in immersive VR and 2D. There were also questions regarding destination attitude and behavioral intentions, to see how the measurements had changed after the actual experience, and if there were any differences between the two groups.

The second questionnaire was filled out in the same place as the first one, with participants putting it in the same box as they had the previous day.

5.1.5 Measurements

The questionnaire in the field experiment was shortened to make it easier to answer for passenger who had planned other activities on the ship, by removing one or more items in several of the different measurements. A second questionnaire was also answered, with many of the same items, only in retrospective phrasings. These measurements will be marked with $T2$ in the following, representing that they were measured at *Time 2*, meaning after the participants had actually experienced the destination. The variables that were measured before the actual experience are similarly marked with $T1$. Seeing as how the measurements in many cases were identical across the lab and field experiment, we only report changes in the measurements in this section.

Dependent Variables

Destination attitude T1. Two items were removed from this measurement for the field experiment, namely the scales with the anchors “uncomfortable/comfortable” and “boring/interesting”. The remaining three items were unchanged.

Behavioral intentions T1. Participants own intentions to travel were removed, as they were already on a trip. Thus, this measurement only included whether or not they would recommend the trip to others.

Purchasing Decision. This measurement was removed, as participants had already purchased the trip with Hurtigruten.

Destination attitude T2. Destination attitude was measured with the same scale as at T1, but with retrospective phrasing.

Behavioral intentions T2. At T2, the behavioral intentions were measured on a three-item, 11-point Likert scale, with questions regarding recommendation of Hurtigruten to friends, whether they had mostly positive things to say about the trip, and intention to travel with Hurtigruten again. The anchors of the scale were “very unlikely/very likely” and “completely disagree/completely agree”.

Mediating Variables

Predicted emotions T1. The item measuring to what degree the trip would feel meaningful was removed to shorten the questionnaire.

Predicted experiences T1. The three items measuring predicted sensory experiences were removed, as well as one item from both predicted affective and intellectual experiences.

Actual emotions T2. The participants’ actual emotions after visiting the destination were measured on the same four-item, 11-point Likert scale as the predicted emotions in T1, only with retrospective phrasing.

Actual experiences T2. The same is true for measuring the participants actual experiences after visiting the destination, with the same four-item, 11-point Likert scale measuring two items of both affective and intellectual experiences, but not sensory ones.

Satisfaction. A new item was measured, to see how satisfied the participants were with the trip. The item was measured on an 11-point scale, ranging from -5 (worse than expected) to +5 (better than expected).

Control Variables

Optimum Stimulation Level (OSL). This measurement was removed to make the questionnaire shorter.

Prior travel experience. Whether or not the participants had previously traveled with Hurtigruten or been to the destination before, was measured with a three-point scale with the answers “Yes”, “No” and “Don’t know”.

Prior VR experience. As in the lab experiment, participants’ prior experience with and knowledge about VR technology was measured. In addition, their general experience with new technology was measured on a single-item, 11-point Likert scale, with the scale anchors “very little experience/very much experience”.

Experience with the VR headset. Whether or not the participants became nauseated or dizzy, and if the experience was uncomfortable, was measured the same way as in the lab experiment. This was also the case for the perceived quality.

Other Variables

The experimenters did not register the participants’ behavior during the exposure in the field experiment, as they had other assignments during the exposure.

Factor Analysis and Scale Reliability Check

Again, we assumed that the theoretical constructs in our model are correlated, and performed a factor analysis with oblimin rotation. We considered factor loadings above .60 to be significant, and did not include variables with factor loadings below this in the final factor solution. With a sample size between 60 and 70, like ours, an appropriate threshold would be .70 (Hair et al. 2006). However, because this was a field experiment with less control, and because we again had a reasonably high number of variables, we decided to lower this threshold.

We did separate factor analyses on the variables from T1 and T2, as these cannot be combined in a factor solution. In the factor analysis from T1, we extracted five factors with an eigenvalue > 1 .

Like in the lab experiment, we divided some factors, where the variables are different theoretical constructs that have been previously established, namely the predicted emotions variables and the affective dimension of predicted experiences, as well as the mental imagery and enjoyment variables. Thus, we ended up with seven factors. The first item in the predicted emotions scale was excluded due to cross loading, as well as the third item in the enjoyment scale. Two of the included variables had factor loadings below the previously mentioned .70, but the remaining had factor loadings $> .70$.

In the factor analysis from T2, we extracted four factors with an eigenvalue > 1 , but divided the actual emotions and attitude variables, making it five factors. The second and third item in the actual emotions scale were excluded due to cross loadings. Two of the included variables had factor loadings $< .70$, but again the remaining had factor loadings $> .70$.

In the scale reliability check, all the extracted factors reached Cronbach's alpha (α) values $> .70$. The predicted emotions (T1), enjoyment, actual emotions (T2) and behavioral intentions (T2) scales reached Cronbach's alpha values $< .80$, which is considered to be a preferable value (Pallant 2010). The remaining scales reached values $> .80$. Again, two of the scales would have reached a higher Cronbach's alpha value if one item had been deleted, but removing items would make it harder to compare findings to previous research (Pallant 2010). None of the scales have more than four items, which speaks against an inflated Cronbach's alpha value because of many items in the scale (Hair et al. 2006). Detailed results from the factor analysis and scale reliability check for both T1 and T2 are reported in tables E.3, E.4 and E.5 in appendix E.

5.1.6 Data Analysis

The statistical techniques used to examine the collected data were the same as in the analysis of the data from the lab experiment, and are explained in chapter 4.

5.2 Results

Descriptive Statistics

Descriptive statistics for the combined twelve factors from T1 and T2 are reported in table F.4 in appendix F. There were 36 observations in the immersive VR condition and 30 observations in the 2D condition.

5.2.1 Test of Assumptions

Independence of Observations

In the field experiment, there was a larger risk of observations influencing each other, because many of the participants were couples, who potentially could talk about the experiment before it was ended. This was especially problematic because it lasted over two days. To counteract this, we tried to assign couples to the same condition, so participants in the different conditions wouldn't hear about the other condition from their partner.

Normal Distribution

We checked for skewness and kurtosis levels in the descriptive statistics (see table F.4 in appendix F), to check for normality. There were 7/12 factors with skewness levels $> |1|$, all of them negative, indicating clustering around the high levels of the scale. In addition 7/12 factors had kurtosis levels $> |1|$, most of them positive, indicating that these were peaked around certain values. This means that the assumption of normality is not satisfied. Since we have a sample size which is larger than 30, and most of the test are relatively tolerant to violation of this assumption (Pallant 2010), we still used parametric tests for the main effects.

Homogeneity of Variance

Levene's test showed no significant values for any of the factors, meaning that the variance in the two groups can be viewed as equal (Pallant 2010). The results of the test are shown in tables F.5

and F.6 in appendix F.

5.2.2 Main Effects

We first tested for main effects of being exposed to the destination in immersive VR as opposed to 2D. We did this by testing if there were any differences in means between the two groups for both the dependent variables, mediating variables and control variables, using an independent-samples t-test. The findings are presented in tables 5.1, 5.2 and 5.3, and explained in the following sections.

Seeing as how this was a field experiment, where circumstances are harder to control, and because we had a smaller sample size this time, we tested the data with 90% confidence intervals, meaning that results with p-values $< .10$ are regarded as significant. This should be kept in mind when examining the results of the experiment.

Main Effects on Dependent Variables

For the dependent variables, the only significant effect of immersive VR (vs. 2D), was on behavioral intentions (T2)(diff. = $-.67593$, $p = .080$), meaning the second time the participants were asked, after traveling to the destination. This factor includes whether the participants would recommend the trip with Hurtigruten to others, had mostly positive things to say about it, as well as whether they were likely to travel with Hurtigruten again. However, contrary to our predictions, the difference in means between the two groups was negative, meaning that the participants in the 2D condition had more favorable intentions than those in the immersive VR condition. This difference was significant at the 10% level. The complete results can be seen in table 5.1.

There was, however, no significant effect on the item regarding whether the participants would recommend the trip (T2), meaning that the change from T1 to T2 was caused by the two additional items added to the behavioral intentions factor at T2. Testing these items for main effects separately reveals that the only significant effect is on the item regarding if the participants were likely to travel with Hurtigruten again (diff = -1.367 , $p = .034$). This means that it was this specific item that was responsible for the negative effect on behavioral intentions (T2), and not the

fact that it was after visiting the destination. Thus, the participants in the 2D condition reported that they were more likely to travel with Hurtigruten again, contrary to our predictions.

Table 5.1: Main Effects of Immersive VR on Dependent Variables

Main Effect on Dependent Variables:	Mean - VR:	Mean - 2D:	Difference:	P-value:
Destination Attitude (T1)	10.3333	10.4889	-.15556	.478
Behavioral Intentions (T1)	10.36	10.30	.061	.822
Destination Attitude (T2)	10.2222	10.3667	-.14444	.563
Behavioral Intentions (T2)	9.3796	10.0556	-.67593*	.080

Significance level: * 10%; ** 5%; *** 1%

Main Effects on Mediating Variables

To see if there were any possible mediation effects or indirect effects, we also tested the main effects of immersive VR on the mediating variables. Unlike in the lab experiment, there were no significant differences in means between the groups for telepresence, mental imagery or enjoyment. There was a significant difference in means for predicted emotions (T1)(diff. = -.43519, p = .068), also in this case negative. There was also a significant negative difference in means for intellectual experiences (T2)(diff. = -1.22778, p = .060), meaning the actual intellectual experiences the participants had when traveling to the destination. These effects being negative indicate that the 2D group had higher means than the immersive VR group in these cases. Both effects were significant at the 10% level. The complete results are reported in table 5.2.

Table 5.2: Main Effects of Immersive VR on Mediating Variables

Main Effect on Mediating Variables:	Mean - VR:	Mean - 2D:	Difference:	P-value:
Telepresence (T1)	7.6476	7.0667	.58095	.374
Enjoyment (T1)	9.2083	9.5833	-.37500	.371
Mental Imagery (T1)	9.4537	9.6000	-.14630	.718
Predicted Emotions (T1)	10.0093	10.4444	-.43519*	.068
Affective Experiences (T1)	9.0857	9.4667	-.38095	.390
Intellectual Experiences (T1)	8.1528	8.9000	-.74722	.136
Actual Emotions (T2)	10.2917	10.5000	-.20833	.330
Affective Experiences (T2)	8.5972	8.6000	-.00278	.995
Intellectual Experiences (T2)	6.8889	8.1167	-1.22778*	.060

Significance level: * 10%; ** 5%; *** 1%

Main Effect on Control Variables

We also tested for main effects on two of the control variables. Knowing whether there were any differences between the groups for these variables, could potentially determine if they would have moderating effects. The only control variables which were measured for both groups, and could be affected by the independent variable, were perceived picture quality and technical experience. The results showed that they were both affected by the independent variable. Perceived picture quality had a negative difference in means between the two groups (diff. = -2.928, $p = .000$), which means that the picture quality was perceived as significantly higher in the 2D group. The same was true for general technical experience (diff. = -3.939, $p = .000$), which indicates that the participants in the immersive VR group judged their general technical experience to be lower than those in the 2D group did. Both differences were significant at the 1% level. The results can be seen in table 5.3.

Table 5.3: Main Effects of Immersive VR on Control Variables

Main Effect on Control Variables:	Mean - VR:	Mean - 2D:	Difference:	P-value:
Perceived Picture Quality	7.47	10.40	-2.928***	.000
Technical Experience	4.53	8.47	-3.939***	.000

Significance level: * 10%; ** 5%; *** 1%

5.2.3 Other Findings

Because of the exploratory nature of this study and the number of different possible relationships between the factors, we will only report significant findings in this section. The findings are related to perceived picture quality as a control variable and a moderator.

Main Effects Controlled for Perceived Picture Quality

When testing main effects of immersive VR on the dependent variables, while controlling for perceived picture quality, we found that there was a significant difference between the means of the two groups for behavioral intentions (T1)(diff. = .737, p = .021). This effect was positive, meaning that it was more likely that the participants would recommend the trip to others if they had seen the pictures in immersive VR than in 2D, when controlling for perceived picture quality. The perceived picture quality was evaluated at the mean score of 8.80. The results can be seen in table 5.4

This effect was not found for behavioral intentions (T2), where there was no significant difference when controlling for perceived picture quality. However, this factor consists of more items than behavioral intentions (T1), namely whether the participants had mostly positive things to say about the trip, and if they would travel with Hurtigruten again. Therefore, we also tested the effect of immersive VR on the item regarding whether the participants would recommend the trip to others (T2) separately, while controlling for perceived picture quality. This did not yield any significant results either.

Table 5.4: Main Effects of Immersive VR on Behavioral Intentions, Controlled for Perceived Picture Quality

Main Effect controlled by Perceived Picture Quality:	Mean - VR:	Mean - 2D:	Difference:	P-value:
Behavioral Intentions (T1)	10.668	9.932	.737**	.021
Behavioral Intentions (T2)	9.577	9.818	-.241	.611

Significance level: * 10%; ** 5%; *** 1%

Perceived Picture Quality is evaluated at a value of 8.80

Moderating Effects of Perceived Picture Quality

As previously reported, there was a higher mean score for predicted emotions (T1) in the 2D condition than in the immersive VR condition. This was also the case for the one item which was excluded from this factor in the final factor solution, *Happiness* (diff. = -.594, $p = .052$). This is an item which has been proven to be important in previous literature on affective forecasting (Wilson et al. 2000), and thus is interesting to examine separately. The negative main effect on predicted happiness was moderated by perceived picture quality, meaning that the effect was different for different values of perceived picture quality. A moderation analysis showed that for lower values of perceived picture quality, the effect of immersive VR on predicted happiness was positive. This effect gradually diminished for higher values of perceived picture quality, until it was no longer significant at a perceived picture quality value of 9.3935.

However, this was not the case for actual happiness (T2). There were neither any significant main effects of immersive VR, nor were there any significant interactions between perceived picture quality and the independent variable for this item. This means that there was no significant difference between the two groups regarding actual happiness (T2).

There was a significant interaction between perceived picture quality and the independent variable on behavioral intentions (T1). As with predicted happiness, there was a positive effect of immersive VR on behavioral intentions (T1) for lower values of perceived picture quality. Again, the effect gradually diminished for higher values of perceived picture quality, until it was no longer significant

at a perceived picture quality value of 10.4631.

Again, this was not the case for behavioral intentions (T2). However, seeing as how the factor behavioral intentions (T1) only consists of one item, whether the participants would recommend the trip to others, we also tested if there was a moderating effect of perceived picture quality on that item from behavioral intentions (T2). There turned out to be a significant interaction between perceived picture quality and the independent variable for whether the participants would recommend the trip (T2). This means that quality acted as a moderator for the effect of immersive VR on this item, like it did for the same item in T1. The effect was positive for low values of perceived picture quality, before it gradually diminished for higher values of perceived picture quality, until it was no longer significant at a value of 9.6509.

5.2.4 Summary of Findings

There was a significant negative main effect of immersive VR on behavioral intentions (T2), but not (T1). There was also a significant negative main effect of immersive VR on actual intellectual experiences (T2), but not predicted intellectual experiences (T1). Conversely, there was a significant negative main effect of immersive VR on predicted emotions (T1), but not for actual emotions (T2). In addition, there were significant negative main effects on the control variables perceived picture quality and technical experience.

When controlling for perceived picture quality, there was a positive significant effect of immersive VR on whether the participants would recommend the trip to others (T1), but not on the same item at T2.

Perceived picture quality moderated the relationship between immersive VR and whether the participants would recommend the trip to others (T1), with a positive effect for lower values of perceived picture quality. This was also the case for the same item at T2, contrary to when controlling for quality.

Finally, perceived picture quality moderated the relationship between immersive VR and predicted

happiness, also with a positive effect for lower values of perceived picture quality, but this was not the case for actual happiness (T2).

5.3 Discussion of Findings

Most of the significant effects in study 2 were in the opposite direction of what we had predicted, and also in the opposite direction of what study 1 had shown. Somewhat surprisingly, it seems that exposure to the destination in 2D was more effective in inducing different effects than immersive VR, in this study, with a different sample and a different experiment setting. As one of the objectives of the second study was to investigate whether the effects from study 1 also applied for a sample closer to the target group of destination marketing, these findings are very interesting. Even more important was the fact that the field experiment was conducted in a completely different setting than the lab experiment, where the relevant destination was both physically and psychologically much closer for the participants in this experiment. It seems that immersive VR does not have the same effects in this situation, which indicates that the physical and psychological distance to the destination has an impact on how participants predict their emotions and experiences. While the students in study 1 were at their place of study, trying to predict what it would be like to go on a hypothetical trip some unspecified time in the future, the participants in study 2 were actually on the ship taking them to this destination the next day. This could be one of the reasons for the different findings in the two studies, and brings forth important implications regarding the effectiveness of immersive VR in different situations. However, it seems that some of the differences in the effects can also be explained by the importance of perceived picture quality in this sample, which will be discussed in a later section.

5.3.1 Changes From T1 to T2

In this exploratory field study, we did not observe many large differences between before and after the participants had visited the destination. There was a difference in behavioral intentions for the two times, but this difference was caused by new items in the factor at T2, specifically by

whether the participants were likely to travel with Hurtigruten again. This effect was negative, meaning that those who saw the pictures in 2D stated that they were more likely to travel with Hurtigruten again than those who saw the pictures in immersive VR. It's difficult to draw any conclusions as to what was the reason for this discrepancy, but one possibility could be that the participants were more disappointed by the actual destination after seeing it in immersive VR. This was not the case, however, as the item measuring satisfaction with the trip did not show any significant differences between the two conditions. Another possible explanation could be that the participants felt that the VR headset was somewhat complicated and unfamiliar, unconsciously making them less willing to recommend the trip. This also seems unlikely, as this would probably affect satisfaction as well, which we have seen is not significantly different for the two groups. It's possible that there were other influencing factors, unrelated to the experiment itself, like the fact that the participants didn't like their cabin or the food on board the ship. However, these factors should not cause any differences between the groups, because the participants were randomly assigned to the different groups, and the sample size was substantial. Still, it's possible that our assumption of two equal groups might not be satisfied, and that with even more participants and a better system for randomization, the difference would be evened out between the groups.

There was a significant difference between the two groups for predicted emotions (T1), but not for actual emotions (T2). By inspecting table 5.2, we see that the difference in predicted emotions (T1) compared to actual emotions (T2) is caused by the fact that the value increased for the immersive VR group from T1 to T2. This means that they predicted less favorable emotions after seeing the pictures in immersive VR, than those who saw them in 2D, but when seeing the actual destination, they reported the same feelings as the other group. This indicates that it was not how the participants experienced the actual destination after viewing it with different technologies that was different, as they had the same experience of the actual destination.

When it comes to the difference between the groups in actual intellectual experiences (T2), as opposed to no difference in predicted intellectual experiences (T1), this was caused by the fact that this value decreased in the immersive VR condition from T1 to T2. This means that the participants in the 2D condition had a more or less accurate prediction of what they would actually experience, whereas the participants in the immersive VR condition didn't. Interestingly, it's not

that the participants in the immersive VR condition made a higher prediction than those in the 2D condition, but rather reported lower values for the actual experiences (T2). Again, it's not clear what caused this effect, but a possible explanation is that participants in the immersive VR condition already had had some of these intellectual experiences while viewing the pictures. This could have led to less of an intellectual experience when seeing the actual destination, resulting in a "been there done that"-effect. Seeing as how the other effects in the experiment point to 2D having a greater impact overall, however, this might not be the case.

Another interesting aspect of this study is the weather conditions. The weather in the pictures shown to the participants was very good, which was also the case for the weather on both of the trips we took with Hurtigruten. Had the actual weather been significantly worse, making the actual experience less enjoyable and memorable, there might have been more pronounced effects of the manipulation, seeing as how the participants might have remembered that experience more than the real one.

5.3.2 Technical Experience

The fact that the participants in the immersive VR condition reported significantly lower scores for their general technical experience is also an interesting finding. Assuming that the groups were in fact equal for all other factors than our manipulation, this difference is an effect of exposure to the destination in immersive VR as opposed to 2D. The degree of previous technical experience should, in theory, not have been affected by any treatment, as of course, the treatments were not able to affect experience retroactively. However, it seems that the participants in the immersive VR condition might have been primed by the fact that the VR headset was a new and perhaps unfamiliar technology, making them estimate their previous technical experience at a lower level. As such, there was a difference with immersive VR as a reference point, compared to 2D. This has potential implications for the other measurements, if the participants in the immersive VR condition found the technology to be technically challenging, and thus less enjoyable. However, there was no difference in enjoyment between the two groups. Still, there could be other, unknown implications, that affect the results.

5.3.3 The Role of Perceived Picture Quality

When it comes to the role of perceived picture quality, we see that it had an important impact on how effective the different stimuli were in affecting different variables. It seems that the quality of the immersive VR pictures, which was perceived as poor relative to the 2D pictures, to some extent was what reduced the effects. Both for whether the participants would recommend the trip and predicted happiness, quality played a crucial role in how the results turned out. Had the quality of the immersive VR pictures been better, the effects would be reversed, and immersive VR would have had a more sizable effect than 2D.

In summary, the results of this experiment partly contradict the results from the previous experiment. However, it's evident that the quality of the immersive VR headset display was not good enough to compete with the smartphone's display, and that this had more of an impact on the test subjects in this experiment than on the students in the lab experiment, perhaps because of the different situation they were in. There was a significantly lower mean score for quality in the immersive VR group also in the lab experiment, but this didn't seem to have the same impact on the results as in study 2. This brings forth implications for how to use immersive VR, which will be discussed in chapter 6.

Chapter 6: General Discussion and Conclusion

6.1 Discussion of Findings

The main goal of this thesis was to examine how immersive VR technology can be utilized in destination marketing. We did this by investigating how immersive VR can influence consumer outcomes both directly and indirectly. In our study, the consumer outcomes referred to are attitudes towards a destination, intentions to purchase/travel to the destination, and the consumers' actual decision to purchase tickets to the destination. Though no direct effects of immersive VR exposure on the consumer outcomes were significant, our research reveals that immersive VR exposure affects the consumer outcomes indirectly, through different important mediators, but is also held back by poor quality, compared to today's existing alternatives.

Study 1 showed that immersive VR was not more effective in creating favorable destination attitudes, behavioral intentions and purchasing decision than 2D pictures on a smartphone, with the technology and marketing material we used. However, we found indirect effects through five different mediators, namely telepresence, enjoyment, mental imagery, predicted emotions and predicted experiences. Both enjoyment and mental imagery acted as mediators in the positive indirect effect of immersive VR on destination attitude and behavioral intentions on their own, whereas the other three mediators were only part of an indirect effect when in a serial mediation. Predicted emotions and predicted experiences were not affected by immersive VR itself. However, as second mediators (M2), with either telepresence, enjoyment or mental imagery as first mediators (M1), they had a positive impact on all the consumer outcomes, even purchasing decision. As for telepresence, this means that it did not work as a mediator in the indirect effect of immersive VR on the consumer outcomes alone, because it had no direct effect on consumer outcomes. Instead, it worked as a facilitator for the effects of predicted emotions and experiences, making it a crucial factor never-

theless. As mentioned, there was an indirect effect of immersive VR on destination attitude and behavioral intentions through enjoyment and mental imagery, but these factors did not influence actual purchasing decision, which is perhaps the most important consumer outcome. In order to be part of a positive indirect effect on the actual purchasing decision, moving the consumers from just having an intention to purchase to actually purchasing, they needed to also go through predicted emotions and predicted experiences. This accentuates the importance of predicted emotions and predicted experiences as factors. Thus, all five mediators were important for immersive VR to have a substantial indirect impact on consumer outcomes. These findings bring forth clear implications for how to best develop marketing material for immersive VR technology, in order to make this an effective marketing tool, which will be discussed in the next section.

While study 1 was conducted with students at The Norwegian School of Economics (NHH) as participants, study 2 aimed to test if the findings were true also in a more realistic setting, with participants in the target group for destination marketing. An even more important difference was the fact that the participants had already purchased tickets and were on the ship taking them to the destination. This meant that the psychological and physical distance to the destination that immersive VR exposure was supposed to create predictions for, was far less than for the participants in study 1. Thus, study 2 also aimed to examine if the findings from study 1 applied for participants in a completely different situation than in the lab experiment, much closer to the destination they were seeing pictures of. The results showed that this was not the case. The direct effects of immersive VR on consumer outcomes were either non-existing or negative, meaning that the 2D pictures had more impact on these outcomes. However, the big difference was how much the participants in this setting were affected by what was viewed to be poor quality of the immersive VR pictures. When controlling for perceived picture quality or including it as a moderator, several of the negative effects became non-significant, and several other effects emerged as positive. This shows that the relatively poor picture quality of the immersive VR pictures is indeed an important reason for why the findings were different than in study 1. In addition, the reported previous technical experience was lower for those in the immersive VR condition, which could mean that the VR headset was perceived as being a new and unfamiliar technology, making participants adjust their reference point and report less previous technical experience. These findings show that immersive VR technology could be more successful if the quality was better, which also

brings forth important implications for marketers. These will also be discussed in the next section.

In summary, our research shows that immersive VR has the potential to influence consumer outcomes, but that the right conditions need to be in place for this to happen.

6.2 Implications

In the following, we will discuss implications of our findings. We will begin with theoretical implications, meaning the implications our findings have for the literature related to virtual reality in marketing and consumer behavior. We will then move on to discussing the managerial implications, meaning the practical implications our findings have for marketers and decision-makers, and what our findings can provide of insight when making decisions about the use of immersive VR technology in marketing.

6.2.1 Theoretical Implications

The results of our research bring forth several theoretical implications. First, the vast majority of previous research is concerned with the role of telepresence as an explanatory mechanism of the relationship between VR exposure and consumer outcomes. Our research provides a more nuanced picture of how telepresence actually affects the consumer outcomes. Contrary to previous research (e.g. Suh and Y. E. Lee 2005; Suh and Chang 2006; Li, Daugherty, and Biocca 2002), our research suggests that telepresence in itself does not affect the consumer outcomes. The indirect effects of immersive VR exposure on the consumer outcomes were actually a result of subsequent mechanisms facilitated by telepresence. However, this does not mean that telepresence is not important. Telepresence facilitates enjoyment, predicted emotions and predicted experiences, which means that telepresence is an important mediator in the processing mechanisms of immersive VR exposure. Secondly, we contribute to the literature by investigating other possible mechanisms that can explain the indirect relationship between immersive VR exposure and the consumer outcomes. Previous research has studied the mediating role of enjoyment and mental imagery on

the relationship between VR exposure and brand attitudes and purchasing intentions (Cho, Wang, and Fesenmaier 2002; Hyun and O’Keefe 2012; Dobrowolski et al. 2014). However, our research suggests that although enjoyment and mental imagery affect destination attitude and behavioral intentions, they don’t lead to actual purchase. This leads us to our most important contribution to the literature, which is the importance of predicted emotions and predicted experiences. In order for consumers to go from intending to purchase to actually purchasing, the indirect effect also has to go through predicted emotions and predicted experiences.

This means that an important part of immersive VR in marketing is its ability to indirectly affect peoples predicted emotions (affective forecasts) and predicted experiences through telepresence, enjoyment and mental imagery, which is a novel contribution to the literature. Both predicted emotions and experiences were drivers of choice, meaning that they could influence purchasing decision (ref: tables 4.4, 4.5 and 4.6). Thus, our research reveals that both predicted emotions and predicted experiences are important mediators in the indirect relationship between immersive VR and the consumer outcomes. Moreover, we contribute to the literature, as one of the first studies in the research field to show the processing mechanisms leading to actual purchase.

Our research has also uncovered that the indirect effects of immersive VR exposure are not equal across different settings, as the results were different in the field experiment than in the lab experiment. This implies that participants who are closer to the destination they are seeing pictures of, both physically and psychologically, do not respond to immersive VR exposure the same way as participants in the lab, which is also an important contribution to the literature.

Another important contribution to the literature is the fact that we have uncovered a hierarchy of effects. The previously researched telepresence, enjoyment and mental imagery were connected mainly to the channel experience, whereas the newly uncovered predicted emotions and predicted experiences were connected directly to the attitude object. This again underlines the importance of predicted emotions and predicted experience, because they have the power to actually influence the consumer outcomes.

Finally, our study revealed that the quality of the immersive VR material, meaning the resolution of the pictures and the precision of the movement tracking, moderated the relationship between

immersive VR exposure and the consumer outcomes. Steuer (1992) refers to the resolution of a sensory channel as sensory depth, which is an important part of vividness. Therefore it makes sense that low perceived quality of immersive VR material has a moderating effect on the relationship between immersive VR and consumer outcomes.

6.2.2 Managerial Implications

As mentioned, the findings in the two studies also give rise to several managerial implications. First, it's important for marketers and companies that are considering investing in developing marketing material for use in immersive VR headsets, to be aware that the broadly available equipment might not provide sufficient quality at this point. There are different immersive VR headsets on the market, with different quality, but headsets with superior quality, like the HTC Vive (Eadicicco 2016), are still expensive, and thus not available to the majority of consumers as of yet. In addition, they often need to be connected to a powerful, expensive computer (Eadicicco 2016), making them impractical. The VR headset used in this study was the Samsung Gear VR, which does not need a cable connecting it to a computer, as it uses a smartphone to create the images. This, however makes the quality suffer, not just in terms of resolution, but also in the degree to which there are lags in the movement, when the users move their heads (Eadicicco 2016). However, the VR industry is fast-growing, and advances in the technology happen fast (Terdiman 2016). For instance, Google have started developing their own VR headsets (Google n.d.), which could help develop the technology and make it more available to the mainstream market. PlayStation has also started selling VR headsets with their gaming consoles, that are of high quality, compared to the Samsung Gear VR (Prasuethsut 2016), which is potentially making higher-quality VR headsets more available to people. This could be a good place to start with destination marketing efforts, with immersive VR demos that are downloadable from the PlayStation Store. However, the consumers using PlayStation VR might not be in the target group of most destination marketing.

It's important to remember that the main target group for most destination marketing might not be a group that is good at adapting to new technology. In study 2, we found that the group who were exposed to the destination in immersive VR reported a lower score for previous technical

experience. Seeing as how the exposure to the destination shouldn't have had any retroactive effects, there shouldn't have been a difference between the groups for this measurement, assuming that the sample size was large enough and that the participants were randomly assigned to the groups. Therefore, this finding indicates that the exposure to the destination in immersive VR made the participants underestimate how much technical experience they had, compared to the other group, implying that they found the VR headset to be somewhat technically advanced. This is relevant for marketers, as this means that it's important that improvement of the quality the equipment produces doesn't lead to the equipment getting overly advanced, so the target group doesn't use it.

In addition, the differences in study 1 and study 2 uncovered that immersive VR exposure might not be as effective in situations where the consumers are physically and psychologically closer to the destination they are seeing pictures of. This could potentially be because the pictures are more impressive when the consumers haven't already formed a clear expectation of what it would be like to visit the destinations, which also brings forth important implications regarding for what type of advertising immersive VR technology should be used. Based on our findings, marketers should direct immersive VR advertising at consumers who are not physically and psychologically close to the destinations being advertised, meaning that it can best be applied in consumers' everyday life, where immersive VR content makes a destination seem more attractive.

Based on the findings of study 1, we also provide several recommendations for marketers, in regards to how they should design marketing material for use with immersive VR technology. The content should stimulate the five different factors which we found to be important mediators, so the effect of these indirect paths can be strong enough to counteract whatever was reducing the direct effect in our study.

First of all, the three first mediators (M1) in our findings need to be stimulated. Enjoyment is very important, meaning that marketers must develop content that is enjoyable for the consumer to watch. This can be done by making sure that the equipment is comfortable to wear and that the quality and movement tracking is good, reducing negative impulses. In addition, the pictures or videos should be enjoyable, either by being pleasant and agreeable or exciting and thrilling, depending on the type of destination being advertised. Furthermore, the immersive

VR experience needs to stimulate telepresence, which can be done by ensuring a high degree of vividness and interactivity (Hyun, S. Lee, and Hu 2009). There are many measures that can help this, for instance using videos instead of pictures, preferably using a personal point of view, making the consumers feel like they are in the destinations themselves. Headphones with sound can also be utilized, to block out the real world even more. Interactivity can be helped by enabling people to maneuver to different places and angles by looking at that point for a given number of seconds, or even with technology that allows the user to physically move around, like the HTC Vive (Eadicicco 2016). Mental imagery must also be induced, by utilizing the capacity of immersive VR to provide information, through rich pictures and videos, accurately depicting the destination. In addition, seeing as how mental imagery is related to telepresence (Hyun and O’Keefe 2012) many of the same measures apply.

The second mediators (M2) in our findings must also be stimulated, namely predicted emotions and predicted experiences. This is because although some of the first mediators mentioned above led to favorable destination attitudes and behavioral intentions, they did not affect actual purchasing decision, which predicted emotions and predicted experiences did. To stimulate favorable predicted emotions and experiences, the pictures and videos should have appealing motives. Depending on the type of destination being advertised, the marketing material should also highlight the prominent features of the destination to make consumers focus only on this, and not on consequences of going on the vacation, in accordance with V. Patrick and D. MacInnis (2003). In addition, these second mediators would be enhanced by stimulating the first mediators preceding them.

In short, the quality of immersive VR headsets available to the mass market needs to improve, and marketers need to develop content that stimulates the aforementioned factors, for immersive VR to be an effective marketing tool.

6.3 Limitations

There are potential limitations as to how the two experiments were conducted, specifically regarding whether the external validity of the lab experiment and the internal validity of the field

experiment were properly ensured. The lab experiment was thoroughly controlled, and thus the internal validity was quite good. Using a realistic alternative to immersive VR as the control stimulus contributed to the external validity as well. However, the sample group consisting of students might not have been representative for the target group for most destination marketing, seeing as how students often don't have much space in their budget for traveling. The sample group in the field experiment was more representative, as they were actual passengers on Hurtigruten, but being a field experiment, the degree of control was somewhat lower. For instance, the participants in the VR condition could have talked about their experiences with the VR headset to people they were traveling with, making these want to participate only to try this technology, and there could also have been word of an experiment involving VR on the ship. However, we tried to counteract this by giving the participants strict notice not to speak to anyone about the experiment and by assigning couples to the same condition, as mentioned. In addition, we conducted the field experiment very similarly as the lab experiment, trying to ensure internal validity in the field experiment as well, with only minor differences in how segregated participants in the same condition were, as well as the in randomization process.

Another possible limitation with our research is the scope of the study, specifically that we tested for a wide array of components in the same experiment. As mentioned in the introduction, the two experiments were more comprehensive than what we have reported in this thesis. In addition to questions regarding the mediators and dependent variables we have reported in this thesis, the questionnaires also contained questions regarding connectedness to nature, self-concept connection, positive uncertainty, availability and anticipated regret. Although the fact that we only reported the measurements relevant to our research question is not a problem in itself, measuring many different things could have influenced the results of the measurements relevant to us, because of respondent fatigue. However, the questionnaires were completed in 10-15 minutes, which makes it unlikely that the respondents couldn't answer the questions properly because of fatigue.

6.4 Further Research

Despite the fact that there is a lot of research related to the use of VR in marketing, only a limited number of studies investigate the effects of immersive VR. Immersive VR technology is able to provide a much more sensory rich virtual environment than non-immersive VR technology because the user is completely enclosed in the virtual environment (Mills and Noyes 1999). Thus, more research is needed in order to establish whether immersive VR technology is more effective than non-immersive VR technology when it comes to influencing consumers' brand attitudes, behavioral intentions, brand knowledge, and purchasing decisions. This could be done by replicating previous research, but using immersive/non-immersive VR as the independent variable.

Corroborating findings would further establish the credibility of our research, and strengthen the literature on VR related marketing in general. The fact that our findings are inconsistent with previous research in the sense that we did not find any significant direct effects of immersive VR exposure on destination attitudes and purchasing intentions, calls for further investigation to uncover why that is. Furthermore, the equipment used in our experiments did not allow for dynamic movement, meaning that the participants could not move around in the virtual environment as their movement was restricted to turning their head in all directions. It would be interesting to see whether the results would be different if a more sophisticated immersive VR technology was used. We therefore suggest replicating both Study 1 and Study 2, but using a different head-mounted display that allows the participants to move around and interact with 3D objects in the virtual environment, for instance the HTC Vive. This would increase both the quality and the interactivity of the virtual experience (Steuer 1992).

Further research should investigate how the consumer outcomes are affected by manipulating different aspects of the immersive VR experience (content), in stead of only comparing immersive VR with non-immersive VR. This could potentially yield valuable insight into which dimensions of the immersive VR experience are most important when it comes to influencing brand attitudes, behavioral intentions and purchasing decision. For instance, future research could try to stimulate more telepresence by including more dimensions, such as sound, video with a personal point of view and responsive gloves. By using a multi-factor experimental design to assess the individual

impact of each sensory dimension, as well as the combined effects, researchers would gain insight into which dimensions are most important in creating vivid and interactive content for immersive VR. This would further expand the theoretical framework of telepresence (Steuer 1992). Although such experiments would be expensive, the benefit of this knowledge would likely outweigh the cost.

As previously mentioned, some of the data collected in the two experiments are related to theoretical constructs that are beyond the scope of this thesis. However, exploring these constructs could also yield further insight into the relationship between immersive VR and consumer behavior, thus contributing to a deeper understanding of this relationship. For instance, it would be interesting to investigate to what extent immersive VR technology can stimulate connectedness to nature, seeing as how new technology generally is perceived as a contrast to pure and untouched nature. In addition to telepresence and mental imagery, the perceived availability of a destination could also be affected by immersive VR exposure, meaning the perceived psychological distance to the destination. Positive uncertainty could potentially work against the effectiveness of immersive VR technology, if the consumers value the excitement of not knowing what the destination is like before traveling there. Thus, studies should be conducted to examine whether the highly vivid and interactive qualities could have a negative effect in tourism marketing because of a “been there done that” effect, where the consumers don’t feel the need to visit a destination because they have already experienced it virtually. The potential impact of these constructs on the relationship between immersive VR and consumer outcomes should be explored further in future research, along with other potential mediators.

Apart from our study, the impact of VR exposure on actual purchasing decision is relatively unknown. Hence, more research is needed to fully understand how immersive VR can influence actual purchasing decision. In addition, the context of our study is tourism and destination marketing. Since tourism products are experientially demanding (Hyun, S. Lee, and Hu 2009), further research is needed to investigate how consumer outcomes are affected by immersive VR exposure for products whose most salient attributes are functional or symbolic, rather than experiential. Previous research suggests that the effect of VR on attitudes, intentions and knowledge are stronger for experiential products than for functional products (Suh and Y. E. Lee 2005), but this research is based on the use of non-immersive VR.

Our research is among the first to investigate the effects of predicted emotions and predicted experiences, facilitated by immersive VR exposure. These variables have not previously been established as important mediators in VR related research, meaning that further research is needed in order to firmly establish the impact of predicted emotions and predicted experiences related to VR in marketing.

6.5 Conclusion

The purpose of this study was to investigate if and how marketers can use immersive VR to effectively advertise tourist destinations. More specifically, the aim was to investigate how exposure to a destination in immersive VR impacts destination attitude, behavioral intentions and purchasing decision. The effects we wanted to investigate were both the direct effects and the underlying processing mechanisms, namely telepresence, enjoyment, mental imagery, predicted emotions and predicted experiences. Through our research, we have found that the indirect effects of immersive VR on consumers' destination attitude, behavioral intentions and actual purchasing decision are stronger than those of the common technology used today, when the indirect effect goes through telepresence, enjoyment and mental imagery, followed by predicted emotions and predicted experiences. These findings provide new insight into how VR exposure is processed by consumers, specifically by uncovering two new processing mechanisms in predicted emotions and predicted experiences, and mapping how these work together with telepresence, enjoyment and mental imagery. This is important knowledge to marketers and decision-makers today. In addition, our research provides a more nuanced perspective on telepresence as a mediating mechanism than what has previously been uncovered in the literature.

Our conclusion is that immersive VR technology potentially can become a powerful marketing tool in destination marketing, but isn't quite ready yet. However, with better quality and content developed specifically to stimulate the five factors we have shown to be mediators in the indirect effect, immersive VR technology can be used as a more effective medium to advertise tourist destinations, than today's prevailing technology.

Chapter 7: References

- Ahn, Sun Joo and Jeremy N Bailenson (2011). “Self-endorsing versus other-endorsing in virtual environments”. In: *Journal of Advertising* 40.2, pp. 93–106.
- Babin, Laurie A and Alvin C Burns (1997). “Effects of print ad pictures and copy containing instructions to imagine on mental imagery that mediates attitudes”. In: *Journal of Advertising* 26.3, pp. 33–44.
- Baron, Reuben M and David A Kenny (1986). “The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations.” In: *Journal of personality and social psychology* 51.6, p. 1173.
- Blair, Ian (2016). *Three Mobile Marketing Trends That Are Dominating 2016*. URL: <http://www.forbes.com/sites/theyec/2016/03/23/three-mobile-marketing-trends-2016/4/#6d675130536a>.
- Brakus, J Joško, Bernd H Schmitt, and Lia Zarantonello (2009). “Brand experience: what is it? How is it measured? Does it affect loyalty?” In: *Journal of marketing* 73.3, pp. 52–68.
- Chaffey, Dave (2016). *Mobile Marketing Statistics compilation*. URL: <http://www.smartinsights.com/mobile-marketing/mobile-marketing-analytics/mobile-marketing-statistics/>.
- Chen, Hsiang (2006). “Flow on the net—detecting Web users’ positive affects and their flow states”. In: *Computers in human behavior* 22.2, pp. 221–233.
- Cho, Yong-Hyun, Youcheng Wang, and Daniel R Fesenmaier (2002). “Searching for experiences: The web-based virtual tour in tourism marketing”. In: *Journal of Travel & Tourism Marketing* 12.4, pp. 1–17.
- Daugherty, Terry, Hairong Li, and Frank Biocca (2008). “Consumer learning and the effects of virtual experience relative to indirect and direct product experience”. In: *Psychology & Marketing* 25.7, pp. 568–586.
- DellaVigna, Stefano (2009). “Psychology and economics: Evidence from the field”. In: *Journal of Economic literature* 47.2, pp. 315–372.
- Dobrowolski, Pawel et al. (2014). “The Effects of Virtual Experience on Attitudes Toward Real Brands”. In: *Cyberpsychology, Behavior, and Social Networking* 17.2, pp. 125–128.

- Domina, Tanya, Seung-Eun Lee, and Maureen MacGillivray (2012). “Understanding factors affecting consumer intention to shop in a virtual world”. In: *Journal of retailing and consumer services* 19.6, pp. 613–620.
- Eadicicco, Lisa (2016). *Virtual Reality Buyer’s Guide: Oculus Rift vs. HTC Vive vs. Samsung Gear VR*. URL: <http://time.com/4277763/virtual-reality-buyers-guide/>.
- Falk, Armin and James J Heckman (2009). “Lab experiments are a major source of knowledge in the social sciences”. In: *science* 326.5952, pp. 535–538.
- Fjordtours. *Den klassiske Norge i et nøtteskall® turen*. URL: <https://www.norwaynutshell.com/no/klassisk-norway-in-a-nutshell/>.
- Gabisch, Jason A and Kholekile L Gwebu (2011). “Impact of virtual brand experience on purchase intentions: the role of multichannel congruence”. In: *Journal of Electronic Commerce Research* 12.4, p. 302.
- Gartner, William C (1994). “Image formation process”. In: *Journal of travel & tourism marketing* 2.2-3, pp. 191–216.
- Gilbert, Daniel T, Michael J Gill, and Timothy D Wilson (2002). “The future is now: Temporal correction in affective forecasting”. In: *Organizational Behavior and Human Decision Processes* 88.1, pp. 430–444.
- Google. *Google VR*. URL: <https://vr.google.com/>.
- Hair, Joseph F et al. (2006). *Multivariate data analysis (Vol. 6)*.
- Hayes, Andrew F (2009). “Beyond Baron and Kenny: Statistical mediation analysis in the new millennium”. In: *Communication monographs* 76.4, pp. 408–420.
- Heeter, Carrie (1995). “Communication research on consumer VR”. In: *Communication in the age of virtual reality*, pp. 191–218.
- Hsee, Christopher K and Reid Hastie (2006). “Decision and experience: why don’t we choose what makes us happy?” In: *Trends in cognitive sciences* 10.1, pp. 31–37.
- Huang, Yu Chih et al. (2016). “Exploring the Implications of Virtual Reality Technology in Tourism Marketing: An Integrated Research Framework”. In: *International Journal of Tourism Research* 18.2, pp. 116–128.
- Hurtigruten (2015). *About Us*. URL: <https://www.hurtigruten.com/about-us/>.

- Hyun, Martin Yongho, Seoki Lee, and Clark Hu (2009). “Mobile-mediated virtual experience in tourism: concept, typology and applications”. In: *Journal of Vacation Marketing* 15.2, pp. 149–164.
- Hyun, Martin Yongho and Robert Martin O’Keefe (2012). “Virtual destination image: Testing a telepresence model”. In: *Journal of Business Research* 65.1, pp. 29–35.
- Jin, Seung-A Annie (2009). “The roles of modality richness and involvement in shopping behavior in 3D virtual stores”. In: *Journal of Interactive Marketing* 23.3, pp. 234–246.
- Kim, Jihyun, Yoon Jin Ma, and Jihye Park (2009). “Are US consumers ready to adopt mobile technology for fashion goods? An integrated theoretical approach”. In: *Journal of Fashion Marketing and Management: An International Journal* 13.2, pp. 215–230.
- Klein, Lisa R (2003). “Creating virtual product experiences: The role of telepresence”. In: *Journal of interactive Marketing* 17.1, pp. 41–55.
- Lee, Woojin and Ulrike Gretzel (2012). “Designing persuasive destination websites: A mental imagery processing perspective”. In: *Tourism management* 33.5, pp. 1270–1280.
- Li, Hairong, Terry Daugherty, and Frank Biocca (2002). “Impact of 3-D advertising on product knowledge, brand attitude, and purchase intention: The mediating role of presence”. In: *Journal of advertising* 31.3, pp. 43–57.
- Lombard, Matthew and Theresa Ditton (1997). “At the heart of it all: The concept of presence”. In: *Journal of Computer-Mediated Communication* 3.2, pp. –.
- Lutz, Kathy A and Richard J Lutz (1978). “Imagery-eliciting strategies: Review and implications of research”. In: *NA-Advances in Consumer Research Volume 05*.
- MacInnis, Deborah J (1987). “Constructs and measures of individual differences in imagery processing: A review”. In: *NA-Advances in Consumer Research Volume 14*.
- MacInnis, Deborah J, Vanessa M Patrick, and C Whan Park (2006). “Looking Through the Crystal Ball”. In: *Review of Marketing Research (Review of Marketing Research, Volume 2) Emerald Group Publishing Limited* 2, pp. 43–80.
- MacInnis, Deborah J and Linda L Price (1987). “The role of imagery in information processing: Review and extensions”. In: *Journal of consumer research* 13.4, pp. 473–491.
- Making View. *Making View*. URL: <http://www.makingview.com/>.
- Mawston, Neil (2016). *Samsung Galaxy S7 edge Was World’s Top-Selling Android Smartphone in H1 2016, says Strategy Analytics*. URL: <https://www.strategyanalytics.com/strategy->

analytics/news/strategy-analytics-press-releases/strategy-analytics-press-release/2016/08/01/strategy-analytics-samsung-galaxy-s7-edge-was-world's-top-selling-android-smartphone-in-h1-2016#.WDxG5KIrI_U.

- McGill, Ann L and Punam Anand (1989). "The effect of imagery on information processing strategy in a multiattribute choice task". In: *Marketing Letters* 1.1, pp. 7–16.
- Mehrabian, Albert (1978). "Characteristic individual reactions to preferred and unpreferred environments¹". In: *Journal of Personality* 46.4, pp. 717–731.
- Mills, Stella and Jan Noyes (1999). "Virtual reality: an overview of user-related design issues revised paper for special issue on "Virtual reality: User Issues" in *Interacting with Computers*, May 1998". In: *Interacting with computers* 11.4, pp. 375–386.
- Nah, Fiona Fui-Hoon, Brenda Eschenbrenner, and David DeWester (2011). "Enhancing brand equity through flow and telepresence: A comparison of 2D and 3D virtual worlds". In: *MI Quarterly* 35.3, pp. 731–747.
- Pallant, Julie (2010). *SPSS survival manual, 4th edition*. McGraw-Hill Education (UK).
- Pantano, Eleonora and Giuseppe Naccarato (2010). "Entertainment in retailing: The influences of advanced technologies". In: *Journal of Retailing and Consumer Services* 17.3, pp. 200–204.
- Patrick, Vanessa M and Deborah J MacInnis (2006). "Why feelings stray: sources of affective misforecasting in consumer behavior". In: *Advances in Consumer Research* 33, p. 49.
- Patrick, VM and DJ MacInnis (2003). "How will I feel about it? Affective misforecasting in consumer behavior". In: *ADVANCES IN CONSUMER RESEARCH, VOL 30* 30, pp. 145–145.
- Pett, Marjorie A, Nancy R Lackey, and John J Sullivan (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. Sage.
- Petty, Richard E, Curtis P Haugtvedt, and Stephen M Smith (1995). "Elaboration as a determinant of attitude strength: Creating attitudes that are persistent, resistant, and predictive of behavior". In: *Attitude strength: Antecedents and consequences* 4, pp. 93–130.
- Prasuethsut, Lily (2016). *PlayStation VR v Samsung Gear VR: Is mobile or console VR best for you?* URL: <https://www.wareable.com/vr/playstation-vr-vs-samsung-gear-vr>.
- Preacher, Kristopher J and Andrew F Hayes (2004). "SPSS and SAS procedures for estimating indirect effects in simple mediation models". In: *Behavior research methods, instruments, & computers* 36.4, pp. 717–731.

- Preacher, Kristopher J and Andrew F Hayes (2008). “Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models”. In: *Behavior research methods* 40.3, pp. 879–891.
- Samsung. *Samsung Galaxy S7 edge*. URL: <http://www.samsung.com/global/galaxy/galaxy-s7/>.
- *Samsung Gear VR*. URL: <http://www.samsung.com/global/galaxy/gear-vr/>.
- Sanchez, Javier et al. (2006). “Perceived value of the purchase of a tourism product”. In: *Tourism management* 27.3, pp. 394–409.
- Schlosser, Ann E (2003). “Experiencing products in the virtual world: the role of goal and imagery in influencing attitudes versus purchase intentions”. In: *Journal of consumer research* 30.2, pp. 184–198.
- Schubert, Thomas, Frank Friedmann, and Holger Regenbrecht (2001). “The experience of presence: Factor analytic insights”. In: *Presence* 10.3, pp. 266–281.
- Steuer, Jonathan (1992). “Defining virtual reality: Dimensions determining telepresence”. In: *Journal of communication* 42.4, pp. 73–93.
- Suh, Kil-Soo and Sunhye Chang (2006). “User interfaces and consumer perceptions of online stores: The role of telepresence”. In: *Behaviour & information technology* 25.2, pp. 99–113.
- Suh, Kil-Soo and Young Eun Lee (2005). “The effects of virtual reality on consumer learning: an empirical investigation”. In: *Mis Quarterly*, pp. 673–697.
- Terdiman, Daniel (2016). *VR Will Be A \$38 Billion Industry By 2026: Report*. URL: <https://www.fastcompany.com/3065227/tech-edge/vr-will-be-a-38-billion-industry-by-2026-report>.
- Tomaseti, Eva, Salvador Ruiz, and Nina Reynolds (2009). “Flow and attitude toward the website on the evaluation of products present by means of virtual reality: A conceptual model”. In: *NA-Advances in Consumer Research Volume 36*.
- Venkatesh, Viswanath (2000). “Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model”. In: *Information systems research* 11.4, pp. 342–365.
- Williams, Paul and JS Perry Hobson (1995). “Virtual reality and tourism: fact or fantasy?” In: *Tourism Management* 16.6, pp. 423–427.

- Wilson, Timothy D et al. (2000). "Focalism: a source of durability bias in affective forecasting."
In: *Journal of personality and social psychology* 78.5, p. 821.
- Zuckerman, Marvin (1971). "Dimensions of sensation seeking." In: *Journal of consulting and clinical psychology* 36.1, p. 45.

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Appendix A: Literature Review

In the following two pages, we have included a summary of the literature review, containing key information about the different articles.

Source	Context	Sub-context	Summary	Method	IV	Technology	Med/theo expl for effect	DV	Moderator	Limitations
Dobrowolski et al. (2014)	Virtual product experience	Consumer behavior	Virtual test drive of cars using VR. Hard driving condition decreased attitudes; easy vice versa. Global attributes decreased/increased for Honda/Ford in post (Honda was hard, Ford easy). Experienced attributes increased for hard driving conditions with Honda and vice versa. For Ford they only increased for easy.	Experiment	VR test drive, quality manipulation	VR simulator (projector)	Driving difficulty	Attitude change (pre/post)	Qualitative manipulation of the virtual experience	No control group, don't know if thinking about the car more often will change attitudes.
Gabisch and Gwebu (2011)	Virtual product experience	Real world applicability	Impact of virtual experiences on attitude formation and real world purchasing intentions exists. Self-image congruence and behavioral consistency impact attitude. Perceived diagnosticity, Self-Image congruence, behavioral consistency and attitude impact intention.	Survey	Virtual brand experience	Virtual "real brands" in Second Life	Perceived diagnosticity, Self-image congruence, Behavioral consistency, (Brand attitude)	Brand attitude, real world purchase intentions	Control variable: Prior Real World Purchase Experience	No control group, only survey to users of Second Life
Daugherty et al (2008)	Virtual product experience	Consumer behavior	The effects of virtual experience on consumer learning, compared with direct and indirect product experience. Also different sequences of these. VR leads to more favorable product knowledge, brand attitudes and purchasing intention than indirect prod. experience. Most prominent effect for experiential products.	Experiment	Virtual experience vs. direct or indirect product experience	Presentation of product on computer vs. direct product experience	Channel congruence and attitudes	Product knowledge, brand attitude, purchase intentions		This article looks at the effects, but it says little about the theoretical explanation for the effects.
Ahn and Bailenson (2011)	Virtual product experience	Virtual environment advertising (with avatars)	The effects of self-endorsing vs. other-endorsing in virtual environments on brand attitude and purchase intention.	Experiment	Levels of immersiveness, Self-endorsing vs. other-endorsing, interactivity (self/other)	Computer, photo, photoshop, virtual environment (head-mounted display with motion tracker)	Interactivity, Identification	Brand attitude, purchase intentions, brand association		
Klein (2003)	Virtual product experience	Telepresence	The ability of computer mediated environments to influence telepresence.	Experiment	3D vs. 2D, product category	Computer mediated virtual environment	Telepresence, user control, media richness	Product attitudes		
Li et al. (2003)	Online shopping	Virtual product experience	Explores virtual affordance. Looks at how 3D product visualization leads to favorable brand attitudes and purchase intention.	Experiment	2D vs. 3D advertising	VR (online)	Perceived physical engagement, naturalness	Brand attitude, purchase intentions		
Verhagen et al. (2016)	Online shopping	Virtual product experience	The effect of product presentation (tangibility) on purchase intentions. Virtual mirrors and 360-spin rotation increased diagnosticity, which in turn increased purchase intentions.	Experiment	Online product presentation formats (tangibility) (pictures vs. 360 spin rotation vs. virtual mirror)	VR (online)	Perceived diagnosticity	Online purchase intention		
Chin and Swatman (2005)	Online shopping	Virtual store	VR is important in online shopping for traditional products, like clothes, cars etc.	Review paper	Virtual presence and reality	VR (online)				
Tomaseti et al. (2009)	Online shopping	Virtual store	Interactivity and richness lead to flow and attitude, which lead to positive product evaluation.	Experiment	Interactivity, Richness	VR (online)	Attitude toward website, flow	Product evaluation	Flow on attitude	
Jin (2009)	Online shopping	Virtual store	The roles of modality richness and involvement in shopping behavior in 3D virtual stores.	Experiment	Modality of marketing information presentation (text-visual, audio-visual)	Virtual store in Second Life		Attitude towards the product, Buying intentions, enjoyment of the online shopping experience	Product involvement	
Domina et al. (2012)	Online shopping	Consumer behavior	Investigates how enjoyment and control affects behavioral intentions and individual judgement making. Also how enjoyment and perceived ease of use affects behavioral intentions. Enjoyment and control increases behavioral intentions. Enjoyment and perceived ease of use also increase behavioral intentions.	Survey	Use of Virtual Store	Virtual store in Second Life	Consumer innovativeness (consumer novelty seeking, independent judgement making) + Consumer experiences with 3D virtual world environments (ease of use, control, concentration, enjoyment)	Consumer intention		No control group. Only college students. No purchase decision.
Wu et al. (2013)	Online shopping	Consumer behavior	Online store atmosphere affects emotional arousal, which in turn affects purchase intention. Emotional arousal also affects attitudes towards the webpage, which affects purchase intention even stronger.	Content analysis	Layout design, atmosphere	Virtual store	Emotional arousal, attitude towards website	Purchase intention		The sample is not very generalizable. Did not take experience and needs for product into consideration. No moderators (personality etc.).
Holzwarth et al. (2006)	Online shopping	Avatars	Using an avatar sales agent leads to more satisfaction with the retailer, a more positive attitude toward the product, and greater purchase intention. An attractive avatar is a more effective sales agent at moderate levels of product involvement, but an expert avatar is a more effective sales agent at high levels of product involvement.	Experiment	Avatar presence, avatar type (attractive/expert)	Virtual store	Entertaining/informative site, likeability/credibility of avatar	Satisfaction with retailer, attitude toward product, purchase intention	Involvement	
Jin & Sung (2010)	Online shopping	Avatars	An exciting avatar projects higher attractiveness, whereas a sincere avatar projects higher expertise and trustworthiness.	Experiment	Exciting/Sincere avatar	Virtual store (Second Life)		Source expertise, trustworthiness, source attractiveness		
Bigné et al. (2016)	Online shopping	Physical reactions	The findings suggest that a high level of attention to a brand and slow eye movement between brands lead to additional brand purchases within the product category.	Exploratory/Descriptive	Looking at products in a virtual store	Virtual store (simulator)	Level of attention, eye movements	Additional brand purchases		
Suh & Lee (2005)	Online shopping	Telepresence and consumer learning	How VR affects consumer learning (through telepresence) for virtually high experiential and virtually low experiential products.	Experiment	Interactivity (2D vs 3D)	Interface design in online stores (e-commerce)	Telepresence	Consumer learning (knowledge, attitude, purchase intentions)	Vision and hearing (fit), VHE and VLE products	
Suh and Chang (2006)	Online shopping	Telepresence	The role of telepresence on consumers perception of online stores.	Experiment	Static pictures vs 3D video/pictures with various VR functions (zoom, movement, etc).	Web page visualisation and video	Telepresence	Product knowledge, attitudes, purchase intentions, risk perception		
Schlosser et al. (2003)	Online shopping	Mental imagery, telepresence and goals	The role of goal and imagery in influencing attitudes versus purchase intentions.	Experiment	Simulated product experience (interactivity), and vividness	Non-immersive VR in online store	Cognitive elaboration, Mental imagery, (Attitudes)	Product attitudes, Purchase intentions, Transportation	Goal (searcher or browser)	
Li et al. (2002)	Online shopping	Telepresence	Investigates how different product information presentation influences product knowledge, brand attitudes and behavioral intentions. Also investigates how this relationship is mediated by telepresence.	Experiment	2D(print/tv) VS 3D presentation formats	3D visualisation	Telepresence	Product knowledge, brand attitude, purchase decision quality, number of cognitive evaluations (units of thoughts)	Product type in terms of salient attributes visual/tactile/behavioral	Only physical products

Source	Context	Sub-context	Summary	Method	IV	Technology	Med/theo expl for effect	DV	Moderator	Limitations
Nah et al. (2011)	Telepresence	Virtual environment	How brand equity affects intention through flow, telepresence, and enjoyment. 3D advertising has both positive and negative effects on brand equity. Positive effects through telepresence and enjoyment, but 3D can be distracting due to information processing limitations. Brand equity positively affects behavioral intentions.	Experiment	2D vs 3D	2D and 3D virtual world/tour	Flow aspects, telepresence, enjoyment, brand equity	Telepresence, enjoyment, brand equity, behavioral intention		
Van Schaik et al. (2004)	Telepresence	Virtual environment	The effect of a mixed reality environment on presence, involvement and realism, confidence and intention to re-visit. General and spatial presence were positively affected, involvement and realism were low. Age was negatively correlated with spatial presence and confidence to play.	Exploratory/Descriptive	Desert Rain mixed reality environment	Mixed reality environment (on screen)		General and spatial presence (high), involvement and realism (low)	Age	Level of involvement and realism low.
Schubert et al. (2001)	Telepresence	Virtual environment	The effect of virtual environments on spatial presence, involvement and sense of realism.	Survey/exploratory	Different virtual environments	Different computer-mediated virtual environments (including HMD)	1. Representation of bodily actions as possible actions in the virtual environment. 2. Suppression of incompatible sensory input	Spatial presence, involvement, sense of realism		Self-assessment by participants in a different location
Cummings and Bailenson (2015)	Telepresence	Immersiveness		Meta-analysis	Level of immersive quality			Presence		
Hyun and O'Keefe (2012)	Tourism marketing	Telepresence and Virtual Destination Image Formation (VDIF)	How telepresence affects and mediates virtual destination image formation (VDIF).	Experiment	Offline- or web mediated travel information.	Web based tourist information sights	Telepresence	Cognition, affect and conation (components of VDIF)	Interactivity and vividness	
Cho et al. (2002)	Tourism marketing	Virtual tours	Discusses the concept of Web-based virtual tours, and the effects and application in tourism marketing. Discusses five impacts of virtual tours on consumers' search and experience. Virtual tours 1. enable tourists to effectively translate experiential attributes into "objective" evaluation criteria, 2. provide basis for efficient info search, 3. provide more extensive/rich information, increasing quality of destination image, 4. increase users confidence of expectation, 5. increase visitor satisfaction.	Descriptive		Web-mediated virtual environment (virtual tour)				
Hyun et al. (2009)	Tourism marketing	Virtual experiences	Concept, typology, and applications. Mobile applications for virtual experiences in tourism. Explains the nature of experiential products.	Descriptive		Various mobile-mediated presentation formats				
Huang et al. (2016)	Tourism marketing	Technology acceptance model (TAM) and self-determination theory	Integrates technology acceptance model (TAM) and self-determination theory to understand how tourists use a 3D virtual world.	Experiment	Perceived ease of use, perceived usefulness, perception of autonomy, perception of competence, perception of relatedness	Virtual tour		Experience of enjoyment, behavioral intentions to visit destination	Naturality, cultural authenticity, graphics, music	Non-immersive VR technology
Banes and Boglut (2013)	Tourism marketing	3D-advertising	Techniques and facts	Descriptive						Not academic. Bad language. Low credibility
Gilbert et al. (2002)	Affective forecasting*	Temporal correction	Cognitively busy people can't correct for proxy reactions (like hunger), because they can't focus on when things will happen.	Experiment	Temporal location (morning/evening), Proxy reactions (hunger), Temporal correction (cognitive load)	-		Predictions of future hedonic reactions		
Patrick & MacInnis (2006)	Affective forecasting*	Affective misforecasting (AFM) - sources	Focalisation. Inaccurate lay theories, ordination and emotional evanescence are stronger for "Worse Than Forecasted" than for "Better Than Forecasted". WTF is more salient than BTF.	Experiment	Consumption incidents (better/worse/different than expected)	-		Memory salience of AFM, Sources of AMF		
Igou (2004)	Affective forecasting*	Lay theories	Belief of durability (continuous or decreasing) affects the precision of affective forecasting.	Experiment	Lay theories of decreasing effect vs. lay theories about continuing effect	Stimuli exposure (priming)	Belief of durability (continuous or decreasing)	Precision of affective forecasting and duration		
Hsee & Hastie (2006)	Affective forecasting*	Decision making biases	A summary of different biases that impact how people make decisions.	Descriptive			Prediction biases and failures to follow predictions			
Grant (2003)	Affective forecasting*	Consumer behavior	Consumers can forecast positive emotions that will arise after consumption of a hedonic good, but not negative ones.	Meta-analysis						
Wilson et al. (2000)	Affective forecasting*	Durability bias	Consumers overpredict the duration of future affective reactions. When thinking of other events as well, they predict a shorter duration.	Experiment	Priming (think about how much time spent on other activities)		Belief that other events will reduce thinking about focal event.	Forecasts for duration of affective reactions		
Brakus (2009)	Product experiences*	Scales and measurements. The component of product experiences	Develops a scale for measuring brand experiences, shows that experiences affect satisfaction and loyalty positively.							
Elizabeth Cooper-Martin (1991)	Consumer behavior	Experiential products		Survey				Objective/subjective features, Global/Unidimensional features		
Scholz & Smith (2016)	3D-advertising	Consumer engagement	How to design an AR experience	Descriptive/Framework		AR (TV, posters etc., not HMD)				
Holbrook and Kuwahara (1999)	Areas of use for 3D/VR		Examples of uses	Descriptive						Old research and old technology might contaminate the relevance
Piyathasanan et al. (2015)	Virtual environment	Social aspects								
Steuer (1992)	Virtual Reality	Virtual reality and telepresence	Defines virtual reality in terms of human experiences. Explains the construct and components of telepresence. Many articles refer to Steuer (1992). Most used definition of virtual reality and telepresence.	Descriptive						
*Additional literature search										

Appendix B: Examples of Stimuli, Study 1 and Study 2

B.1 Examples of Stimuli, Study 1



Figure B.1: 2D Picture of *Nærøyfjorden*



Figure B.2: 2D Picture of *Flåmsbana*



Figure B.3: 2D Picture of *Aurlandsfjorden*

B.2 Examples of Stimuli, Study 2



Figure B.4: 2D Picture of *Leknes*



Figure B.5: 2D Picture of *Geirangerfjorden*

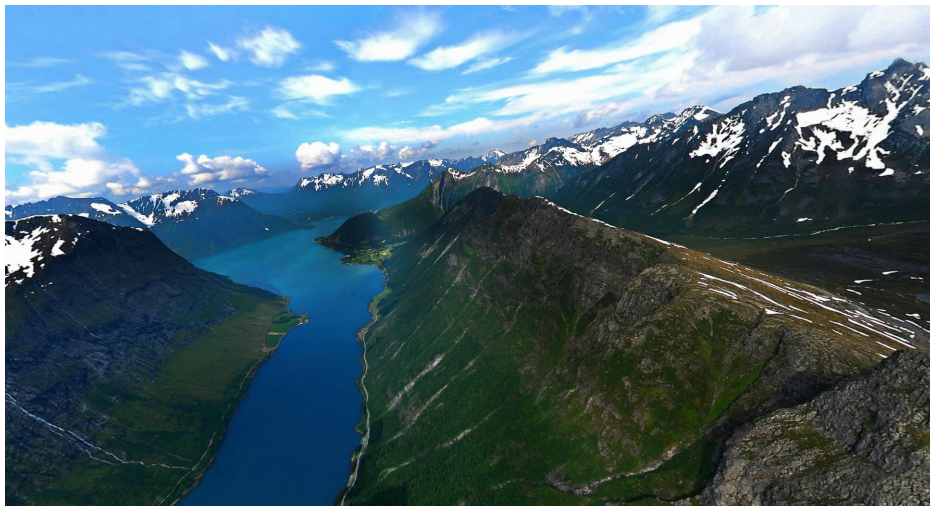


Figure B.6: 2D Picture of *Slogen*

To see the 360-pictures used in the immersive VR condition, visit this link:

<http://360.visitnorway.com/geiranger/#/leknes>

Appendix C: Written Material, Study 1

C.1 Invitation

The invitation to the lab experiment that was sent out to all students at The Norwegian School of Economics is included below.

This message is for Norwegian speaking students only

Informasjonsskriv om undersøkelse

Kjære student,

Vi ønsker med dette å invitere deg til å delta i en undersøkelse om reiseopplevelser i Norge.

Undersøkelsen tar ca. 20 minutter, og ved å delta er du med i trekning av **2 byGavekort til en verdi av 3000 kroner hver**. Gavekortene kan brukes i butikker og restauranter i hele Bergen.

Undersøkelsen vil finne sted på SOL-instituttet på NHH (3. etasje i nybygget), og man kan selv velge dag og tidspunkt som passer best i løpet av neste uke (uke 38).

Du kan følge denne lenken dersom du ønsker å delta:

http://thomas.nhh.no/dj/expmotor/new_participant/8/

Det vil ikke lagres noen personsensitive data i forbindelse med undersøkelsen, og deltakelse er frivillig. For å kunne delta i trekningen av gavekort vil vi imidlertid trenge å ta vare på din kontaktinformasjon til trekningen er over.

Vi håper å se deg neste uke!

Vennlig hilsen,

Center for Service Innovation (CSI), NHH

C.2 Manuscript

The manuscripts which the experimenters used in the experiment are included below. Both the manuscript for the VR condition and for the 2D condition are included, as they are slightly different.

Eksperimentskript (2D):

Innledning:

- Velkommen til denne undersøkelsen. Den utføres i forbindelse med forskning på reiselivsopplevelser, for Center for Service Innovation ved NHH.
- Undersøkelsen er helt anonym. Vi trenger kun e-postadressen din for å ta kontakt med vinneren av gavekortene i ettertid.
- Før vi begynner vil vi gjerne at du signerer et samtykkeskjema. Ved å signere samtykker du til at du har forstått at du er her av fri vilje og at den gjennomføres anonymt.

Forklaring - 2D:

- Du vil nå få se bilder av norsk vestlandsnatur, som kan besøkes på en dagstur fra Bergen.
- Bildene vil du få se på denne mobiltelefonen. Du kan bytte mellom bildene ved å sveipe mot venstre og høyre.
- Ta deg den tiden du trenger til å få sett ordentlig på hvert bilde. Du har god tid. Du kan også se bildene så mange ganger du vil.
- Det vil ikke komme noen memoreringsspørsmål eller kunnskapsspørsmål etterpå, så ikke tenk på det.

(Eksponering med mobil)

Forklaring - Undersøkelse:

- Vi vil nå begynne med en spørreundersøkelse.
- Den inneholder noen spørsmål du skal svare på. Det er ingen riktige eller gale svar. Du skal huke av for det alternativet som best representerer hva du mener og føler.
- Når du kommer til siden hvor det står at du er ferdig, skal du henvende deg til meg.
- For å være med i trekningen av to ByGavekort til en verdi av 3000 kr hver må du etterpå fylle ut et skjema med mailadresse.

(Begynn med surveyen)

Tilbud (etter utfylt survey):

- Som takk for at du deltok vil vi nå gi deg et tilbud om å kjøpe to rabatterte billetter til en dagstur fra Bergen til de stedene du har sett bilder av. Tilbudet er beskrevet her. Bare spør meg hvis det er noe ved tilbudet du lurer på.

Debrief:

- For å være med i trekningen av to byGavekort til en verdi av 3000 kr hver, kan du nå skrive mailadressen din nederst på dette skjemaet.
- Det er svært viktig at du ikke snakker med noen om noe av det som har skjedd i denne undersøkelsen før neste uke. Det gjelder både hva du ble spurt om, hva du har blitt vist og tilbudet du har fått. Dette er for å unngå at resultatene blir endre på noen som helst måte. Neste uke kan du fritt diskutere alt om undersøkelsen.

Eksperimentskript (VR):

Innledning:

- Velkommen til denne undersøkelsen. Den utføres i forbindelse med forskning på reiselivsopplevelser, for Center for Service Innovation ved NHH.
- Undersøkelsen er helt anonym. Vi trenger kun e-postadressen din for å ta kontakt med vinneren av gavekortene i ettertid.
- Før vi begynner vil vi gjerne at du signerer et samtykkeskjema. Ved å signere samtykker du til at du har forstått at du er her av fri vilje og at den gjennomføres anonymt.

Forklaring - VR:

- Du vil nå få se tre 360-graders bilder av norsk vestlandsnatur, som kan besøkes på en dagstur fra Bergen.
- Du skal straks få ta på deg dette headsetet for å se på bildene. Med dette kan du se i alle retninger, og snu hodet fritt. Du kan også bruke stolen til å snu deg rundt, men bli sittende.
- Hvis bildene ikke er fokusert kan du selv endre fokus med dette hjulet på toppen. Still gjerne inn fokus på det så skarpt som du får det første bildet før du begynner, men bruk venstre hånd. Hvis du bruker briller med mye styrke kan det være lurt å ha disse på under.
- Prøv å ikke komme nær siden av headsetet. Gi beskjed når du ønsker å skifte bilde. Dette gjør vi for deg ved å trykke på en knapp på selve VR-brillen.
- Ta deg den tiden du trenger til å få sett ordentlig på hvert bilde. Du har god tid. Du kan også se bildene så mange ganger du vil.
- Det vil ikke komme noen memoreringsspørsmål eller kunnskapsspørsmål etterpå, så ikke tenk på det.

(Eksponering med VR-briller)

Forklaring - Undersøkelse:

- Vi vil nå begynne med en spørreundersøkelse.
- Den inneholder noen spørsmål du skal svare på. Det er ingen riktige eller gale svar. Du skal huke av for det alternativet som best representerer hva du mener og føler.
- Når du kommer til siden hvor det står at du er ferdig, skal du henvende deg til meg.
- For å være med i trekningen av to ByGavekort til en verdi av 3000 kr hver må du etterpå fylle ut et skjema med mailadresse.

(Begynn med surveyen)

Tilbud (etter utfylt survey):

- Som takk for at du deltok vil vi nå gi deg et tilbud om å kjøpe to rabatterte billetter til en dagstur fra Bergen til de stedene du har sett bilder av. Tilbudet er beskrevet her. Bare spør meg hvis det er noe ved tilbudet du lurer på.

Debrief:

- For å være med i trekningen av to byGavekort til en verdi av 3000 kr hver, kan du nå skrive mailadressen din nederst på dette skjemaet.
- Det er svært viktig at du ikke snakker med noen om noe av det som har skjedd i denne undersøkelsen før neste uke. Det gjelder både hva du ble spurt om, hva du har blitt vist og tilbudet du har fått. Dette er for å unngå at resultatene blir endre på noen som helst måte. Neste uke kan du fritt diskutere alt om undersøkelsen.

C.3 Consent Form

Included below is the consent form that participants had to sign before commencing with the experiment.

Samtykkeskjema

Formålet med undersøkelsen er å undersøke reiselivsopplevelser.

Informasjonen du oppgir er konfidensiell. Det samles ikke inn personlig informasjon som kan kobles til svarene du gir.

Din deltagelse i denne undersøkelsen er helt frivillig. Du kan avbryte undersøkelsen når som helst, men vil i så tilfelle ikke være med i trekningen av premie.

Jeg har lest og forstår overnevnte informasjon, og samtykker herved til å delta i denne undersøkelsen.

Navn

Signatur

C.4 Questionnaire

In the following eleven pages, the questionnaire from study 1 is included. This questionnaire was answered on a computer. The questionnaire given to respondents in the 2D condition was slightly different in that question 15 and half of question 16 were excluded, seeing as how these were VR related.



Vi vil nå stille deg noen spørsmål knyttet til det du nettopp har sett. Vi bruker stort sett en skala fra 0 til 10, og du skal velge det punktet på skalaen som du synes best reflekterer din mening.

Svar så ærlig og oppriktig som du klarer på alle spørsmål.

1. Se for deg at du reiser på en organisert dagstur fra Bergen som inkluderer stedene du nå har sett bilder av.

Hvor glad tror du at denne turen ville gjort deg?

0 - Ikke glad	1	2	3	4	5	6	7	8	9	10 - Svært glad
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hvor mye ville du følt på en beundring for naturen underveis på reisen?

0 - Ingen beundring	1	2	3	4	5	6	7	8	9	10 - Sterk beundring
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hvor meningsfullt ville det følt for deg å reise i naturen på denne måten?

0 - Ikke meningsfullt	1	2	3	4	5	6	7	8	9	10 - Svært meningsfullt
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hvor sterkt inntrykk tror du at denne type reiseopplevelse ville gjort på deg?

0 - Lite inntrykk	1	2	3	4	5	6	7	8	9	10 - Sterkt inntrykk
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hvor fornøyd ville du følt deg i ettertid med at du dro på denne type reise?

0 - Ikke fornøyd	1	2	3	4	5	6	7	8	9	10 - Svært fornøyd
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Går du for tiden på Bachelor- eller Masterstudiet?

Bachelor

Master

Hva er din alder?

Hva er ditt kjønn?

Mann

Kvinne

Hvilken kommune har du vokst opp i?

Beskriv kort hva du tror var hensikten med dette eksperimentet:

Tusen takk for at du har deltatt i undersøkelsen!

Du er nå ferdig. Vennligst henvend deg til forsøksleder.

Hvor lenge så deltakeren på bilder?

Hvor mye bevegde deltakeren seg?

1 - Svært lite	2	3	4	5 - Svært mye
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hvor mye snakket deltakeren om teknologien?

1 - Svært lite	2	3	4	5 - Svært mye
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hvor mye snakket deltakeren om det han/ hun så?

1 - Svært lite	2	3	4	5 - Svært mye
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hvor entusiastisk var deltageren under eksponering?

1 - Svært lite entusiastisk	2	3	4	5 - Svært entusiastisk
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Oppstod det tekniske utfordringer / problemer?

Ingen problemer

Små problemer

Vesentlige problemer

Brukte deltageren briller/ linser?

Ja, og hadde de på under eksponering

Ja, men hadde de ikke på under eksponering

Nei

Kjøpte deltageren billett?

Nei

Ja, 1 billett

Ja, 2 billetter

Er det ellers noen grunn til at denne deltakeren ikke bør regnes som gyldig?

Nei

Ja (kommentér under)

Ikke gyldig fordi:

C.5 Offer to Purchase Tickets

The offer to purchase tickets to the Norway In A Nutshell-trip is included below.

Tilbud om tur

Som takk for din deltagelse i denne undersøkelsen vil vi tilby deg inntil 2 rabatterte billetter til turen «Norway in a Nutshell» som tilbys av Fjord Tours. Dette er en dagstur fra Bergen til de reisemålene du nå har sett bilder fra. På denne turen vil du få oppleve Aurlandsfjorden og Nærøyfjorden fra båt, Flåmsbanen, Stalheimskleiva¹ og Bergensbanen. Turen starter og slutter i Bergen sentrum, og har følgende reiserute.

07:57 	09:50	10:58 	11:55	14:00 
07:57 Avgang Bergen (Bergensbanen)	09:50 Ankomst Myrdal	10:58 Avgang Flåmsbana fra Myrdal	11:55 Ankomst Flåm	14:00 Avgang fra Flåm, Fjordcruise
15:30	15:40 	16:55	17:41 	18:58
15:30 Ankomst Gudvangen	15:40 Avgang Gudvangen (buss)	16:55 Ankomst Voss	17:41 Avgang fra Voss (tog)	18:58 Ankomst Bergen

Pris

Ordinær pris for disse billettene er kr 1320,- per person. Som del av denne undersøkelsen kan vil tilby inntil to billetter for kr 440,- per person (kr 880,- for to billetter). Billetten(e) er personlige og kan ikke videreselges. Dersom du kjøper to billetter, må disse benyttes sammen. Du må da selv være med på reisen, men står fritt til å velge hvem du vil ta med deg. Du velger også selv når du ønsker å reise.

Bestilling

Kryss av her: dersom du ønsker å kjøpe billett, og oppgi antall billetter her:

Ved utfylling av dette skjemaet forplikter du deg til kjøp.

Navn:

Adresse:

Telefon:

E-post

Signatur:

¹ Stalheimskleiva besøkes kun i perioden mai-september.

Appendix D: Written Material, Study 2

D.1 Invitation

The full version of the invitation to take part in the field experiment is included in the following, with all four languages represented. The invitation was printed two-sided, including all languages on one sheet, which was handed out to all the passengers.



Can you help Hurtigruten to be even better?

The Norwegian School of Economics (NHH) is carrying out a survey for Hurtigruten. The purpose of the survey is to provide even better experiences to those travelling on Hurtigruten.

The survey will only take 10 minutes and will be conducted **between 16.00 and 22.00** today (12 Oct.). To participate in the survey, you can **come to the reception on deck 4** at any time during the given times above.

The survey will give you a taste of the places you are going to see on your journey, and you will have to answer two questionnaires to be included in the draw.

We will draw the names of five (5) participants who will receive a gift voucher to the value of NOK 500, which can be used in the ship's shop.

We appreciate if you want to help us with this survey!

Enjoy your journey!



Können sie Hurtigruten helfen noch besser zu werden?

Die Norwegische Handelshochschule (NHH) wird auf dieser Reise eine Umfrage für passagiere mit Hurtigruten durchführen. Die Untersuchung bezweckt, den Passagieren der Hurtigruten noch schönere Erlebnisse bieten zu können.

Die Umfrage wird nur 10 Minuten dauern, und findet heute **zwischen 16 und 22 Uhr** statt (12. Oct). Wenn Sie teilnehmen möchten, kommen Sie bitte im angegebenen Zeitraum in **die Rezeption auf Deck 4**.

In der Umfrage werden Ihnen Bilder der Orte gezeigt, die Sie im Laufe der Reise sehen werden. Um an der Verlosung der Gutscheine teilnehmen zu können, müssen Sie danach die Fragen auf zwei kurze Fragebögen beantworten.

Unter den Teilnehmern der Umfrage verlosen wir fünf Geschenkgutscheine im Wert von jeweils 500 NOK, die an Bord des Schiffes eingelöst werden können.

Wir wünschen Ihnen eine angenehme Reise!

Helge Thorbjørnsen

Professor / Vice rector for Research, NHH

Lisbeth Hjertås

Guest Arrival Manager, Hurtigruten



Kan du hjelpe Hurtigruten å bli enda bedre?

Norges Handelshøyskole (NHH) vil på denne turen gjennomføre en kundeundersøkelse for reisende med Hurtigruten. Formålet med undersøkelsen er å tilby enda bedre opplevelser for dere reisende.

Undersøkelsen tar kun 10 minutter, og utføres i dag fra kl. **16:00 til 22:00**. For å delta, møt opp ved resepsjonen på dekk 4 innenfor det gitte tidsrommet.

I undersøkelsen vil du få en smakebit av steder du vil se i løpet av turen, og i etterkant svare på to korte spørreskjemaer.

Vi trekker ut fem (5) av deltakerne som får et gavekort til verdi av 500 kr, som kan brukes her om bord på båten.

Vi setter stor pris på om du vil hjelpe oss med denne undersøkelsen!

God tur!

Pouvez-vous aider Hurtigruten à devenir encore mieux?

L'Ecole supérieure de commerce de Norvège (Norges Handelshøyskole - NHH) effectue une enquête pour Hurtigruten. L'objectif de cette enquête est de pouvoir améliorer les expériences proposées à ceux qui voyagent avec Hurtigruten.

L'enquête ne dure que 10 minutes se déroulera **entre 16 h et 22 h** aujourd'hui (12.10). Pour participer à l'enquête, vous pouvez vous présenter à **la réception au pont 4** à n'importe quel moment à l'intérieur des plages horaires indiquées.

Au cours de l'enquête, nous vous présenterons des sites que vous verrez durant la croisière, et vous répondrez ensuite à deux questionnaires pour participer au tirage au sort et, peut-être, gagner des prix.

Nous tirerons au sort cinq (5) participants qui recevront un bon-cadeau d'une valeur de 500 NOK, qui peut être utilisé dans la boutique à bord du bateau.

Nous apprécierions si vous vouliez nous aider dans cette enquête!

Bonne croisière!



Helge Thorbjørnsen

Professor / Vice rector for Research, NHH



Lisbeth Hjertås

Guest Arrival Manager, Hurtigruten

D.2 Instructions

Included in the following, are Norwegian instructions for the participants, for how to use the equipment in the experiment. The first instructions are the instructions for the VR condition, and the second instructions are for the 2D condition. The English, German and French versions are not included.

Instruksjoner

Vennligst les gjennom alle punktene før du begynner.

1. Ta på deg VR-brillene.
2. Du vil få se tre 360°-bilder av Hjørundfjorden.
3. Se gjerne rundt deg. Du kan snu hodet i alle retninger, og også bruke stolen til å snu deg rundt, men vennligst bli sittende.
4. Du kan bruke fokushjulet på toppen av brillene til å gjøre bildene klarere. Vennligst ikke rør høyre siden av brillene.
5. Bruk all den tiden du trenger.
6. Si fra til oss når du vil se neste bilde. Vi vil da navigere for deg ved å trykke på en knapp på siden av brillene.
7. Når du er ferdig kan du ta av VR-brillene.

Instruksjoner

Vennligst les gjennom alle punktene før du begynner.

1. Du vil få se bilder av Hjørundfjorden på denne telefonen.
2. Du kan navigere mellom frem og tilbake mellom bildene ved å dra fingeren frem og tilbake på skjermen.
3. Se gjennom alle bildene og bruk all den tiden du trenger.

D.3 Questionnaire 1

In the following, the full Norwegian version of the first questionnaire in study 2 is included. The included questionnaire is the one given to respondents in the VR condition. In the questionnaire given to respondents in the 2D condition, questions 13-15 from the included form were excluded. In addition, the front page of the English, German and French versions are included.

Spørreskjema #1

Fullt navn:

Lugarnummer:

Skjema #1 Hurtigruten

Det er ikke noe riktig eller galt svar på spørsmålene nedenfor. Vi vil at du skal svare nøyaktig slik du føler det.

1. I løpet av reisen vil du se og oppleve alle de stedene vi har vist deg bilder av.

- Hvor glad tror du at du blir når du kommer til disse stedene?
(0 = Ikke glad, 10 = Svært glad)

<i>Ikke glad</i>											<i>Svært glad</i>
0	1	2	3	4	5	6	7	8	9	10	

- Hvor mye vil du føle på en beundring for naturen underveis på reisen?
(0 = Ingen beundring, 10 = Sterk beundring)

<i>Ingen beundring</i>											<i>Sterk beundring</i>
0	1	2	3	4	5	6	7	8	9	10	

- Hvor sterkt inntrykk tror du at denne type reiseopplevelse ville gjort på deg?
(0 = Lite inntrykk, 10 = Sterkt inntrykk)

<i>Lite inntrykk</i>											<i>Sterkt inntrykk</i>
0	1	2	3	4	5	6	7	8	9	10	

- Hvor fornøyd tror du at du vil føle deg i ettertid med at du dro på denne reisen?
(0 = Ikke fornøyd, 10 = Svært fornøyd)

<i>Ikke fornøyd</i>											<i>Svært fornøyd</i>
0	1	2	3	4	5	6	7	8	9	10	

2. Hvilke typer opplevelser tror du at denne turen vil gi deg? (0 = Helt uenig, 10 = Helt enig)

- Det er sannsynlig at reisen vil gi meg mange følelser

<i>Helt uenig</i>											<i>Helt enig</i>
0	1	2	3	4	5	6	7	8	9	10	

- Jeg vil mest sannsynlig få sterke følelser underveis

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

- Jeg vil sannsynligvis bruke mye tid på å reflektere og tenke underveis

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

- Reisen vil nok få meg til å tenke mye

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

- Denne turen kommer til å skille seg veldig fra alle andre turer jeg har vært på

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

- Turen kommer nok til å gi meg helt unike opplevelser

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

3. Vi vil nå stille deg noen spørsmål om hvordan du opplevde bildene du så (0 = Ikke i det hele tatt, 10 = I svært stor grad)

- I hvilken grad fremskapte bildene mentale forestillinger av destinasjonene som du er på vei til nå?

Ikke i det hele tatt

0 1 2 3 4 5 6 7 8 9 10

I svært stor grad

- I hvilken grad inneholdt bildene informasjon som gjorde det lett å forestille seg hvordan det blir å komme til disse destinasjonene?

Ikke i det hele tatt

0

1

2

3

4

5

6

7

8

9

I svært stor grad
10

- I hvilken grad hjalp bildene deg til å visualisere disse stedene?

Ikke i det hele tatt

0

1

2

3

4

5

6

7

8

9

I svært stor grad
10

4. Hvordan opplevde du det å se på bildene? (0 = Helt uenig, 10 = Helt enig)

- Da jeg så bildene var det som om jeg allerede var tilstede på destinasjonene

Helt uenig

0

1

2

3

4

5

6

7

8

9

Helt enig

10

- Da jeg var ferdig med å se bildene var det som om å komme tilbake til den virkelige verden etter en reise

Helt uenig

0

1

2

3

4

5

6

7

8

9

Helt enig

10

- Da jeg så bildene av destinasjonene glemte jeg litt hvor jeg egentlig var

Helt uenig

0

1

2

3

4

5

6

7

8

9

Helt enig

10

5. Hva synes du om billedserien i seg selv? (0 = Helt uenig, 10 = Helt enig)

- Jeg synes det å se på bildene var underholdende

Helt uenig

0

1

2

3

4

5

6

7

8

9

Helt enig

10

- Jeg synes bildene var interessante

Helt uenig

0

1

2

3

4

5

6

7

8

9

Helt enig

10

- Jeg synes det var gøy å se på bildene

Helt uenig

0

1

2

3

4

5

6

7

8

9

Helt enig

10

6. Hva tenker du om den reisen du har foran deg? (0 = Helt uenig, 10 = Helt enig)

- Jeg tror reisen vil stimulere nysgjerrigheten min

Helt uenig

0 1 2 3 4 5 6 7 8 9 *Helt enig*
10

- Jeg setter pris på det å reise til nye steder uten å vite helt sikkert hva som kommer til å skje

Helt uenig

0 1 2 3 4 5 6 7 8 9 *Helt enig*
10

7. Sier reisen du skal på noe om deg som person? (0 = Helt uenig, 10 = Helt enig)

- Det å reise til slike destinasjoner reflekterer hvem jeg er som person

Helt uenig

0 1 2 3 4 5 6 7 8 9 *Helt enig*
10

- Det å reise til slike destinasjoner hjelper meg å bli den type person som jeg ønsker å være

Helt uenig

0 1 2 3 4 5 6 7 8 9 *Helt enig*
10

8. Vi vil gjerne vite litt om ditt forhold til naturen slik du føler det akkurat nå. (0 = Helt uenig, 10 = Helt enig)

- Jeg tenker på naturen rundt meg som et samfunn som jeg tilhører

Helt uenig

0 1 2 3 4 5 6 7 8 9 *Helt enig*
10

- Jeg føler meg ofte i ett med naturen

Helt uenig

0 1 2 3 4 5 6 7 8 9 *Helt enig*
10

- Jeg har en dyp forståelse for hvordan mine handlinger påvirker naturen

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt er

- På samme måte som et tre kan være en del av en skog, så føler jeg meg som en liten del av naturen som helhet

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

9. Hva er ditt generelle inntrykk av den turen du skal på?

- Dårlig (0)/ bra (10)

Dårlig

0 1 2 3 4 5 6 7 8 9 10

Bra

- Ikke appellerende (0)/ appellerende (10)

*Ikke
appellerende*

0 1 2 3 4 5 6 7 8 9 10

Appellerende

- Lite attraktivt (0)/ attraktivt (10)

*Lite
attraktivt*

0 1 2 3 4 5 6 7 8 9 10

Attraktivt

10. Ville du anbefalt Hurtigruten til en kollega eller en venn? (0 = Helt usannsynlig, 10 = Svært sannsynlig)

*Helt
usannsynlig*

0 1 2 3 4 5 6 7 8 9 10

*Svært
sannsynlig*

11. Har du reist med Hurtigruten tidligere? (Ja/Nei/Vet ikke)

Ja

Nei

Vet ikke

12. Har du vært på noen av de stedene vi viste deg bilder av tidligere? (Ja/Nei/Vet ikke)

Ja

Nei

Vet ikke

13. Har du brukt/prøvd VR-briller tidligere? (Ja/Nei/Vet ikke)

Ja

Nei

Vet ikke

14. Hvor stor kunnskap hadde du om VR før denne undersøkelsen? (0 = Svært lite kunnskap, 10 = Svært mye kunnskap)

*Svært lite
kunnskap*
0

1

2

3

4

5

6

7

8

9

*Svært mye
kunnskap*
10

**15. I hvilken grad opplevde du følelsene nedenfor da du så på bildene med VR-brillene på?
(0 = Ikke i det hele tatt, 10 = I svært stor grad)**

- Kvalm

*Ikke i det
hele tatt*
0

1

2

3

4

5

6

7

8

9

*I svært stor
grad*
10

- Ukomfortabel

*Ikke i det
hele tatt*
0

1

2

3

4

5

6

7

8

9

*I svært stor
grad*
10

- Svimmel

*Ikke i det
hele tatt*
0

1

2

3

4

5

6

7

8

9

*I svært stor
grad*
10

16. Hvordan synes du kvaliteten på bildene var? (0 = Svært dårlig kvalitet, 10 = Svært god kvalitet)

*Svært dårlig
kvalitet*
0

1

2

3

4

5

6

7

8

9

*Svært god
kvalitet*
10

17. Generelt, hvor mye erfaring har du med ny teknologi? (0 = Svært lite erfaring, 10 = Svært mye erfaring)

*Svært lite
erfaring*

0

1

2

3

4

5

6

7

8

9

*Svært mye
erfaring*

10

Til slutt trenger vi litt bakgrunnsinformasjon om deg

Kjønn

Kvinne

Mann

Alder: _____

Nasjonalitet: _____

Questionnaire #1

Full name:

Cabin number:

Fragebogen #1

Voller Name:

Kabinennummer:

Questionnaire n° 1

Nom complete: _____

Numéro de cabine: _____

D.4 Information with Questionnaire 1

The Norwegian version of the information on how to fill out the questionnaire and when and where the second questionnaire should be filled out, is included in the following.

Informasjon til spørreskjemaet

- Du vil nå bli bedt om å svare på noen spørsmål. Under hvert av spørsmålene finner du informasjon om hvordan det skal besvares.
- Skriv lugarnummer og navnet ditt med blokkbokstaver i feltet på forsiden av spørreskjemaet. Undersøkelsen er anonym, men vi trenger navn og lugarnummer for å trekke vinnere av gavekort. Alle personlige opplysninger vil bli makulert, og svarene anonymisert.
- Når du har svart på alle spørsmålene plasseres skjemaet i den angitte esken med forsiden ned.
- For å sikre at resultatene fra undersøkelsen skal være gyldige, er det viktig at du ikke snakker med andre reisende om hva du har gjort og svart på i undersøkelsen, før reisen er over.
- For å være med i trekningen av gavekort må du også fylle ut et kort spørreskjema en gang i tidsrommet 15:00 - 20:00 i morgen (09.10). Dette vil finne sted her i konferansesalen på Dekk 4.

D.5 Questionnaire 2

The Norwegian version of the second questionnaire in study 2 is included in the following.

Spørreskjema #2

Fullt navn:

Lugarnummer:

Skjema #2 Hurtigruten

Det er ikke noe riktig eller galt svar på spørsmålene nedenfor. Vi vil at du skal svare nøyaktig slik du føler det.

1. Du har nå sett og besøkt alle de stedene vi viste deg bilder av i går. Vi lurer på hvordan du opplevde dette

- Hvor glad følte du deg? (0 = Ikke glad, 10 = Veldig glad)

<i>Ikke glad</i>											<i>Svært glad</i>
0	1	2	3	4	5	6	7	8	9	10	

- Hvor mye følte du på en beundring for naturen underveis?
(0 = Ingen beundring, 10 = Sterk beundring)

<i>Ingen beundring</i>											<i>Sterk beundring</i>
0	1	2	3	4	5	6	7	8	9	10	

- Hvor sterkt inntrykk gjorde reisen på deg? (0 = Lite inntrykk, 10 = Sterkt inntrykk)

<i>Lite inntrykk</i>											<i>Sterkt inntrykk</i>
0	1	2	3	4	5	6	7	8	9	10	

- Hvor fornøyd er det med at du reiste på denne turen? (0 = Ikke fornøyd, 10 = Svært fornøyd)

<i>Ikke fornøyd</i>											<i>Svært fornøyd</i>
0	1	2	3	4	5	6	7	8	9	10	

2. Hvilke typer opplevelser hadde du underveis? (0 = Helt uenig, 10 = Helt enig)

- Reisen gav meg mange følelser

<i>Helt uenig</i>											<i>Helt enig</i>
0	1	2	3	4	5	6	7	8	9	10	

- Jeg fikk sterke følelser underveis

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

- Jeg brukte mye tid på å reflektere og tenke underveis

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

- Reisen fikk meg til å tenke mye

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

3. Hvor godt likte du turen?

*Dårligere
enn
forventet*

-5 -4 -3 -2 -1 0 1 2 3 4 5

*Som
forventet*

*Bedre enn
forventet*

4. Jeg synes at turen gav god valuta for pengene (0 = Helt uenig, 10 = Helt enig)

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

5. Hva er ditt generelle inntrykk av turen?

- Dårlig (0)/ bra (10)

Dårlig

0 1 2 3 4 5 6 7 8 9 10

Bra

- Ikke appellerende (0)/ appellerende (10)

*Ikke
appellerende*

0 1 2 3 4 5 6 7 8 9 10

Appellerende

	- Lite attraktivt (0)/ attraktivt (10)										
<i>Lite attraktivt</i>											<i>Attraktivt</i>
0	1	2	3	4	5	6	7	8	9	10	

6. Hva synes du om Hurtigruten?

	- Jeg ville anbefalt Hurtigruten til en kollega eller en venn (0 = Helt usannsynlig, 10 = Svært sannsynlig)										
<i>Helt usannsynlig</i>											<i>Svært sannsynlig</i>
0	1	2	3	4	5	6	7	8	9	10	

	- Dersom noen spør, har jeg flest positive ting å si om denne turen med Hurtigruten (0 = Helt uenig, 10 = Helt enig)										
<i>Helt uenig</i>											<i>Helt enig</i>
0	1	2	3	4	5	6	7	8	9	10	

	- Det er sannsynlig at jeg kommer til å reise på tur med Hurtigruten igjen i fremtiden (0 = Helt uenig, 10 = Helt enig)										
<i>Helt uenig</i>											<i>Helt enig</i>
0	1	2	3	4	5	6	7	8	9	10	

7. Til slutt vil vi gjerne stille deg noen spørsmål om innholdet fra denne turen

	- Utsikten var spektakulær flere steder underveis (0 = Helt uenig, 10 = Helt enig)										
<i>Helt uenig</i>											<i>Helt enig</i>
0	1	2	3	4	5	6	7	8	9	10	

	- Jeg følte jeg fikk et panoramaperspektiv av norsk natur (0 = Helt uenig, 10 = Helt enig)										
<i>Helt uenig</i>											<i>Helt enig</i>
0	1	2	3	4	5	6	7	8	9	10	

	- Det var god sikt underveis (0 = Helt uenig, 10 = Helt enig)										
<i>Helt uenig</i>											<i>Helt enig</i>
0	1	2	3	4	5	6	7	8	9	10	

- Det var godt vær underveis (0 = Helt uenig, 10 = Helt enig)

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

- Det var behagelig temperatur underveis (0 = Helt uenig, 10 = Helt enig)

Helt uenig

0 1 2 3 4 5 6 7 8 9 10

Helt enig

Appendix E: Factor Analysis and Scale Reliability Check, Study 1 and Study 2

Table E.1: Factor Loadings and Cronbach's Alpha, Study 1 (1)

Items:	Factor 1: Telepresence	Factor 2: Enjoyment	Factor 3: Mental Imagery	Factor 4: Predicted Emotions	Cronbach's α :
Telepresence 1	.680				.845
Telepresence 2	.832				
Telepresence 3	.786				
Entertaining		-.771			.903
Interesting		-.741			
Fun		-.844			
Mental Imagery 1			-.603		.804
Mental Imagery 2			-.825		
Mental Imagery 3			-.793		
Predicted Happiness				.621	.846
Predicted Meaningfulness				.794	
Predicted Impression				.748	
Predicted Satisfaction				.855	
Eigenvalues:	3.526	1.372	1.267	10.282	

Note: Factor loadings below .50 were suppressed

(The factor solution continues on the next page)

Table E.2: Factor Loadings and Cronbach's Alpha, Study 1 (2)

Items:	Factor 5: Sensory Experiences	Factor 6: Affective Experiences	Factor 7: Intellectual Experiences	Factor 8: Destination Attitude	Factor 9: Behavioral Intentions	Cronbach's α :
Sensory Experiences 1	.879					.898
Sensory Experiences 2	.755					
Sensory Experiences 3	.701					
Affective Experiences 1		-.504				.839
Affective Experiences 2		-.563				
Affective Experiences 3		-.736				
Intellectual Experiences 1			-.885			.946
Intellectual Experiences 2			-.849			
Comfortable				.852		.844
Attractive				.593		
Interesting				.562		
Behavioral Intentions 1					.820	.786
Behavioral Intentions 2					.668	
Behavioral Intentions 3					.931	
Eigenvalues:	1.019	2.754*	2.754*	1.072	1.989	

* These factors were originally one factor, before they were separated

Note: Factor loadings below .50 were suppressed

Table E.3: Factor Loadings and Cronbach's Alpha, Study 2, T1 (1)

Items:	Factor 1: Telepresence	Factor 2: Enjoyment	Factor 3: Mental Imagery	Factor 4: Predicted Emotions	Cronbach's α :
Telepresence 1	.749				.898
Telepresence 2	.877				
Telepresence 3	.904				
Entertaining		-.779			.751
Interesting		-.720			
Mental Imagery 1			-.718		.864
Mental Imagery 2			-.741		
Mental Imagery 3			-.673		
Predicted Admiration				.631	.796
Predicted Impression				.751	
Predicted Satisfaction				.745	
Eigenvalues:	2.888	1.614*	1.614*	9.362**	

* These factors were originally one factor, before they were separated

** This factor was originally paired with *Affective Experiences*, before being separated

Note: Factor loadings below .60 were suppressed

(The factor solution continues on the next page)

Table E.4: Factor Loadings and Cronbach's Alpha, Study 2, T1 (2)

Items:	Factor 5: Affective Experiences	Factor 6: Intellectual Experiences	Factor 7: Destination Attitude	Cronbach's α :
Affective Experiences 1	.794			.917
Affective Experiences 2	.813			
Intellectual Experiences 1		.848		.932
Intellectual Experiences 2		.807		
Good			.896	.962
Appealing			.950	
Attractive			1.012	
Eigenvalues:	9.362**	1.382	1.218	

** This factor was originally paired with *Predicted Emotions*, before being separated

Note: Factor loadings below .60 were suppressed

Table E.5: Factor Loadings and Cronbach's Alpha, Study 2, T2

Items:	Factor 1: Actual Emotions (T2)	Factor 2: Affective Experiences (T2)	Factor 3: Intellectual Experiences (T2)	Factor 4: Destination Attitude (T2)	Factor 5: Behavioral Intentions (T2)	Cronbach's α :
Actual Happiness (T2)	.595**					.726
Actual Satisfaction (T2)	.623					
Affective Experiences 1 (T2)		-.869				.973
Affective Experiences 2 (T2)		-.804				
Intellectual Experiences 1 (T2)			.941			.964
Intellectual Experiences 2 (T2)			.971			
Good (T2)				.923		.917
Appealing (T2)				.932		
Attractive (T2)				.824		
Recommend (T2)					.816	.726
Positive (T2)					.796	
Travel Again (T2)					.723	
Eigenvalues:	7.311*	1.061	1.834	7.311*	1.211	

* These factors were originally one factor, before they were separated

** *Actual Happiness* was included, due to a factor loading of nearly .60

Note: Factor loadings below .60 were suppressed

Appendix F: Test of Assumptions, Study 1 and Study 2

Table F.1: Descriptive Statistics, Study 1

Variables	N	Mean	Std. Dev.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Telepresence	103	5.8641	2.36230	.148	.238	-.618	.472
Enjoyment	103	8.4822	1.81060	-.494	.238	-.069	.472
Mental Imagery	103	8.2460	1.72573	-1.133	.238	2.070	.472
Predicted Emotions	103	8.4854	1.33387	-.155	.238	-.713	.472
Sensory Experiences	103	8.3236	1.66958	-.785	.238	1.019	.472
Affective Experiences	103	6.3107	1.90931	-.067	.238	-.301	.472
Intellectual Experiences	103	6.3107	2.06407	.058	.238	-.447	.472
Destination Attitude	103	8.5663	1.60936	-1.356	.238	4.308	.472
Behavioral Intentions	103	8.4207	1.98027	-1.011	.238	1.147	.472

Note: Violation of normality assumption in bold

Table F.2: Frequencies for *Purchase Decision*, Study 1

VR: Tickets Bought	Frequency	%	2D: Tickets Bought	Frequency	%
No	42	82.4	No	42	80.8
Yes, 2 tickets	9	17.6	Yes, 2 tickets	10	19.2
Total:	51	100	Total:	52	100

Table F.3: Levene's Test of Equality of Variance, Study 1

Variable	<i>F</i>	<i>p</i>
Telepresence	.907	.343
Enjoyment	.407	.525
Mental Imagery	1.553	.216
Predicted Emotions	1.377	.243
Sensory Experiences	.359	.550
Affective Experiences	.251	.617
Intellectual Experiences	1.098	.297
Destination Attitude	3.200	.355
Behavioral Intentions	.863	.355

Table F.4: Descriptive Statistics, Study 2

Variables	N	Mean	Std. Dev.	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
Telepresence (T1)	65	7.3795	2.60600	-.572	.297	.598	.586
Enjoyment (T1)	66	9.3788	1.68034	-1.130	.295	1.203	.582
Mental Imagery (T1)	66	9.5202	1.62157	-1.788	.295	4.218	.582
Predicted Emotions (T1)	66	10.2071	.96568	-1.211	.295	.598	.582
Affective Experiences (T1)	65	9.2615	1.76358	-.811	.297	-.028	.586
Intellectual Experiences (T1)	66	8.4924	2.02388	-.240	.295	-1.137	.582
Destination Attitude (T1)	66	10.4040	.87806	-1.368	.295	1.138	.582
Behavioral Intentions (T1)	66	10.33	1.086	-1.376	.295	.643	.582
Actual Emotions (T2)	66	10.3864	.85842	-1.986	.295	5.439	.582
Affective Experiences (T2)	66	8.5985	1.95767	-.573	.295	-.215	.582
Intellectual Experiences (T2)	66	7.4470	2.64884	-.564	.295	.048	.582
Destination Attitude (T2)	66	10.2879	1.00066	-1.863	.295	4.054	.582
Behavioral Intentions (T2)	66	9.6869	1.56334	-1.954	.295	5.099	.582

Note: Violation of normality assumption in bold

Table F.5: Levene's Test of Equality of Variance, Study 2, T1

Variable	<i>F</i>	<i>p</i>
Telepresence (T1)	.002	.962
Enjoyment (T1)	.542	.464
Mental Imagery (T1)	.029	.865
Predicted Emotions (T1)	1.062	.307
Affective Experiences (T1)	.289	.593
Intellectual Experiences (T1)	3.011	.088
Destination Attitude (T1)	.421	.519
Behavioral Intentions (T1)	.100	.753

Table F.6: Levene's Test of Equality of Variance, Study 2, T2

Variable	<i>F</i>	<i>p</i>
Actual Emotions (T2)	.744	.391
Affective Experiences (T2)	2.539	.116
Intellectual Experiences (T2)	.001	.976
Destination Attitude (T2)	.014	.906
Behavioral Intentions (T2)	3.455	.068