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MASTER'S THESIS

STUDY PROGRAM: MSc in International Hospitality Management	THESIS IS WRITTEN IN THE FOLLOWING SPECIALIZATION/SUBJECT: Technology in Tourism IS THE ASSIGNMENT CONFIDENTIAL? No.
TITLE: The importance of technology for young visitors at heritage sites	

AUTHOR

ADVISOR:

Heidi Victoria Skeiseid

Student number: 234189	Name: Sagida Valiyeva

ABSTRACT

This study seeks to describe the topic of visitor experience at heritage sites by investigating how different on-site factors are being perceived by the visitors. As a replication and extension of a similar study carried out earlier, the present paper aims at specializing on one visitor segment, the younger visitors that are also local residents in the area where the study will be carried out. The main objective of the paper is to examine whether technology can play an important factor and have a bigger impact on the visitor experience among the younger visitors. In addition, it is proposed that a negative correlation may exist between the technology interest and satisfaction, proposing that the technological aspect is less focused on than it should perhaps be at the site. A paper form survey was completed by high school students at the Iron Age farm in Stavanger, the findings showed that the presentation platforms concerning information technology were perceived as important as the oral presentation platform. A negative correlation was also found between the technology interest and general satisfaction, suggesting that the technological aspect was less present for the respondents and considering that technological devices are a part of their everyday lives, they also perceived it as one of the factors they missed the most. Further implications for future research and for management practices are suggested, highlighting the importance of heritage sites to innovate and create new ways of marketing their attractiveness for the younger visitors, by for instancing applying modern technology as a part of their exhibitions.

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FOREWORD

Modern technology and visitor experience is an endless area of research with several topics that can be explored. As we live in a constantly changing society, adapting to these changes can be both exciting and challenging. The use of technology has made it possible for the tourism industry to develop new ideas accommodating the consumers´ needs, by for instance only pressing one button, a person can virtually end up on the other side of the globe in a matter of seconds. The topic of modern technology and the interpretation of it in the tourism industry has always been an interesting topic for me. Before writing this paper, my wish was to explore an area that is still raw to the research world, a topic that would be of interest for both adults and for the younger readers.

With the help of thoroughly going through a couple of articles within the topic of visitor experience and modern technology, it was proposed whether I would be interested to replicate a similar study that was written previously regarding on-site factors at tourist attractions in Northern Norway. After reading the paper, new ideas came into my mind of what could be further explored by replicating and extending the same paper, simultaneously focusing on certain aspects that might have an importance from a bigger perspective. These aspects concerned the technological part of the visitor experience and whether focusing on a specific segment, for instance the younger visitors could give different results where technology would play a bigger role in contrast to the findings from the original study.

The accomplishment of this thesis could not have been possible without the help and support of first and foremost, my advisor Heidi Victoria Skeiseid, also a big thank you to the administrators at Jernaldergården in Stavanger for letting me work with them and helping me to conduct the research at the site. I would also like to thank all the administrators and

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thesis work.

CHAPTER 1: INTRODUCTION

Heritage tourism has been serving a significant role in today´s fast-growing tourism industry and despite being recognized as a big contributor to the economic growth, the phenomenon has still been little explored in the research world (Garrod & Fyall, 2000). Heritage tourism itself can be defined as involving the cultural legacy of the past, often with cultural resources found in old buildings or in museums, monuments, landscapes, also represented in ´heritage centres´ (Richards, 2000). Newer studies have argued that heritage tourism and the topic of visitor experience need to be managed and marketed differently as today´s tourists are more experienced and have their own specific needs and desires, making their expectations high to the tourism providers. (Hobson & Williams, 1995; Poria, Butler & Airey, 2003; Richards, 2000; Garrod & Fyall, 2000).

Previous literature also discuss that heritage sites must be relevant to primarily everyone (Garrod & Fyall, 2000). It should make visitors gain more appreciation of the importance of the site, the local area, and represent something the local community can identify itself with, in addition with giving them a bigger sense of pride (Garrod & Fyall, 2000). The study of heritage tourism can be vital to investigate in order to understand the social behavior of individuals and the society, thus it is also argued that few studies explore the relationship between demand and market segments, including the core of site attributes as an important way of understanding the social phenomenon (Poria, Butler & Airey, 2003; Chan, 2009).

The current paper will be a replication and extension of the study "Visitors´ satisfaction at managed tourist attractions in Northern Norway: Do on-site factors matter?" by Øystein Jensen, Yuan Li, and Muzaffer Uysal (2017). Their study investigated the sub-categories of on-site factors and the visitors´ perception and evaluation of these categories at four different

attraction sites in northern Norway, in addition the influence of attraction type and visitor type

was also investigated throughout the paper. The results suggest that attraction site and type of

visit can affect the visitor perceptions of presentation platforms and support services. Among

other things, the technological orientation as one of the presentation platforms showed a low

importance rate, thus the research question for the present paper is to examine whether

technology have a probability of being significant and not necessarily be neglected as a factor

for satisfaction, since it may be important for a different consumer group. By focusing on the

technological orientation, the concept of Virtual reality (VR) will additionally be used as an

example of a technological device, which may perhaps have a potential to be used more

frequently in the future.

With its unique abilities, Virtual reality (VR) has been gaining a significant attention in the

recent years. As previous studies show, a lack of acceptance of VR in the tourism industry

does exist and has barely been explored (Disztinger, Groth & Schlögl, 2017), thus this will be

the main research problem for this paper. A closer look will be taken towards technology and

the potential role of VR in the visitor experience, the benefits it can give both to researchers,

tourism businesses and for the consumers. It is proposed to analyze whether certain

characteristics of the tourists might affect the likelihood to accept VR substitute. Regarding

some of the characteristics, being a replication of a previous study, the current paper will

focus on a younger segment that are local residents from the region of Rogaland in Norway.

The objective for this paper is to focus on the role of technology within the visitor experience

at heritage sites. Thus it is hypothesized that among the younger visitors and the role of

technology in their everyday lives playing as an important factor, can have a bigger impact on

the visitor experience. It is suggested that a negative correlation might exist between

technology interest and satisfaction, considering that this factor is less emphasized on by

tourism businesses than it should perhaps be.

This will further be investigated by first introducing the topic and reviewing previous

literature within visitor experience in the context of tourism, and the topic of modern

technology. Furthermore necessary data will be collected and analyzed, and lastly the main

findings will be discussed following with suggestions for implications of the study for future

research and management practices.

CHAPTER 2: LITERATURE REVIEW

2.1 The role of technology in tourism

The implementation of information technology has throughout the years enhanced the tourism industry controlling several areas of the tourism products such as different travel reservations and multimedia packages developed to market a destination (Cheong, 1995). Technology has the big potential in enhancing the tourist´s experience in addition to benefiting the industry, meaning that by getting a better experience, the tourist will gain higher satisfaction (Cheong,1995; Stipanuk, 1993). Furthermore, being able to sell technology products to consumers will increase revenue and as Stipanuk (1993) mentions "the introduction of technologies which enhance or broaden the experience creates the potential for repeat business by redefining the experience for subsequent visits" (p. 273). It has become easier for international travelers to travel and communicate by for example being provided headsets and transmitters when visiting museums where they can choose the language they prefer the tour to be in, along with the desired speed (Stipanuk, 1993). Applying the use of technology in cultural or heritage tourism can play a crucial role, for instance the cultural tourists are often finding new information about cultural attractions and book tourism products through the internet (Richards, 2006). Consequently, these technological developments are creating new ways of tourism consumption (Richards, 2006).

2.2 What is VR?

Over the years, the concept of VR has been defined in various ways however, several researchers have defined virtual reality as the use of computer generated 3D environment that the user can navigate and interact with and at the same time obtain real-time simulation of the user´s senses (Burdea & Coiffet, 2003; Yung & Lattimore, 2017; Guttentag, 2010). As

Cheong (1995) describes it "With virtual reality, information is not displayed in two dimensions via the computer monitor; instead, the user finds him/herself in the same dimension as and is immersed within the data." (p. 418).

With VR, both real and unreal experiences are created with the help of computer-mediated imaging and graphical environments (Hobson & Williams, 1995). Three key elements characterize virtual reality, these are; visualization, immersion, and interactivity where the former describes the ability to look around, and immersion that is both physical and psychological presence (Yung & Lattimore, 2017; Hobson & Williams, 2011), here the immersion is defined as the extent to which the user of VR is isolated from the "real world" (Guttentag, 2010). The third element signifies the degree of control the user has over the experience that is accomplished with the help of sensors and input device such as joysticks or keyboards (Cruz-Neira, Sandin, DeFanti, Kenyon, & Hart, 1992; Yung & Lattimore, 2017).

A VR system requires a certain input device that will correspond to the user´s movement, this will help to track the movements of the user holding an object or the person's head or limbs. The data from the device is further used to regulate his or her view and navigation along with the interaction with the objects and movement of the so called "avatar" the person is being in the virtual environment (VE) (Burdea & Coiffet, 2003; Foxlin, 2002; Gottentag, 2010). With the help of the input device, the VE can be seen from any point of view from the user's perspective (Gottentag, 2010).

In contrast to other technologies, VR offers the ability to provide both physical immersion and psychological presence (Gutiérrez, Vexo & Thalmann, 2008; Makransky & Lilleholt, 2018), thus by having the advantage of high level of immersion can in turn facilitate learning through enjoyment when using the device (Makransky & Lilleholt, 2018). The number of VR experiences are many, one can for instance travel back in time to ancient Egypt and observe

the great pyramids or have the opportunity to travel into the future fantasy world (Cheong,

1995).

VR is continuing to evolve with different improvements that are taken into consideration to

make the VR experiences more real. Developers are putting emphasis on stimulating each of

the five senses (sight, sound, touch, smell and taste), that will make users feel fully immersed.

For instance when it comes to the smell, the idea could be to have different scents created and

put into the headset when the user encounters a particular place or object in the VE (Cheong,

1995).

2.3 VR in tourism

Previous research shows that the acceptance level of VR is not significantly high due to the

preference of seeing the actual site instead and will also depend on motivations of the tourist

(Guttentag, 2010; Sussmann and Vanhegan, 2000). As mentioned in Guttentag's (2010)

paper, it is suggested that virtual reality can provide various applications to tourism

professionals and researchers in areas such as tourism planning, marketing, entertainment,

education, and heritage preservation. The aim of this study is to focus on the younger visitor

group, thus it will be mainly focused on students, hence the educational area will also be

discussed when investigating the level of acceptance of technology and VR, and the potential

role it can play both in the tourism industry and for educational purposes.

2.3.1 Marketing

Considering that most tourism products can not be tested in advance before being purchased,

one of the advantages of VR for tourism providers is the potential to serve as a novel tool in

marketing a destination by offering the clients to get previews of different sites, their

attractions and facilities before purchasing it (Cheong, 1996, Guttentag, 2010; Disztinger,

Groth & Schlögl, 2017).

Serving as a helpful marketing tool, it can be assumed that VR can enhance the decision

making process for the consumer. By trying a virtual device, the user can explore different

destinations and make better decisions by gaining a more realistic idea of what to expect,

consequently it will cause a higher satisfactory vacation (Cheong, 1995; Hobson & Williams,

1995; Guttentag, 2010). VR technology is already used in several tourism products and can

for instance be found in different websites offering ´virtual tours´ of panoramic photos

(Guttentag, 2010).

Earlier studies have also shown that these types of virtual experiences could be a good

advertising tool compared to brochures encouraging potential travelers to visit the site.

Besides, brochures and multimedia packages have the disadvantage of offering short and

limited glimpses of a site´s attractions with no personal involvement from the clients´ side,

which can limit the seller´s effectiveness in convincing the clients to visit the site (Cheong,

1995; Wan, Tsaur, Chiu & Chiou, 2007; Guttentag, 2010). Nevertheless, it has also been

argued that there are few studies exploring the significance of virtual words in the context of

marketing a tourism destination (Huang, Backman, Backman & Moore, 2013).

2.3.2 VR as an educational tool

According to Garrod and Fyall (2000) one of the most important elements in the mission of

heritage sites is the educational element. The paper explains that the educational element is

serving an important role in teaching visitors to appreciate the heritage asset and its

significance and why it should be conserved. The authors also emphasize that the educational

element is most effective when it is simultaneously entertaining for the visitors.

Despite having the potential to be applied in several areas, VR can play as an educational tool

in both teaching and training visitors at different ages in various subjects (Guttentag, 2010;

Hobson & Williams, 1995). With the ability to give the users a feeling of presence, VR can

support the learning process and offer an opportunity to simultaneously interact through

different games or challenges when learning (Mikropoulos, 2006; Roussou, Oliver and Slater

(2006).

Previous studies also argue that tourists who seek knowledge about particular attractions can

find a VR substitute more attractive compared to tourists who seek relaxation holidays and

will therefore find VR less appealing for them (Guttentag, 2010).

The educational element can be utilized in heritage sites, museums, and other touristic places

by for example offering different types of educational exhibits where visitors can explore

ancient places and gain new knowledge by adapting deeper into the VE (Guttentag, 2010).

Not only will this educate the visitors but also give a number of advantages for researchers,

such as the opportunity to test different theories and observe objects from different viewpoints

(Chalmers & Debattista, 2005; Rizvić, Sadžak, Buza, & Chalmers, 2008, as cited in

Guttentag, 2010, Bernardini, Rushmeier, Martin, Mittleman, & Taubin, 2002).

VR´s ability to stimulate high level of immersion can also be used in educational contexts, for

instance in the study regarding the emotional value of immersive VR in education, Makransky

and Lilleholt (2018) argue that there is a small amount of research investigating the

psychological process concerning how immersion impacts students´ interest and motivation

and the role of VR in the learning process. The authors also refer to earlier studies suggesting

that the use of simulations can result in at least as good or even better cognitive outcomes and

attitudes towards learning compared to the more traditional methods.

2.3.3 Accessibility

Accessibility is one of the key advantages of VR technology, making it possible for tourists to experience remote and dangerous places or places that can be impossible or restricted for the tourists to visit in real life (Paquet and Viktor, 2005; Guttentag, 2010). The accessibility can be beneficial for disabled individuals which is a market segment that should also be included as they often times are not mentioned. (Hobson & Williams, 1995). For instance Hobson and Williams (1995) stated "VR could offer alternatives for those who are disabled but who want a tourism experience" (p.133). In their paper, the authors discuss whether VR as an artificial form of tourism can truly be considered as a part of the tourism industry since common definitions of tourism imply travelling from one geographical location to another, nonetheless VR can offer that by just staying in your own home (Hobson & Williams, 1995).

Having previous experience and knowledge in travelling, consumers today are becoming more demanding and the expectations are high, thus the acceptance of artificial tourism experiences have made it possible to give the consumers a more "guaranteed" and enjoyable experience by avoiding factors that might negatively affect the real experience (Hobson & Williams, 1995). These factors can be weather conditions, crime, poverty, financial constraints, health issues, time limitations, and so forth (Hobson & Williams, 1995), and instead benefitting the users by offering lower costs, better safety, no requirements for visas or any other concerns (Guttentag, 2010). In addition, Cheong (1995) also mentions that tourists are often exposed to several risks and accidents that can happen on the actual trip, but with the VR offering the users to engage in high-risk activities, one can simply stay in one´s preferred location without having to face the fear of getting injured.

2.3.4 Technology as a tool for reducing negative impacts of tourism

Making VR accessible for several segments can also contribute to site preservation, specifically sites with high visitation numbers that is affecting its sustainability (Li, Wu & Cai, 2008; Guttentag, 2010). Despite having big social and environmental changes, it is important for the tourism industry to acknowledge the problems it is facing as a consequence of the negative effects that have and are still being created (Guttentag, 2010).
Črnjar & Šverko (1998) argue that mass tourism is representing one of the main causes of environmental damages along with the negative effects such as air and water pollution, soil pollution, degradation of natural landscapes, and crime associated with tourists (De Sausmarez, 2007). In addition, Stipanuk (1993) discusses the role of technology in tourism and emphasizes that "It will be difficult to accommodate all the people who want to travel and visit already overcrowded destinations and, if we do, we will despoil the destinations, their culture, and the local and global environment" (p. 277). Thus the role of technology can play a major role in protecting a destination from damage or degradation caused by the tourists´ presence by giving the consumers the opportunity to visit sensitive sites that can not cope with demand or for instance visit caves without damaging the actual place (Stipanuk, 1993; Hobson & Williams, 1995).

2.3.5 Disadvantages of VR in tourism

Looking at technology as the "destroyer" of the tourism experience, Stipanuk (1993) argues that modern technology has made the tourism systems believe that it will always create, enhance and protect a tourism experience, nevertheless there is still a probability of a an opposite outcome to happen. This is also supporting the discussion of the aspect of sensation emphasizing that when travelling, tourists seek risk and novelty which can cause them to reject VR as a substitute since it will not fully be mimicked in its controlled environment

(Pizam et al., 2004). The users may feel fully immersed in the VE, however the senses of

hearing, feeling and breathing in the real world environment can not fully be replaceable with

the VR (Cheong, 1995). This will also lead us to the discussion of the lack of interaction that

the user may experience in the VE, such as being able to participate in a social tribal dance

performance that can play an important role in creating a memory of a destination for the

tourist (Cheong, 1995). Additionally, it can be mentioned that in the VE, the user or the

virtual traveler is mostly unable to communicate and interact, instead the person is playing the

role of a passive observer who´s absorbing sensory stimulation (Cheong, 1995). In contrast,

Guttentag (2010) also mentions that despite VR not being capable to fully mimic a replicated

site to its full realness, nevertheless it can still make the user perceive it as a satisfactory

substitute.

As VR is becoming an emerging trend in the tourism industry, the question whether VR can

be considered as a form of tourism is still questioned by researchers and professionals

(Guttentag, 2010). Travelling with VR can for some consumers be as entertaining as

travelling in real life or even better or the opposite way. It is also reflected upon the

distinction between VR as entertainment and VR as tourism (Hobson & Williams, 1995).

VR can also play as a threat to developing countries who have tourism as one of their main

income source, here Cheong (1995) argues that the influx of tourists´ spending and foreign

investments in the tourism infrastructure are boosting the economy of these countries as well

as enhancing the living conditions for the population. Having the threat of VR causing the

host countries to receive fewer tourists over time, it is crucial for them to attract more tourists

to their destinations (Cheong, 1995).

2.3.6 Authenticity and motivations

The acceptance of Virtual reality as a substitute for visiting the real site is determined by the

tourist's perception of authenticity along with the person's motivations and constraints

Guttentag, 2010; Hobson and Williams, 2011).

Looking at motivations for leisure travel, several researchers along with Hobson and Williams

(1995) claim that the most common reasons are escape from everyday life or reality and novel

experiences, emphasizing that the motive for a change of environment is the key reason for

why people travel. In the study by Poria, Butler and Airey (2004) concerning the reasons for

why tourists visit heritage sites, the authors emphasize the importance of investigating the

motivations for why tourists do certain things as a crucial topic for both managers of tourism

businesses and for academic investigation. The identification of heritage site motivations can

contribute to a more direct marketing where the visitors can be approached accordingly to

their individual reasons for visiting a heritage site (Poria et al. 2004). The latter paper also

argues that a number of research examining the reasons for why people visit historical places

are often times making the mistake of relying on the literature within leisure and recreation,

when in reality visiting heritage sites are often times not perceived as recreational leisure

sites. As a consequence, these mistakes can often confuse the understanding of the

phenomenon of heritage tourism as the reasons for visiting heritage sites can be in contrast to

the leisure motives. Thus the findings from their study suggest that the reasons for visiting

heritage sites can be placed into three groups: "heritage experience", "learning history", and

"recreational experience" (Ploria et al., 2004, p. 25). The authors also suggest that the link

between the individual and the site is crucial to understand heritage tourism, meaning that the

different perceptions of a site for instance the site attributes, will affect the different reasons

for visiting it.

One can believe that as consumers today are more concerned with fulfilling their own

personal needs, VR can offer a dream experience that will take the individual to a different

world where he or she can experience another reality (Hobson & Williams, 1995). With VR

as a substitute offering to cover these motivational factors to a limited degree, we might ask

ourselves whether the consumer will truly enjoy a VR experience where he or she gets to

participate in creating a bonfire with indigenous people in a VE as much as doing it in real life

surrounded by real indigenous people and perhaps reaching a higher level of sensation or vice

versa.

Significant growth in mass tourism has lead to a change in the travelers' search for and to be

involved in authentic experiences as the idea of having a staged event for the visitors has

become very common, for instance making visitors think it is the "real" reality when it may

not be the actual case (Hobson & Williams, 1995). As Richards (2006) argues that cultural

tourism also involves the search for authenticity and often times seen as a more specific form

of tourism and compared to other types of tourists, the cultural tourists are searching for more

authentic and "deep" experiences.

By having the desire of a dream experience, it is being discussed whether the consumers are

still finding authenticity and realness as important components, adding that one of the

objectives of VR is to give the user a feeling of being transported from a physical world into

an imaginative world (Hobson & Williams, 1995).

Wang (1999) argues that in ethnic, historical and cultural tourism, authenticity plays a

significant role when representing "the other or the past" (p.350). Nevertheless the author

refers to MacCannell (1973) who claims that even if tourists may perceive an experience

being authentic, they often end up not being fully aware of the toured object being staged for

them, simultaneously it is suggested that having an experience that may be inauthentic, the

tourists can still seek an authentic substitute. This goes in line with Guttentag (2010)

considering the contrasting views of authentic experiences, the person´s own perception of

VR´s authenticity is what will matter. In addition to personal characteristic influencing the

individuals´ perception of an authentic experience, the attitude towards technology is also

important and is the area that the present paper will mainly focuses on.

2.4 Young visitors and modern technology

Considering that previous studies such as the one the current paper is replicating, the data has

been collected from both locals and tourists within different age categories. As the paper

written by Chan (2009) focuses on marketing museums and exhibitions, it is being

emphasized that museums, which are considered to be a part of cultural heritage and

important for foreign tourists and for the locals, should be more visitor-oriented by having a

better understanding of their visitors´ preferences.

Younger visitors are playing an important role for museums, however this segment is being

underrepresented and reasons can be that exhibitions and their methods of marketing don´t

match the young visitors´ worldview (Mason and McCarthy, 2006), this argument is also in

line with Griffin (20014), claiming that museums should find new ways to engage young

visitors. One of the actions could be to implement modern technology popular among the

segment (Lopez, Daneau, Rosoff, and Congdon, 2008).

Apart from previous studies showing that museum visitors have interest in participatory

activities (Kinghorn and Wills, 2008), it has also been elaborated that digitally augmented

exhibitions can increase engagement, especially for the young visitors visiting in groups

(Hornecker and Stifter, 2006).

Regarding the technological aspect, it is also being emphasized that travel technology is

playing a significant role in the tourism sector and requires frequent changes in marketing and

management, nevertheless this leads to the assumption that researchers and professionals may

not be completely aware of these developments and not fully prepared to adapt to new

technologies in our modern society (Guttentag, 2010).

CHAPTER 3: METHOD

In this chapter, the research question and the hypothesis will further be investigated by

presenting the overall research design for the study consisting of the chosen sample following

with a description of how the data will be collected. The next part will be the measurements

and the research instrument that will be used, and with the type of analyses that will further be

applied to test the data. The data collection and the obtained sample will be presented, in

addition with the final results of the main findings and a discussion of the overall reliability

and validity of the results. The last section will be the conclusion and a discussion of the

limitations and implications of the study for future research and for management practices.

3.1 Research design

The current study is a descriptive research aiming at describing the visitor experience at a

heritage site and how different on-site factors are perceived by the visitors, thus the collected

data will also help to potentially find if certain variables are correlating and whether there is a

connection between them. Having the research question concerning whether technology have

a probability of being significant and not necessarily be neglected as a factor for satisfaction,

since it may be important for a different consumer group, the research design for this paper

will be a quantitative design with a paper form survey instrument.

The aim is to test our main hypothesis and see whether differences exist regarding the

evaluation of the different presentation platform in contrast to the original study that is being

replicated. In addition, it will be relevant to test whether there is a negative correlation

between the technology interest and general satisfaction since it is suggested that the

technological aspect is less present and less focused on at the site than it should perhaps be for

the young visitors. Similarly it is hypothesized that there is also a negative correlation

between technology interest and recommendation probability.

3.1.1 The Technology Acceptance Model (TAM)

The suggested conceptual framework for this study will be the technology acceptance model

(TAM) introduced by Davis (1989), describing "the potential user´s behavioral intention to

use a technological innovation" (King & He, 2006, p. 740). By being straight forward with its

context-independent applicability and used in earlier tourism research, the TAM will be a

helpful guiding tool for the present study (Disztinger et al. 2017; Huang et al. 2013).

In the meta analysis of 88 TAM studies, King and He (2006) mentioned that the two

predictors explaining the perceived usefulness and perceived ease of use have a significant

meaning, where the former is mediating the effect of the latter predictor on the behavior

intention to use, which is further considered as a predecessor of actual system use or a success

of an information system (Disztinger et al. 2017; Huang, et al. 2013).

In addition Huang et al. (2013) explains that the TAM can also serve as a useful tool to better

understand a tourism organization´s adoption to technology, suggesting that the perceived

ease of use and usefulness of a 3D tourism site can be positively related to the behavioral

intention to visit the destination. The overall purpose of TAM is to offer a foundation to

discover impacts from external factors on internal beliefs, attitudes, and intentions (Davis,

Bogozzi & Warshaw, 1989). This is illustrated in the following Figure 1.
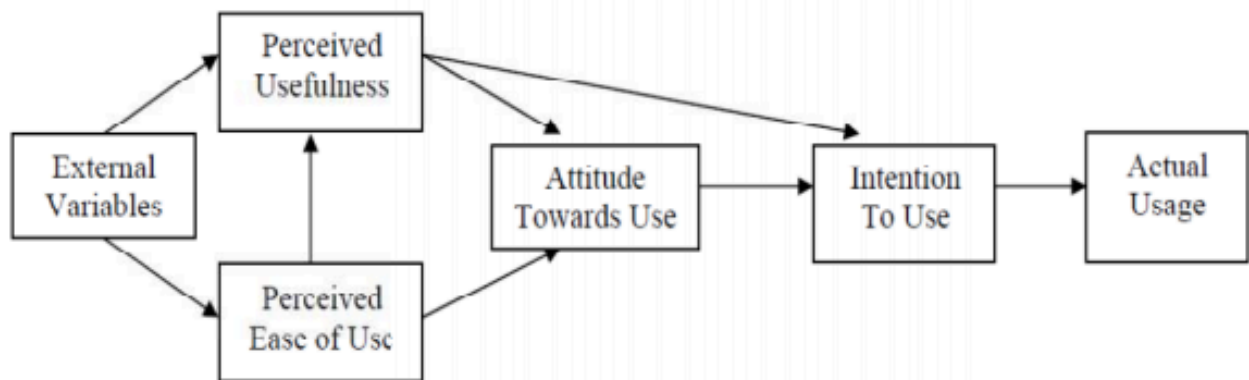
Figure 1: The first modified version of Technology Acceptance Model (TAM) (Davis,

Bogozzi and Warshaw, 1989). Retrieved from "The literature review of technology adaptation

models and theories for the novelty technology" by P.C. Lai, 2017, *JISTEM-Journal of*

Information Systems and Technology Management, 14(1), p. 27.

As Davis (1986) describes it, the potential user´s attitude towards using a given system is

suggested to determine whether or not the person actually will use it, following that the

attitude towards using it is a function of perceived usefulness and perceived ease of use.

Factors such as design features that belong to the external variables, can also influence the

perceived usefulness and perceived ease of use, and not necessarily having a direct effect on

attitude or behavior.

What makes the current study different is that a VR device was not available for the site and

its visitors, thus the idea was to analyze how the visitors would perceive the use of technology

and VR as a potential tool in the exhibition of the site they were visiting.

Thus, the TAM can be a useful conceptual framework when explaining the use of information

technologies and has previously been used in studies of consumer behavior in computer

mediated environments, in addition to explore the use of 3D virtual worlds (Huang et al.

2016). Davis (1989) suggested that perceived usefulness and perceived ease of use an

individual has towards information technology affects the attitude of using it. In addition,

researchers have examined the relationships among the two constructs and determined that

they have relation to consumer motivations and behavioral intentions along with the online

consumer´s acceptance of information technology (Huang et al. 2016).

The present study will include the presentation platform attributes and support services from

the original paper that is being replicated, however the attributes «Opportunity to enjoy a

relaxed, pleasant environment» and «Organizing thrilling events» were removed and replaced

with «Opportunity to use computer based technology such as VR glasses».” Considering that

the paper is mainly focusing on the technological orientation.

As implemented in the original study, these attributes were developed to «facilitate successful

and meaningful experience at the managed attraction sites» (Jensen et al., 2017, p. 280), thus

the first part of the current questionnaire will consist of questions measuring the importance

of the different presentation platforms, additionally three questions measuring which

presentation platform(s) contributed to a positive visitor experience, which presentation

platform(s) the participants missed the most, and the presentation platform(s) that were

considered to be poorly performed were also applied, in order to reassure and make it easier

for the respondents to understand what the questions are measuring.

3.2 Sample

As a replication of the study by Jensen et al. (2017) where the data was collected from tourists

within various age groups, the present study is mainly focusing on local visitors, more

specifically young students from elementary and high schools in the city where the heritage

site is located. The data collection in the original study took place in peak travel seasons,

additionally it was suggested that international tourists were assumed to have different needs,

knowledge prior to the trip, and behavior compared to for example local residents (Jensen et

al. 2017). In contrast to similar studies that used online surveys or for instance the study by

Diszttinger et al (2017), mentioned that one of their limitations was the fact that most of the respondents owned a personal VR device when responding to the questionnaire. Consequently, a positive attitude with certain knowledge and awareness towards VR was already given, thus the paper suggests that future research with a less technology aware respondent group would possibly give different results.

As mentioned previously, the site where the data will be collected does not provide any VR devices, and for that reason it is making it interesting to investigate the attitude and perceptions the respondents will have towards the technological aspect of the site they are visiting and whether they are familiar with the concept of VR.

The survey for this study will be anonymous, however since most of the participants are under the age of 18, it was considered whether a permission is needed from their parents to participate. After being in contact with the Norwegian centre for research data (NSD), the company ensured that since the survey is not requiring any personal information and will be anonymous, there is no need to request any permission from the centre to conduct the research. Regarding the young age of the participants, NSD replied that it will depend on the type of questions that will be asked, meaning that as long as the language is easily understandable for the participants to the extent where they are able to answer independently, there should not be a problem and no permission is needed other than the actual high school and the administration of the site who let us conduct the data collection.

The formulation of the questions is also an important aspect that can influence the different types of method bias, which will be discussed more in detail later.

3.3 Data collection

The location for the data collection was chosen to be Jernaldergården, an Iron Age farm at

Ullandhaug, located in Stavanger. The site is a part of the University of Stavanger. After

being in contact with them, a permission was given to perform the data collection.

According to Jernaldergården, the site receives visitors within different age groups, however

families with kids is the most frequent target group. Nevertheless, they also receive exhibition

requests from schools and in this case a high school class in Stavanger requested to visit in an

off-season period. It was decided that the respondents will be approached directly at the site

and asked to fill out the survey when the exhibition is finished. Following that,

Jernaldergården let us know that they would further help to contact other schools in the city to

visit the site making it possible to collect more data for the research.

3.4 Measurements

Being a descriptive research, the current paper aims at describing visitor experience at a

heritage site and how different factors are being perceived along with testing whether the

technological aspect can have a significant meaning. What can be done with the obtained data

is to test whether the significance of the variables are differing and if there is a correlation

between them. As previously mentioned the data collection and the analysis will have a

quantitative approach using in-person survey as the research instrument.

By focusing more on the technological orientation of the visitor experience where VR is

included as the example, what makes the current study unique is that a VR device was not

available for the site and its visitors, nevertheless the aim here is to examine *how* the visitors

would perceive the idea of using VR as a potential tool in the exhibition of the site they

visited, and consider it as something that could be enjoyable and perhaps useful for them.

The survey will first ask the participants to provide some demographic information such as

gender and age, following with questions regarding previous visit and guide preferences in

order to get to know the visitors´ background. The next part of the survey will contain

questions measuring the perceived importance and preferences of different aspects and the

presentation platforms at the site.

The participants are local residents and Norwegian speakers, thus the survey handed out will

be in Norwegian (see Appendix 1), however an English version (see Appendix 2) will also be

available mainly for the analysis, considering that it will be more efficient when entering and

testing the data in the software SPSS since the present paper is written in English.

In addition to assuring anonymity, the various presentation platforms and statements in the

survey were placed in an unsystematic random order and framed in a neutral light, helping to

avoid question order bias and social desirability bias (Thau, Mikkelsen, Pedersen, Larsen,

2020; Banjo & Val, 2012). Podsakoff, MacKenzie and Podsakoff (2012) reviewed several

procedural and statistical remedies that can control and minimize method biases. Due to

practical limitations, not all of them could be applicable to the current study, however one of

the relevant applications were to improve scale items to eliminate ambiguity by keeping the

questions simple and specific, avoiding double-barreled questions. In addition, as

recommended by Podsakoff et al. (2012), balancing the positively and negatively worded

measures of the constructs was also important to be considered.

The last page of the questionnaire will contain statements about the technological aspect of

visitor experience, starting with the first statement measuring whether technological devices

are a part of the respondent´s life, which was obtained from Davis´ (1986) study where he

measured the frequency of the use of electronic mail. It will be interesting to see whether

technological devises are a part of the respondents´ everyday lives, consequently, that will be

the first statement of this part of the questionnaire and all the rest of the technology related

statements will be answered with the help of a Five-Point-Likert scale with the following

values: "1 = Strongly disagree", "2 = Disagree", "3 = Neither or", "4 = Agree" and "5 =

Strongly Agree".

Second statement stating whether the respondents have used VR glasses and are familiar with

the concept, was also based on Davis´ (1986) study where he asked if the respondents were

knowledgeable about using electronic mail as the example system.

The rest of the statements were adapted from Disztinger et al. (2017) where their study was

based on the TAM with a 36-item questionnaire. Founding it on Davis´ (1986) original model,

they measured perceived usefulness, perceived ease of use, behavioral intention, and extended

the model by adding "perceived enjoyment (PENJ), interest (INT), personal innovativeness

(PI), accessibility (ACC), Skepticism (SKE), technology anxiety (ANX)", and "perceived

immersion (PIM)" (Disztinger et al. 2017, p. 260). Their study used the Technology Usage

Inventory (TUI) from Kothgassner et al., (2012) as the foundation. To investigate whether the

young visitors have an interest in technological devices and their perceptions of it, the key

phrases such as interest, personal innovativeness, skepticism, and technology anxiety were

included in the formulation of the technology related statements.

The questions were thoroughly evaluated by having a prior pilot test with five respondents to

test the feasibility of the survey. Considering the young age of the participants, it was crucial

to formulate the questions in a way that would not make it difficult for them to understand by

trying to avoid unknown and confusing theoretical terms in order to make the process go

smooth and efficient.

Change in the research process

After the first obtained sample, the following steps were to continue collecting more data from other schools requesting exhibitions. Unfortunately, in the month of March 2020 the Coronavirus disease (COVID-19) escalated and stopped the process of data collection for this research, as a consequence this left us with a small sample size. Thus, the amount of data is making this paper limited to a certain degree, considering that the size of the analysis will be smaller and differ compared to if a higher number of sample data was obtained. Further discussion regarding the limitations will follow.

3.5 Data analysis

Considering that the eight statements in the last page of the questionnaire are measuring the respondents´ attitude towards technology, two of the statements: "The use of VR will give more disadvantages than advantages for me" and "I find it difficult to rely on technological tools" had to be reverse coded since they are both negative towards technology compared to the other technology related statements. After reverse coding the scale for these two statements, the new values were: "1=Strongly Agree" to " 5 Strongly Disagree".

As the data is being collected from a questionnaire, the software SPSS Statistics will be used for the analysis (Pallant, 2007). The idea is to first get a general overview of what factors are of interest for this particular age group, thus the first step in the analysis will be to develop a descriptive overview of the visitors based on their demographic and visitation characteristics. Considering that the obtained sample size is small, what can be implemented are Non-parametric tests. Non parametric tests are often used when having small sample sizes and when the data is not normally distributed (Van Buren & Herrin, 2020). Regarding the distribution of the data, a normality test will be applied in advance to reassure that the selected tests are appropriate for the sample data.

Various tests such as the Wilcoxon signed rank test will be performed to test the respondents´

interest before and the interest after visiting the site. This type of test is a nonparametric

alternative used when measuring subjects on two occasions or under two different conditions

(Pallant, 2007). By using the Wilcoxon signed rank test, it will be examined whether the

interest have changed after the exhibition and if the size of the change is significant.

The relationship of several variables will be tested, and to test whether a correlation exists

between the interest before and general satisfaction, a nonparametric alternative for Pearson

correlation coefficient called the Spearman´s rank order correlation (rho) will be applied

(Astivia & Bruno, 2017). The general satisfaction will also be tested with the variable of

recommendation probability using the same Spearman rho procedure.

The following parts of the questionnaire regarding the importance of elements and importance

of factors at the site will be examined by using the Wilcoxon signed rank test by comparing

every two pair of variables with another in order to test whether some of the variables were

perceived as more important than others. The evaluation of the 12 presentation platforms will

be analyzed using the same procedure of the the Wilcoxon signed rank test in addition to

investigating whether these results are in contrast to the original study by Jensen et al. (2017)

measuring the same presentation platforms.

The last part of the questionnaire will concern the technological part of the visitor experience

consisting of eight statements that will further be put into one scale representing the

technology interest of the respondents, in addition, a reliability analysis will be applied to the

scale to test the internal consistency of the scale.

Furthermore, this scale will be used as a tool in the analysis such as in the Mann Whitney U

test by comparing the technology interest levels between males versus females. This particular

test is common in statistical practice when comparing measures of location between two

independent samples on a continuous measure, also where the assumption of normality in the data is questionable (Rosner and Grove, 1999; Pallant, 2007). Considering that the original study covered a wider sample with more differences in terms of age and other visitor characteristics, the reason why the present paper will test males and females is to further see whether gender can also have an influence on topics such as the technology interest and technology acceptance.

Considering that the current paper aims at demonstrating that the technological orientation of a visitor experience at the heritage site cannot be neglected and assuming that little focus has been made on this aspect, another non-parametric correlation test of Spearman rho will be applied to test the technology interest and the general satisfaction, this will be repeated by also testing the relationship of technology interest and recommendation probability, hypothesizing that a negative relationship exists between the two variables.

3.6 Data collection and sample

In order to collect the necessary data to test the hypothesis, it was crucial to make the participants to be present at a heritage site where they could gain a visitor experience and later share it by answering the survey. When the students arrived to the site, they were informed by the host of the site and their teacher about the exhibition and the survey that would be handed out. The visit to the site started with an exhibition that lasted for approximately one hour and after the tour, a short presentation about the research was introduced, requesting the visitors to answer the survey individually with their own free will.

3.7 Results

In total all of the 24 respondents completed the questionnaire with a completion rate of 100%,

62.5% were females and 37.5% were males (Table 1). The majority of the respondents (87.5

%) were in the age group of 17 to 18 years old and the rest (12.5%) were between 19 to 20

years old. Since the aim is to focus on one segment with visitors at a younger age group, the

sample was considered to be suitable for this study as they are all full time high school

students living in the region of Rogaland.

Previous visitation showed that 62.5% of the respondents have already been to

Jernaldergården before and were familiar with the site and its theme, whereas 37.5% have

never visited the site before. The common reason for coming to the Iron Age farm was

because the exhibition was a part of their study program.

The majority of the respondents (75%) preferred a mix of having a guide and being able to

walk around the site on their own.

The guide preferences also indicate that the respondents wish to have the feeling of

independency as visitors and a sense of secureness. This supports Galí and Aulet (2019)

where their study compares guided and nonguided visitors, suggesting that without having

guides, the tourists will get less detailed information and perhaps loose important knowledge

about the heritage of the town they are visiting.

Table 1: Demographic characteristics of respondents
Total (N = 24)

Profile details	Frequency	Percentage (%)
Gender		
Male	9	37.5
Female	15	62.5
Age		
17-18 years old	21	87.5
19-20 years old	3	12.5
Previous visit		
Yes	15	62.5
No	9	37.5
Guide preference		
Walk around with a guide	4	16.7
Walk around on your own without a guide	2	8.3
A mix of both	18	75.0

3.7.1 Distribution of the data

Assuming that the data in the present study is not normally distributed, a preliminary

normality test was carried out to reassure which analysis would be appropriate to use. The

interest before and general satisfaction were the first two variables tested for normality. Thus,

the Shapiro Wilk test confirmed that the two variables are not normally distributed with both

significance values being below 0.05 (interest before $p = .045$ and general satisfaction $p =$

.000).

This was also repeated on the variables of general satisfaction and recommendation

probability as well as the interest before and interest after. In addition, the data from questions

regarding the importance of elements at the site, importance of factors at the site, data from

the evaluation of the presentation platforms, and lastly data from the technology related

statements were tested for normality.

Results showed a very low significance value under 0.05, confirming the null hypothesis of

the sample being not normally distributed, thus nonparametric tests will be applicable for this

research.

3.7.2 The technology interest scale

Being a replication of a previous paper and also making it different by adding the technology

interest scale consisting of the eight technology related statements, a reliability analysis was

applied in advance to ensure the appropriateness of the scale that will later be used as a tool

for the analysis. The results showed a significantly low Cronbach´s Alpha (CA) of .649

indicating that some of the items have not been correctly reverse scored or do not fit in, in

addition the corrected item-total correlation also showed that some values did not correlate

with the total score being below .3, which indicates that they are measuring something

different from the scale (Pallant, 2007).

This part of the survey aims at understanding in a general way how technology interested the

respondents are, however with a low CA there are some statements that are differing in what

they are measuring and makes it less possible to be put into one scale (see Figure 2).

Statement e) "The use of VR will give more disadvantages than advantages for me" and

statement h) "I believe that modern technology such as VR will play an important role in

historical/cultural sites in the future" were removed and gave a much higher CA of .711

considering that they are highly focused on VR and are less general than the other six

statements.

After obtaining a higher CA, a variable was created in order to get one scale representing all

the six technology related statements, this was named as "Technology.Interest" and will

further be used as an instrument in the analysis.

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
a) Technological devices are part of my everyday life	28,5833	14,428	,398	,275	,620
b) I have previously tried VR glasses and Im familiar with the concept	29,0833	13,819	,317	,468	,625
c) I always try to keep up to date with the latest technology trends	29,6250	10,071	,604	,568	,526
d) I am interesd in using computer based technology such as VR when I visit a historical/ cultural site	29,4167	10,428	,593	,619	,533
e) The use of VR will give more disadvantages than benefits to me	29,5833	13,297	,143	,318	,695
f) I find it difficult to rely on technolocal tools	29,0833	13,036	,463	,521	,592
g) The use of high technology can help creating exciting experiences	28,7917	14,955	,281	,513	,637
h) I believe that modern technology such as VR will play an important role in historical/cultural sites in the future	29,1667	14,928	,115	,246	,668

Figure 2: Item-Total Statistics of the eight technology related statements without reverse coding and removing items that do not fit in.

3.7.3 Interest of the site

A Wilcoxon signed rank test revealed a statistically significant increase of the interest in the main theme of the site after visiting it (z = -2.324, p = 0.02) with a medium effect size (r = .335), indicating that the visitors were positively influenced and being in Jernaldergården had an effect on them, with the same median score (Md = 3.0) on both of the variables of the interest before and the interest after.

The Spearman rho test also showed a significant positive correlation between the respondents´ ratings of their interest before visiting the site and the general satisfaction of the visit (rho = 0.622, n = 24, p = 0.00).

Considering that the interest before and the interest after the visit was positively influenced and being at the site had a significant effect on the visitors, the relationship between general satisfaction and recommendation probability was also tested. Additional analyses were also performed to ensure no violation of the assumption of normality and linearity.

Comparing the Spearman rho to Pearson´s correlation that is emphasizing at measuring the strength of a linear relationship (Sedgwick, 2012), however in this case the line of fit did not go through any of the points showing no linear relationship, following with the assumption whether these variables are normally distributed, both resulted under the significance value of $p = .05$ and were not normally distributed.

The Spearman rho test showed a positively strong relationship between the two variables $rho = .532$, $p = .007$, simultaneously the Pearson´s correlation showed a much lower correlation $r = .493$, $p = .014$.

Because of the data not being normally distributed with outliers in the data, the Pearson´s correlation is being underestimated, thus when computing it with the Spearman correlation, the correlation coefficient is bigger. Consequently, the increase of interest and the general satisfaction of the visit made the participants gain more willingness to recommend the site to their friends and acquaintances.

As positive satisfaction from visiting a site often times naturally causes recommendation probability, this can also go in line with the study examined by Altunel and Erkurt (2015) where they analyzed the experience quality and satisfaction on the relationship between involvement and recommendation intention in the context of cultural tourism, suggesting that the quality of the visitor experience can have a positive effect on recommendation intention. Additionally their study concluded that the experience quality that the tourists receive is influenced by important factors such as learning, enjoyment and escape.

3.7.4 Evaluation of elements and factors at the site

Wilcoxon Signed Rank test on the evaluation of the four elements revealed that the element

"The way the life in the Iron Age is presented for you as a visitor" was seen as the most

important element for the visitors´ experience ($Md = 6.0$), it scored significantly higher than

both "Area and objects" ($Md = 5.0$, $z = -2.62$, $p = 0.009$) with a medium effect size ($r = .37$)

and the main theme as well ($Md = 5.0$, $z = -2.64$, $p = 0.008$, $r = .38$).

Regarding the calculation of the effect size, Cohen´s (1988) criteria was used where .1 is

considered as a small effect, .3 is considered as medium effect, and .5 is considered as large

effect. Similarly, the facilities were also seen as important ($Md = 5.0$) scoring significantly

higher than area and objects ($z = 2.03$, $p = .041$) with a medium effect size ($r = .29$).

The same procedure was applied to test and compare the six factors the visitors got to

evaluate according to their perceived level of importance of each factor contributing to their

visit.

The factor "Sharing the experience with others" ($Md = 4.0$) and "To learn and gain new

insights" ($Md = 4.5$) showed a medium effect size ($z = -1.96$, $p = .049$, $r = .28$). Another

difference was also found comparing the factor "Gain a meaningful life experience" and "To

learn and gain new insights" ($z = -3.33$, $p = .001$) with a large effect size ($r = .48$).

Similarly the factor "Confirmation of what I had known beforehand" and "To learn and gain

new insights" also showed a large effect size ($z = -3.6$, $p = .00$, $r = .51$). "Experience a

moment of escape from everyday life" ($Md = 4.0$) and learning and gaining new insights

showed a medium effect size ($z = -2.399$, $p = .01$, $r = .34$).

Getting confirmation of beforehand knowledge ($Md = 3.0$) and learning and gaining new

insights ($z = -3.60$, $p = .00$) revealed a large effect size ($r = .51$). The factor "Share the visitor

experience with other visitors" and "Entertain myself" ($Md = 4.0$) showed a medium effect

size ($z = -2,177$, $p = .02$, $r = .31$) whereas the latter factor and "Gain a meaningful life

experience" showed a large effect size (z = -3.35, p = .00, r = .48). "Experience a moment of

escape from everyday life" and "Entertain myself" showed a medium effect size (z = -2.63, p

= .00, r = .37).

"Confirmation of what I had known beforehand" and "Entertain myself" (z = -3.45, p = .00)

showed a large effect size (r = .49). Lastly, "Confirmation of what I had known beforehand"

and "Experience a moment of escape from everyday life" (z = -2.05, p = .04) showed a

medium effect size (r = .29).

3.7.5 Evaluation of presentation platforms

Considering that the present paper is using a non-parametric approach by for instance using

Wilcoxon signed rank test, which does not compare means but instead converts scores to

ranks comparing them at two occasions (Pallant, 2007), the mean scores of the 12

presentation platforms were preliminarily compared and showed both similarities and

differences compared to the original study by Jensen et al. (2017), nevertheless it was taken

into account that non-parametric tests normally do not use standard deviation and mean

scores, thus a Wilcoxon signed rank test was additionally applied.

The "Oral presentation from guides" was the most important presentation platform (mean =

3.91). In contrast, the results from the original study showed that independency orientation

was the most important presentation platform consisting of "Opportunity to enjoy a relaxed,

pleasant environment", "Opportunity to carry out self-initiated activities", "Opportunity to use

all senses" (p. 281).

The next three most important presentation platforms for the present study were related to

technology; "Opportunity to use computer based technology such as VR glasses" (mean =

3.87), "Information available with interactive technology at the site" (mean = 3.83), and "Use

of modern high technology to create an exciting experience" (mean = 3.79).

Similarly to the original study, "Opportunity to play roles in dramatized performances" was

the least important presentation platform for the visitors (mean = 1.87).

As mentioned, these results are only showing the mean score of each presentation platform,

therefore the Wilcoxon signed rank test was applied in order to first test the two presentation

platforms that scored the highest mean. Thus the results showed that for this sample, the oral

presentation from guides (*Md* = 4.0) is as important as the presentation platform "Opportunity

to use computer based technology such as VR glasses" (*Md* = 4.0) with no statistical

significance $p = .89$, $z = -.13$ between these two presentation platforms, and with a small

effect size ($r = .019$) using Cohen´s (1988) criteria.

The same procedure was applied to test the "Oral presentation from guides" and the

presentation platform with the third highest mean score "Information available with

interactive technology at the site" (*Md* = 4.0). Here the results showed again no significant

difference with the first presentation platform ($p = .783$, $z = -.276$) revealing a very small

effect size ($r = .039$).

The three presentation platforms scoring the highest mean score after the "Oral presentation

from guides" are all concerning information technology, consequently these results suggest

that they are as statistically important as the first presentation platform.

The Wilcoxon signed rank test was applied to test the "Oral presentation from guides" and the

presentation platform "Traditional theme specific displays at the attraction" (mean = 3.45),

this presentation platform scored a much lower mean compared to the previous ones. The

results showed indeed a significant difference this time ($p = .038$, $z = -2.07$) with a medium

effect size ($r = .29$), the median score remained the same (*Md* = 4.0) for both variables.

This was also tested on other presentation platforms with lower mean scores such as "Portable

audio guides" that is an element commonly used in museums (Schautz, Van Dijk & Meisert,

2016) and also showed a significant difference ($p = .004$, $z = 2.89$), with a medium effect size

($r = .41$) between the first presentation platform ($Md = 4.0$) and the latter presentation

platform ($Md = 3.0$).

The results from the Wilcoxon rank test on the presentation platforms suggest that a

difference exists in the preference and most important the perceived importance of each

presentation platform to give a good visitor experience, particularly for the young respondents

who visited the site. These preferences can further help practitioners and managers of heritage

sites or museums to perhaps invest and prioritize more the presentation platforms that are

concerning information technology in order to attract and offer a better visitor satisfaction for

the younger segment.

Table 2: Mean and standard deviation of presentation platforms

Presentation platform	Mean	SD
Oral presentation from guides	3.91	0.88
Opportunity to use computer based technology such as VR glasses	3.87	1.32
Information available with interactive technology at the site	3.83	0.91
Use of modern high technology to create an exciting experience	3.79	1.31
Opportunity to use all senses	3.54	1.28
«Traditional» theme specific displays at the attraction	3.45	0.88
Opportunity to carry out self-initiated activities	3.33	0.91
Opportunity to discuss with skilled/educated experts	3.29	0.99
Dramatized storytelling	2.95	1.08
Participate in task solving games	2.87	1.11
Portable audio guides	2.83	1.27
Opportunity to play roles in dramatized performances	1.87	1.11

In addition it can be shortly mentioned that the evaluation of the presentation platform(s) that

the respondents perceived as; contributing the most to a positive visitor experience, the

presentation platform that the respondents perceived as missing, and the presentation platform

the respondents perceived as being poorly performed showed similar results as the previous

question that was analyzed.

Results showed that the respondents perceived the oral presentation from the guide (mean =

.70) as the presentation platform contributing the most to a positive visitor experience. In

contrast, the presentation platform chosen as the one that was missed the most, was the

"Opportunity to use computer based technology such as VR glasses" (mean = .50). The

second most missed presentation platform was "Participate in task solving games" (mean =

.29).

The presentation platform considered as the most poorly performed was the "Opportunity to

carry out self-initiated activities" (mean = .37) following with "Opportunity to use computer

based technology such as VR glasses" (mean = .33). Since the questions were referring to

their visitor experience at a site where VR was not present, the results from the latter question

may perhaps indicate that the respondents perceived it similarly to the previous question

regarding which presentation platform they missed the most at the site and perceived the use

of technology as an alternative they wished they could use or expected to be more present for

them at the site.

3.7.6 Technology interest

The last part of the survey regarding the use and attitudes towards technology and VR showed

that 79.2% of the participants chose "Strongly agree" to the statement saying "Technological

devices are part of my every day life", 16.7% answered "Agree" and only one respondent

(4.2%) chose "Neither or". When asked whether they have tried VR glasses before and were

familiar with the concept, the majority of the respondents (41.7%) answered "Strongly agree"

and "Agree" (45.8%). Only 8.3% answered "Neither or" and 4.2% (one participant) has not

tried VR or was not familiar with it.

The evaluation of these two questions may indicate that technology *does* play a certain role in

the young visitors´ lives, this is also supporting the meta-analysis written by Cai, Fan and Du

(2017) about gender and attitudes towards the use of technology, which among other things

discuss that technology has become an important part of our lives especially for the young

segment. Furthermore, a Mann-Whitney U test revealed a significant difference in the

technology interest levels of males ($Md = 5$, $n = 9$) and females ($Md = 4$, $n = 15$), $U = 28.5$, z

$= -2.34$, $p = .019$, with a medium close to large effect size ($r = 0.47$).

Similarly, Cai et al. (2017) also concluded that several studies have shown gender differences

in attitudes towards technology where males have more favorable attitude towards technology

use than females, nevertheless the attitudes were still positive and not negative (p. 9). Despite

having a small sample size, these results suggest that a difference in the technology interest

levels between males and females might exist and have an influence, however further research

is necessary to test whether this can be relevant.

As one of the main objectives of the present paper is to investigate whether technology can

have a big impact on the younger visitors and be considered as a factor for satisfaction, the

next step of the analysis was to examine whether those who were highly technology interested

gained less satisfaction at the site as the technological factor was not highly focused on at the

site. Thus the proposed hypothesis was that there is a negative correlation between technology

interest and general satisfaction. The relationship between general satisfaction and technology

interest was analyzed using the Spearman rho correlation, here results showed a weak

negative correlation coefficient using the same criteria by Cohen (1988). As the technological

aspect was not significantly big at the site, the technology interest is negatively correlated

with the general satisfaction of the visit (*rho* = -.149, *p* = .488, *n* = 24), thus the results are not

significant.

The same procedure was repeated on recommendation probability and the technology interest

with the hypothesis that there is a negative correlation between technology interest and

recommendation probability. Results showed a medium negative correlation between the

variables following Cohen´s (1988) criteria where the value of the correlation coefficient of

.30 to .49 is considered as medium (pp. 79-81). *(rho* = -.471, *n* = 24, *p* = .02). This suggests

that high interest in technology is associated with *reduced* likelihood to recommend the site.

Considering that the technological aspect was not highly focused on by the site they were

visiting, and the technology scale was asking about the overall technology interest with

questions independent from the actual site, these results were as expected.

3.8 Discussion

Regarding the strengths of this study, it is important to mention that there is a small amount of research available specifically on the topic of VR in the tourism industry or modern technology in the visitor experience, which can give the current paper a possibility to contribute to fill the research gap as it can be a topic of interest for future research and for management practices.

As mentioned earlier the site where the data was collected does not have young teenagers or young adults as their most frequent visitor group, this can also support Gofman, Moskowitz and Tõnis´ (2011) paper, mentioning that the millennials are often times negative to attending museums both by themselves and through school trips, in addition the paper argues that these preferences depend on age and will therefore require tailored marketing. The previous literature and findings from this study also supports the perspective of the importance of visitor experience and the visitors´ perception of on-site factors, particularly concerning visitors at different age groups, which can differ in many aspects as this study demonstrated. It is suggested that the technological aspect of visitor experience at heritage sites can play an important role for this particular segment who visited the Iron Age farm. The findings indicate that technological devices are a part of the respondents´ everyday lives, thus there may have been a wish to see more of this aspect.

As a replication of the study by Jensen et al. (2017), the evaluation of the on site factors revealed both similarities and differences that can be of interest for further examination. To answer the main hypothesis of this study, among the younger visitors who visited the site, the technological aspect *does* play an important role in their lives and may indeed have a bigger impact on their visitor experience. As results show that the respondents found the main theme of the site as an important factor with oral presentation from guides, nevertheless it was also

revealed that the presentation platforms concerning information technology were all equally
important as the first presentation platform.

The evaluation of the different presentation platforms and the technology interest indicate that
the majority of the respondents perceive modern technology and VR as useful elements that
they could prefer to see and use more at the site they were visiting.

The findings also support the hypothesis that there is a negative correlation between
technology interest and general satisfaction, and a negative correlation between technology
interest and recommendation probability. The reasons for this can be the lack of the presence
of technology at the site. In the case were the visitors were highly interested in technology and
perceived it as very important, simultaneously finding no technology at the site, the chances
could be high that they would not find it as exciting or satisfying as this element is missing.
However, if there was a site highly focusing on technology taking into account that it may be
important to this segment, a positive correlation might have resulted with a higher willingness
to recommend the site, nevertheless this will be a suggestion for future research to examine
further.

As mentioned earlier, it was found that majority of the respondents missed having the
opportunity to use computer based technology such as VR device and participating in task
solving games, this can indicate that VR might have the potential to serve as an educational
tool where young visitors can be more engaged in learning as modern technology has become
a part of their everyday lives. This is also supporting the paper by Mikropoulos (2006),
Roussou et al. (2006) and Guttentag (2010) describing VR as a helpful learning tool to
educate the visitors about for instance the history of the site. Thus, these results suggest that
the young respondents may have a positive attitude towards the use of technology at the site

and there might be a probability that the positive attitude will in turn affect their intention to

use it. Involvement is also an element that might be important to consider, as Altunel and

Erkurt (2015) write in their study about the tourist involvement and recommendation

intention, in the context of tourism the authors refer to Manfredo´s (1989) definition of

involvement as "the degree of interest in the product and the affective response associated

with it" (p. 30). Connecting this to the present paper, the young visitors may perhaps not only

have the wish to see and use more technology devices at the site, but also be more engaged in

learning when using it. The results also support Kinghorn and Wills (2008) when it comes to

the interest of participating in activities when visiting museums along with Lopez et al. (2008)

suggesting the implementation of modern technology to engage young visitors.

One of the limitations of this study is the sample size as the aim was to create a representative

sample, however due to Covid-19 and practical limitations, it was not possible to collect a

higher number of respondents making the data analysis limited to a certain extent, as a

consequence it can also be highlighted that these findings cannot be generalized.

Another issue can be that the technology interest scale cannot guarantee to be fully

appropriate to use considering that it haven't been used in other studies before. Despite the

small sample size, it is suggested to expand the study to reassure whether this scale is

applicable or whether it covers what it wishes to measure, which is the perception of or

attitude towards technology and VR. Consequently future studies should perhaps reformulate

these statements in the scale or for instance find a different conceptual approach to it.

There might also be a lack of or differences in how the concept of VR is understood by the

respondents as they did not get a full description of the characteristics of VR when responding

to the survey, which might have improved the understanding.

Another suggestion would be to perhaps collect the data both prior to the exhibition and after

in order to get a more thoroughly overview and to possibly reassure the validity of the post

experience the visitors receive to further compare if there is a significant difference and what

factors might have influenced the potential changes.

VR has become a topic of interest for research and with the continuous improvement, it can

have a potential of becoming even bigger. As a consequence, this type of modern technology

can be a helpful tool in enhancing the marketing of a tourist site and attract younger segments

in addition to serving as a substitute for travelling. However, giving several benefits such as

saving the costs of an actual trip and making the user feel more safe in the VE, it can still be

discussed whether the virtual substitute may not reach the fully realistic level of a real site,

particularly the social and cultural aspects as mentioned in Cheong´s (1995) paper that play an

essential role. Thus, future research should investigate the perspective of VR serving as a

substitute and whether consumer would perceive it as a pure authentic experience.

3.9 Conclusion

Applying theory and the research in practice, with a small sample size despite having

parametric or non-parametric test, results a low statistical power that is limiting this paper to

make any definitive conclusions (Van Buren & Herrin, 2020), consequently similar research

should be further carried out.

As the findings support the previous literature regarding VR´s potential to be used in

educational contexts, it is suggested for future research to carry out a similar study at a site

that offer VR or is highly focused on modern technology and test whether the visitors will be

more or less engaged by using it and whether it will contribute to the learning outcome.

It is suggested that new management practices should be applied specifically when

considering to include and attract the younger visitors to a heritage site. For instance as

suggested in Cheong´s (1995) paper, the idea of ´pop-up´ windows could also be implemented

in virtual technology but giving the visitors of Jernaldergården the access to the ancient site

view along with information about its history. This way the exhibition could be not only

entertaining for the visitors but also making them gain new knowledge.

The findings of this study and future research examining the topic of visitor experience and

the role of technology can be helpful in the tourism industry as the paper of Gofman,

Moskowitz and Mets (2011) mention that museums have to innovate and create new

marketing methods that improve their attractiveness to maintain and increase visits,

simultaneously competing with other leisure activities in the tourism industry.

The technological acceptance of the young visitors that visited the site suggest that they

acknowledge the fact that technological devices are very common in today´s society, and

might not get easily confused as they are familiar with using it in their everyday lives.

Another suggestion for future research would also be to carry out a similar study but dividing

the age groups to find whether age can have a big affect on what the respondents emphasize

the most when visiting a heritage site as this paper only focused on visitors that were between

17-20 years old.

This study demonstrated that the technological aspect has a possibility to have a positive

effect on the visitor experience and visitor satisfaction. Lastly, future research within heritage

tourism should be aware when using literature concerning leisure and recreation, as Poria et

al. (2004) mentioned, that motivations for visiting a heritage site can often times not be for

leisure or recreational purposes.

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APPENDIX 1. SURVEY QUESTIONNAIRE (NORWEGIAN VERSION)

Universitetet
i Stavanger

Spørreskjema om besøksopplevelsen på Jernaldergården

Kvinne ☐

Mann ☐

I hvilken aldersgruppe hører du til?

a) 13-14 år
b) 15-16 år
c) 17-18 år
d) 19-20 år
e) 20- eldre

Har du besøkt Jernaldergården før?
   Ja ☐

   Nei ☐

**Nå vil vi gjerne stille deg noen spørsmål om hvordan du opplevde besøket
her på Jernaldergården idag.**

1. Ble du vist rundt av en guide på stedet?

   • Ja ☐

   • Nei ☐

2. Hva foretrekker du? Velg kun ett svar

   • Gå rundt med en guide ☐

   • Gå rundt på egenhånd uten guide ☐

   • En blanding av begge deler ☐

3. Hvor interessert var du i hovedtemaet (livet i jernalderen) som Jernaldergården bygger på **før** besøket? Sett ring rundt det som passer best for deg.

Slett ikke
interessert   1   2   3   4   5   Svært
interessert
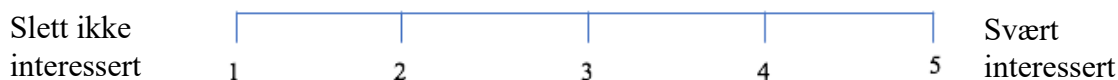
5. Som besøkende, hvor fornøyd var du med den generelle opplevelsen på Jernaldergården i dag?

Ikke fornøyd i
det hele tatt   1   2   3   4   5   Veldig
fornøyd

6. Hvor sterk er din interesse for hovedtemaet (livet i jernalderen) knyttet til Jernaldergården nå **etter** besøket?

Slett ikke
interessert   1   2   3   4   5   Svært
interessert
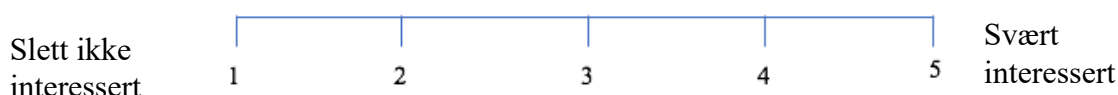
7. Hvor sannsynlig er det at du vil anbefale denne attraksjonen til venner og kjente?

Svært lite
sannsynlig   1   2   3   4   5   Svært
sannsynlig

8. Hvor viktig var følgende elementer for deg i dag med tanke på å gjøre opplevelsen din på Jernaldergården interessant? Vennligst sett ring rundt svaret.

a) Området med de gjenstandene som finnes her

Ikke viktig i
det hele tatt   1   2   3   4   5   6   7   Svært
viktig
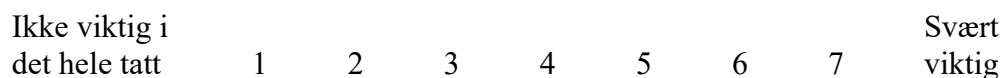
b) Hovedtemaet (livet i jernalderen) som blir fortalt og beskrevet her

Ikke viktig i
det hele tatt   1   2   3   4   5   6   7   Svært
viktig

c) Måten livet i jernalder ble presentert på for deg som besøkende

Ikke viktig i
det hele tatt   1   2   3   4   5   6   7   Svært
viktig

d) Service fasiliteter i besøkssenteret

Ikke viktig i   Svært
det hele tatt   1   2   3   4   5   6   7   viktig

9. For at du skal føle at du har hatt et bra besøk her på Jernaldergården, hvor viktig er følgende for din opplevelse for deg?

a) Lære og få ny innsikt

Ikke viktig i   Svært
det hele tatt   1   2   3   4   5   viktig

b) Underholde meg selv

Ikke viktig i   Svært
det hele tatt   1   2   3   4   5   viktig

c) Dele besøksopplevelsen med andre besøkende

Ikke viktig i   Svært
det hele tatt   1   2   3   4   5   viktig

d) Oppnå en meningsfull livserfaring

Ikke viktig i   Svært
det hele tatt   1   2   3   4   5   viktig

e) Oppleve et øyeblikk av flukt fra hverdagslivet

Ikke viktig i   Svært
det hele tatt   1   2   3   4   5   viktig

f) Bekreftelse på det jeg på forhånd visste (kunnskap, fakta spørsmål, osv)

Ikke viktig i   Svært
det hele tatt   1   2   3   4   5   viktig

10. Det er mange måter å presentere historisk informasjon på. Nedenfor har vi listet ulike måter man kan presentere historisk informasjon på.

I hvilken grad tror du de ulike presentasjons formene kunne vært viktig for å gi deg en god opplevelse ved denne typen museumsattraksjon?

	Presentasjons-former	Ikke noe viktig				Svært viktig
A	Muntlig presentasjon av guider	1	2	3	4	5
B	«Tradisjonelle» tema spesifikke utstillinger ved attraksjonen	1	2	3	4	5
C	Dramatisert historiefortelling	1	2	3	4	5
D	Bruk av moderne høyteknologi for å skape en spennende opplevelse	1	2	3	4	5
E	Mulighet til selv å spille roller i dramatiserte forestillinger	1	2	3	4	5
F	Delta i oppgaveløsnings spill	1	2	3	4	5
G	Mulighet til å diskutere med dyktige/faglærte eksperter	1	2	3	4	5
H	Informasjon tilgjengelig med interaktiv teknologi på stedet	1	2	3	4	5
I	Bærbare lydguider	1	2	3	4	5
J	Mulighet til å bruke alle sanser	1	2	3	4	5
K	Mulighet til å gjennomføre selv initierte aktiviteter	1	2	3	4	5
L	Mulighet til å bruke databasert teknologi som for eksempel VR briller	1	2	3	4	5

11. Hvilke av de ovennevnte presentasjonsformene i tabellen (med bokstav foran), bidro mest til en positiv besøksopplevelse for deg her på Jernaldergården? (velg maks 2 alternativer)

A	B	C	D	E	F	G	H	I	J	K	L

12. Hvilke av de ovennevnte presentasjonsformene i tabellen (med bokstav foran) savnet du mest her på Jernaldergården? (velg maks 2 alternativer)

A	B	C	D	E	F	G	H	I	J	K	L

13. Hvilke av de ovennevnte presentasjonsformene i tabellen (med bokstav foran) oppfattet du som dårlig utført her på Jernaldergården? (velg maks 2 alternativer)

A	B	C	D	E	F	G	H	I	J	K	L

14. Nedenfor har vi satt opp opp en del påstander angående bruk og holdninger til teknologi og Virtual Reality (VR).
Kryss av i hvilken grad du er enig eller uening med følgende påstander.

	Sterkt uenig	Uenig	Verken eller	Enig	Svært enig
a) Teknologiske apparater er en del av hverdagen min	1	2	3	4	5
b) Jeg har tidligere prøvd VR briller og er kjent med konseptet	1	2	3	4	5
c) Jeg prøver alltid å holde meg oppdatert med de nyeste teknologi trender	1	2	3	4	5
d) Jeg er interessert i å bruke databasert teknologi som for eksempel VR når jeg besøker en historisk/kulturell attraksjon	1	2	3	4	5
e) Bruken av VR vil gi mer ulemper enn fordeler for meg	1	2	3	4	5
f) Jeg synes det er vanskelig å stole på teknologiske verktøy	1	2	3	4	5
g) Bruk av høyteknologi kan være med på å skape spennende opplevelser	1	2	3	4	5
h) Jeg tror at moderne teknologi som VR vil spille en viktig rolle innenfor historiske attraksjoner i fremtiden	1	2	3	4	5

Tusen takk for din deltagelse!

APPENDIX 2: SURVEY QUESTIONNAIRE (ENGLISH VERSION)

Universitetet i Stavanger

Questionnaire about the visitor experience at Jernaldergården

Female ☐

Male ☐

Which age group do you belong to?

a) 13-14 years old   ☐
f) 15-16 years old   ☐
g) 17-18 years old   ☐
h) 19-20 years old   ☐
i) 20- older   ☐

Have you visited Jernaldergården before?

Yes ☐

No ☐

Now we would like to ask you some questions about how you experienced your visit here at Jernaldergården today.

15. Was there a guide showing you around the site?

- Yes ☐

- No ☐

16. What do you prefer? Choose one option only

- Walk around with a guide ☐

- Walk around on your own without a guide ☐

- A mix of both ☐

17. How interested were you in the main theme (the life in the iron Age) that Jernaldergården builds upon **before** your visit? Circle the best suited for you

Not interested at all   1   2   3   4   5   Very interested
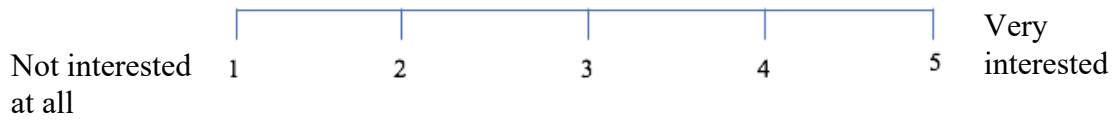
18. As visitor, how satisfied were you with the general experience at Jernaldergården today?

Not satisfied at all   1   2   3   4   5   Very satisfied
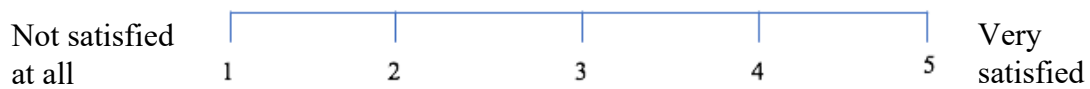
19. How strong is your interest in the main theme (the life in the iron Age) related to the Iron Age farm now **after** your visit?

Not interested at all   1   2   3   4   5   Very interested
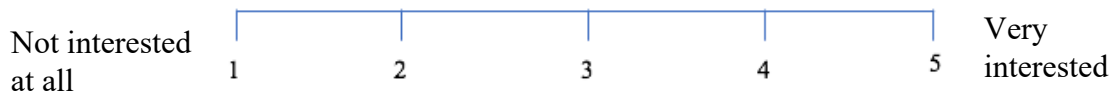
20. How likely are you to recommend this attraction to friends and acquaintances?

Very unlikely   1   2   3   4   5   Very likely
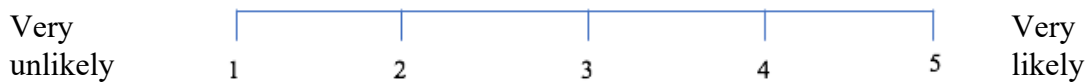
21. How important were the following elements to you today in order to make your experience in Jernaldergården interesting? Please put a circle around your answer

e) The area with the objects found here

Not important at all   1   2   3   4   5   6   7   Very important

f) The main theme (life in the Iron Age) that is told and described here

Not important At all   1   2   3   4   5   6   7   Very important

g) The way the life in the Iron Age is presented for you as a visitor

Not important At all   1   2   3   4   5   6   7   Very important

h) Service facilities at the site

Not important   Very
At all   1   2   3   4   5   6   7   important

22. In order for you to feel that you have had a good visit here at Jernaldergården, how
important is the following for your experience?

g) To learn and gain new insights

Not important   Very
at all   1   2   3   4   5   important

h) Entertain myself

Not important   Very
At all   1   2   3   4   5   important

i) Share the visitor experience with other visitors

Not important   Very
at all   1   2   3   4   5   important

j) Gain a meaningful life experience

Not important   Very
at all   1   2   3   4   5   important

k) Experience a moment of escape from everyday life

Not important   Very
at all   1   2   3   4   5   important

l) Confirmation of what I had known beforehand (knowledge, facts issues, etc.)

Not important   Very
at all   1   2   3   4   5   important

23. There are many ways to present historical information. Below we have listed different ways to present historical information.

To what extent do you think the different presentation forms could have been important to give you a good experience of this type of museum attraction?

	Presentation forms	Not important at all				Very important
A	Oral presentation from guides	1	2	3	4	5
B	«Traditional» theme specific displays at the attraction	1	2	3	4	5
C	Dramatized storytelling	1	2	3	4	5
D	Use of modern high technology to create an exciting experience	1	2	3	4	5
E	Opportunity to play roles in dramatized performances	1	2	3	4	5
F	Participate in task solving games	1	2	3	4	5
G	Opportunity to discuss with skilled/educated experts	1	2	3	4	5
H	Information available with interactive technology at the site	1	2	3	4	5
I	Portable audio guides	1	2	3	4	5
J	Opportunity to use all senses	1	2	3	4	5
K	Opportunity to carry out self-initiated activities	1	2	3	4	5
L	Opportunity to use computer based technology such as VR glasses	1	2	3	4	5

24. Which of the above presentation forms in the table (with the letter in front) contributed most to a positive visitor experience for you here at Jernaldergården? (select maximum 2 options)

A	B	C	D	E	F	G	H	I	J	K	L

25. Which of the above presentation forms in the table (with the letter in front) did you miss most at Jernaldergården? (select maximum 2 options)

A	B	C	D	E	F	G	H	I	J	K	L

26. Which of the above presentation forms in the table (with the letter in front) did you consider poorly performed here at Jernaldergården? Select maximum 2 options

A	B	C	D	E	F	G	H	I	J	K	L

27. Below we have made some statements about the use and attitudes towards technology and Virtual Reality (VR).
Please select what extent you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neither or	Agree	Strongly agree
a) Technological devices are part of my everyday life	1	2	3	4	5
b) I have previously tried VR glasses and I am familiar with the concept	1	2	3	4	5
c) I always try to keep up to date with the latest technology trends	1	2	3	4	5
d) I am interested in using computer based technology such as VR when I visit a historical/cultural site	1	2	3	4	5
e) The use of VR will give more disadvantages than advantages for me	1	2	3	4	5
f) I find it difficult to rely on technological tools	1	2	3	4	5
g) The use of high technology can help creating exciting experiences	1	2	3	4	5
h) I believe that modern technology such as VR will play an important role in historical/cultural sites in the future	1	2	3	4	5

Thank you for participating!