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Digitalization: An alternative method of tourism in order to reduce transportation

Master's degree thesis in Logistics and Transport Management

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Abstract

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This thesis deals with the topic of digitalization within the tourism sector. The main focus was on researching if a digitized approach had the possibility to satisfy travellers while reducing physical traveling. The importance of finding alternative ways of traveling stems from the unsustainable increase of emissions that traveling entails. The tourism industry accounts for 22% of transport emissions, something that is predicted to increase by 25% until 2030 and will account in the future for 21% of transport emissions. In addition, tourism plays a crucial economic role in many countries as its economic growth comes from the tourism industry. Nevertheless, COVID-19 has provided the chance to reshape the industry and provide a more responsible and sustainable future.

With the help of an empirical study conducted in Sweden, we found that a digitized approach of traveling could work as an alternative but there were barriers such as the need for travellers to experiencing everything in real life rather than through a technological application and stakeholders operating within the sector wanting to take advantage of the cash flow that tourism entails. Furthermore, through an analytic hierarchy process (AHP) we

identified and ranked which types of tourism that are most ready for a digitized approach of tourism from the perspective of Sweden and found that the business type of tourism distinctly was the most ready type.

The research is designed with literature review and interviews to conduct both qualitative and quantitative data. The quantitative data were to examine the readiness of the different types of tourism, whereas the qualitative data were gathered to get a better insight into tourism and find the commons and differences gathered from the literature. The quantitative data were analyzed with the analytic hierarchy process (AHP) system.

The findings showed that people have embraced digital and virtual forms of tourism and with the help of experts we identified three types of tourism that are more ready to turn into digitalization (business, cultural, sports). Furthermore, Sweden is ready to adopt such an alternative way of traveling from a technological perspective.

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1. Introduction

1.1 Background

The tourism industry plays a crucial role in economic development (Archer & Fletcher, 1996), it is an important part for each country's economic growth and helps in increasing local's welfare (Webster & Ivanov, 2014). Economic development can be looked at as the development of trade, consumption of goods and services, investments and production (Wagner, 1997, Pitoska, 2013) and promote employment (Pitoska , 2013). Tourism can be looked at as an "universal tool for rural development" (Almstedt et. al., 2016). The tourism industry is one of the largest multinational economic activities and is ranked within the top five export industries for a considerable percent of countries in the world (Plangmarn, et. al. 2012). Particularly, non-tradable goods and services can be defined as exports products (Beladi et. al., 2009). Such products are the usage of transportation, accommodation, food and recreation (MA, J., & LAW, R., 2009). Additionally, heritage resources have a crucial role in the economic growth of each country as tourists are interested in it (Oh & Kim, 2016).

On the other hand, the advantages of tourism push to increase the infrastructure of hotels and tourist facilities to attract and accommodate tourists, without considering the harmful effects on the environment (Beladi et. al., 2009). Furthermore, Webster & Ivanov (2014) underlined that more tourists in one place might not mean more wealth for the locals, as some workers might be recognized as repatriation workers, who live abroad and return during tourism seasons to work (Webster & Ivanov, 2014). Thus they take away some of the income (Webster & Ivanov, 2014).

Oh & Kim (2016) introduced the demand and supply side as the most important stakeholders in the tourism industry. The supply side includes actors such as recreation managers, local government, community leaders, etc., which try to cover the needs of the demand side, which is the tourists and travellers (Oh & Kim, 2016). According to Ruiz (2018), tourism industry products have shown a significant sale through the internet, becoming the top industry of selling products online. In addition, the internet has provided significant benefits to the industry, as travellers can find accurate data easier and on time (Pitoska, 2013).

In 2018 Sweden was in the top 50 most visited countries with a record of 7 million visitors. The most visited city was Stockholm; it was in the top 100 of most visited cities with 2.60 million visitors, spending on average per visitor 1,792 US Dollars (World Data, n.d.). Also, an analysis showed that millions of travellers are planning to visit Sweden in the future (Visit Sweden, 2021c). Except for the capital, Sweden offers many island destinations as it consists of thousands of islands. Stockholm has been built on 14 islands, and the most visited places are the old town of Gamla Stan, Nikolai church, and the Royal Palace (World Data, n.d.; Visit Sweden, 2021a). The second most visited city in Sweden is Gothenburg, built near the river with a magnificent harbour and many cafes and shopping facilities (World Data, n.d.; Visit Sweden, 2021a). Kiruna is the third most visited place in Sweden, located about 150 km from the Arctic Circle, offering hiking, dog sledding, snowmobile excursions, and occasionally observing the magnificent northern lights (World Data, n.d.; Visit Sweden, 2021a). Then, the last area of the most visited places is the province of Gotland having Viking's settlements, medieval towns and the well-known island Fåro (World Data, n.d.; Visit Sweden, 2021a).

In addition, Sweden has more places to visit, each of which provides different tourism options. In the southern part, landscapes, forests, fields, scenic spots and magnificent coastline offer several opportunities for discovering nature (Visit Sweden, 2021b). More adventure options are provided in the north, such as dog sledging, sitting around campfires, exploring the land of Sami etc (Visit Sweden, 2021a). The Sami people have their own language and culture, they differ from other societies, and their land, Sapmi, consists of snow-capped mountains, wild rivers, lakes, and forests (Visit Sweden, 2021b).

The tourism sector is essential for Sweden as the tourism industry accounts for almost 15 billion US dollars which corresponds to 2.8% gross of domestic products and 33% of all international tourism earnings in northern Europe (Almstedt et. al., 2016). Since 1995, Sweden has seen a significant increase in tourism, particularly in 2018, in which visitors were about 3.5 times more, resulting in rising revenues generated by tourism (World Data, n.d.). Holst (2019) stated that in recent years the tourism share in GNP in Sweden has remained in the same levels between 2.6% and 2.8%. Further in 2018 the income was up to 337 billion kronor , three thousand new jobs were created to cover the needs of the industry and in general 172.000 people have been employed . Further, in 2013 the tourism industry ranked as the third most important industry for Sweden (Almstedt et. al., 2016). Moreover, compared to the rest 8 countries of Northern Europe, Sweden is above the average of tourists arrived in (World Data, n.d.). The importance of tourism can also be seen in the funding made by the

government to improve rural tourism in Sweden until 2013 which was about 513 million SEK (Almstedt et. al., 2016).

1.2 Problem statement

According to the World Tourism Organization, both international and domestic tourism account for the increase in emissions. Even though the tourism industry is crucial for the global economy and has made progress in reducing emissions per passenger per kilometre, tourism and transportation have to become more effective in reducing the impact on the environment and becoming a leading role for other sectors (World Tourism Organization, 2019). Although the organizations take measures to become more environmentally friendly, the forecast about the tourism emission by 2030 claim that there will be a 25% increase compared to 2016, and it will account for 5.3% of all man-made emissions and 21% of transport emissions (World Tourism Organization, 2019). Additionally, international and domestic arrivals are expected to be almost double by then, reaching 37 billion arrivals. In addition, it is stated that transport-related emissions is and will be a significant challenge, including in the tourism sector (World Tourism Organization, 2019). Further, Shaw and Williams (2004) state that due to the increase in tourism, the host country's environment is becoming overcrowded and causes resources to be overexploited, damaging natural habitats and increasing pollution. Moreover, it states that if there will be no consideration of the environment, there will not be anything to visit in the future.

Currently, due to the COVID-19 pandemic, the problematization of tourism is the risk of spreading diseases when travelling rather than the environmental impact. Moving to urban areas is associated with diseases spread, as more people live nearby and interact regularly. Furthermore, globalization increases travelling globally, resulting in a high risk of transmitting disease within a day. This spread is related to transport connectivity, by plane, train, shipping and road. Hence, people from urban areas may transmit diseases to another urban centre. Furthermore, transport-related pollution has been identified as a variable that negatively affects people's health and contributes to respiratory diseases. In addition, tourism is a significant contributor to the increasing transport pollution (Romero et al., 2017), and it is expected to increase pandemics and disease outbreaks (Hall et al., 2020).

Except for the risk of health problems and even death because of infection by the COVID-19 virus, there are other symptoms such as anxiety, sleeping problems, depression, weakening of the immune system and behavioural problems related to psychological stress caused by the virus (Yang T. et al., 2021). This pandemic extends social and economic inequalities, especially in developing countries. The necessary measures taken by countries like social distancing and lock-down might not benefit some groups like migrant workers or people with lower social and economic status. In addition, many people in many sectors, including tourism, have lost their jobs facing financial difficulties, debts or even poverty (Rastegar et al., 2021). Tourism has been one of the hardest affected industries and got attention as it plays a crucial role in the countries' economy (Rastegar et al., 2021). Beyond the economic problems of tourism, there are also psychological problems arising for people due to the limitations of travelling (Kock, 2020). This situation is considered an urgent problem, and solutions have to be found to face it (Higgins-Desbiolles, 2020). Studies have shown that exploring nature can contribute to reducing stress (Higgins-Desbiolles, 2020). Tourism can provide people with experience of visiting natural landscapes and ecological environments, which will reduce stress (Higgins-Desbiolles, 2020). Nevertheless, due to the continuous spread of COVID-19, governments have shut down hospitality sectors and have closed their borders (Higgins-Desbiolles, 2020). Quarantine and the suggestion of 'stay home' contribute as barriers to movement outside (Yang T. et al., 2021). Higgins-Desbiolles (2020) states that there were concerns about over-tourism before the pandemic, whereas, after the pandemic, the entire sector is at stake. It is sufficient that this pandemic is something more than just a global disease crisis. Except for the socio-economic impact, it might underlie the so far commitments in improving the environmental conditions (Rastegar et al., 2021). Therefore, it is important to find a way to satisfy the travellers' needs while minimizing travelling.

On the other hand, a solution to both these problems is digital and virtual tourism. Digital tourism is a computer application system offering precise real-time information and provides updated information in time, and virtual tourism is virtual reality-based computer technology. It gives the possibility to travel around without leaving home (Xu et al. 2020). Because of the pandemic, many museums, conferences and enterprises have been utilising it. Digitalisation could complete ordinary tourism and provide new opportunities (Xu et al. 2020; Härtig et al., 2017). It offers possibilities for individuals to escape their everyday lives and experience other places such as nature (Wright, 2015). According to Yang et al. (2021),

virtual reality reduced psychological stress caused by lockdown from the COVID-19 pandemic.

1.3 Research object

As stated above, tourism transportation is a major problem for the environment because of the increase in emissions.. Besides, many natural habitats are in danger due to human activity. Further, COVID-19 is a problem both for the tourism industry and the psychological health of tourists. Thus, the research object of this master thesis is to recommend an alternative way to satisfy travellers needs while minimizing travelling. Firstly, we will examine whether digital-tourism can satisfy travellers' needs and its impact on the environment. Additionally, we aim to identify which types of tourism are more ready to apply. Finally, we will examine whether Sweden is ready for this change. The research objects will be achieved by answering the following questions

Can digitalization be an alternative option for traveling while reducing transportation?

By answering this question more knowledge about the current situation regarding digitalization will be achieved. There will also be a better understanding about traveling motivators and problems occuring due to geographical traveling. This question will mainly be answered with the help of literature studies within the topic. The information collected will also be used to answer the second research question.

Is Sweden tourism ready for reducing travelling with digitalization?

If the outcome of the first research question supports the use of digital-tourism as an alternative way to satisfy travel motivators while reducing traveling it will be applied in the case of Sweden. The focus here will be on empirical data collected from experts within the tourism industry. More specifically, whether Sweden is ready to use digitalization as an alternative method and in which types of tourism is more likely to apply.

Which type of tourism is more ready to turn into digitalization as an alternative way of travel?

If the previous research question shows that Sweden is ready for a digitized approach of tourism the Analytic Hierarchy Process (AHP) will be used to investigate and rank different types of tourism in regards to their readiness. With the help of experts, we will examine

which of the different identified types of tourism is more ready to use a digitized approach of traveling from the perspective of Sweden.

It is essential to state that our aim is to research an alternative way for tourism, especially under challenging circumstances like COVID-19 or other difficulties, aiming to protect the environment and reduce transportation. Our goal is not to promote digitalization to fully replace traditional tourism, as this will have a negative economic impact on many countries. Nevertheless, we highly believe that digital tourism can become an alternative way with the aim of reducing the emissions of this industry. As Higgins-Desbiolles F., (2020) stated this situation (COVID-19) might be a chance for the tourism industry to reshape and set a new better infrastructure for the future of the industry and the environment.

1.4 Defining keywords

Tourism - Activities of people travelling to and staying in different environments than their usual for at least 24 hours and less than one consecutive year (Camilleri, 2018).

Domestic, inbound and outbound tourism - Tourism can be splitted into three types, domestic, inbound and outbound. Domestic defines individuals travelling within a country, inbound refers to individuals visiting a country which are not residents of, and outbound refers to individuals travelling away from their resident country (Eurostat, 2014).

Traveling - Moving from one geographical place to another (Cambridge dictionary, 2021).

E-tourism - The digitalization of the tourism industry and its infrastructure (Pitoska, 2013).

Virtual reality (VR) - Environment simulated by computer technology, using sensory equipment providing to the user the sense of being in the environment and participating actively in it, usually with the help of a virtual reality headset (Wang, 2011).

Telepresence in the virtual tour - The feeling being in a virtual tourist destination which is perceived as equivalent to a real experience. Presence in the virtual tour is associated with the realism of the experience generated by the virtual reality (Yang T. et. al., 2021).

Host country - Country that supplies services for an occurrence (Cambridge dictionary, 2021).

2. Theoretical framework

2.1 The tourism industry

From time to time, the definition of tourism has faced changes. In 1963 the United conference on international travel and tourism came with the term visitors to define individuals who travelled to another country (Camilleri, 2018). Then acknowledged the different types of visitors, the first is temporary, visiting a destination for at least 24 hours, for leisure reasons such as recreation, health, sports or holidays etc (Camilleri, 2018). The second is the excursionists, which includes cruise travellers and visit a destination for less than 24 hours. Later in 1976, the institute of tourism defined "tourism" as a temporary short period movement of individuals away from their regular habits, where they live and work (Camilleri, 2018). After that, in 1981, the Worldwide Network of Tourism Experts and the Tourism Society in Cardiff defined "tourism" as the activities individuals choose to participate in, and those activities are taking place outside of their home environment and might or might not include overnight accommodation (Camilleri, 2018). The last definition was made in 1991 from the United Nations World Tourism Organisation, which defines tourism as the activities of individuals participating in, travelling and being away from their usual environments either for leisure or business circumstances for less than a consecutive year (Camilleri, 2018). Thus, tourists are considered any individual who willingly leaves their daily lives to travel to another environment, to participate in activities (Camilleri, 2018).

Mass tourism commenced after the second world war concerning the post-WWII economic development (Shaw and Williams, 2004). During this development, individuals were provided paid holidays, higher income, and more people could afford a car. These conditions were vital for mass tourism to establish (Shaw and Williams, 2004). The characteristics that encapsulated the tourists during this time were affected by the industrial society they lived in. Namely, undifferentiated products with low prices (Shaw and Williams, 2004). As the economy grew during the 20th century, so did globalization (Árva and Deli-Gray, 2011). Companies with multinational structures, foreign investments and new technologies assisted the economic development to advance (Árva and Deli-Gray, 2011). Therefore, globalization was and still is a crucial element to the growth of tourism (Shaw and Williams, 2004). The information flows that originate from globalization affect the

decision-making of the tourist, and global investment flow helps create tourist attractions and international hotel chains (Shaw and Williams, 2004).

Tourism is a complex phenomenon as it is affected by political, social, economic and cultural factors (Bunghes, 2016). These factors are interconnected, creating even more complexity (Bunghes, 2016). Political factors are defined by how governments manage tourism. Governments have the power to create legal and financial frameworks and through these frameworks, establish security and political stability. They also provide basic infrastructure and essential services needed for tourism. The reason for governments to be involved in tourism is mainly due to its economic importance. (Elliot 1997; Shaw and Williams, 2004). The economic importance of tourism is the cash flow it entails for the host country (Bunghes, 2016). The importance varies between countries, where some countries rely mainly on tourism while it only is a subpart of the economy for other countries (Bunghes, 2016). The social and cultural impact of tourism is difficult to measure as it is indirect or unknown and subjective (Haley et. al. 2005). There are some negative social and cultural aspects for the host country, such as overcrowding, noise and litter (Haley et. al., 2005). The positive aspects include improvements in local infrastructure, an increase in jobs for locals and an increase in recreational opportunities (Haley et. al., 2005).

Tourism creates opportunities that could be generalized in terms of diversification and growth (Shaw and Williams, 2004). These opportunities are most evident in economic terms, where tourism stimulates economic growth worldwide (Shaw and Williams, 2004). It is usually more important in less developed countries as it provides a base for reconstructing and developing the country with the cash flow that inbound tourism brings (Shaw and Williams, 2004). Tourism also entails risk reduction through diversification, making countries less dependent on other sectors for economic prosperity (Shaw and Williams, 2004). Travelling is vital for the traveller, and diversification is evident in social-cultural terms, where it contributes to more cultural alternatives for travellers and residents in the host country (Shaw and Williams, 2004). The objective of travelling, motivation for travelling and satisfaction from travelling are three critical concepts for understanding why people travel (Pizam, Neumann and Reichel 1979). Motivation to travel is an internal drive based on the travellers' needs and attitudes (Pizam, Neumann and Reichel, 1979). The objective of travel is the formulated reason why the traveller travels (Pizam, Neumann and Reichel, 1979). The objective is a conscious and tangible reason to act in a certain way but is unconsciously governed by motivation (Pizam, Neumann and Reichel, 1979). The tourism industry's primary objective is to serve travellers and to make the customer satisfied (Camilleri, 2018).

Therefore, there needs to be a close collaboration between different service providers within the tourism industry (Camilleri, 2018). It is important for the tourist to be able to travel quickly and efficiently, making air travel the dominant form of transportation for distant destinations (Camilleri, 2018). Information about the destination is also valued by the tourist when making their decision (Camilleri, 2018).

2.2 Motivators for traveling

Travel motivators are determined by the needs that drive a person to engage in a tourist activity (Pizam, Neumann and Reichel, 1979). Travelling is derived from the need to engage in activities that are spatially separated (Salomon and Matan, 2015). It is used as an instrument to satisfy these needs (Salomon and Matan, 2015). Understanding what drives individuals to travel is favourable to figure out the basics of motivation as it explains what makes people act in general (Salomon and Matan, 2015).There are several theories from psychology that explain motivation, and one of the most well known is Maslow's hierarchy of human needs (Salomon and Matan, 2015). Maslow categorizes the human needs in a hierarchy, usually presented in the form of a pyramid. The needs lower down in the pyramid needs to be satisfied before the individual can attend to those higher up. From the bottom and upwards are the physiological needs, safety needs, belongingness and love needs, esteem needs and self-actualization (Maslow, 1943). The physiological needs such as water, food, sleep and shelter generate essential travelling for survival, for example, going to the grocery store or eating out (Patricia, Salomon and Matan, 2015).

Furthermore, these needs mostly make the traveller value time as it gives them the possibility to sleep and eat more (Patricia, Salomon and Matan, 2015). Safety needs motivate travelling for work, exercise and religious reasons (Patricia, Salomon and Matan, 2015). Here, the traveller might avoid specific modes of travelling or destinations due to safety aspects (Patricia, Salomon and Matan, 2015). Belongingness and love need to compel travelling for social activities, where the individual can interact with other people (Patricia, Salomon and Matan, 2015). Esteem needs make the individual travel for status, adventure or independence (Patricia, Salomon and Matan, 2015). Finally, the need for self-actualization enforces travelling due to curiosity and seeking variety (Patricia, Salomon and Matan, 2015). Travelling is an activity that can satisfy the individual's different needs, especially the esteem and self-actualization needs (Patricia, Salomon and Matan, 2015).

There are a couple of bases for why people travel. It could be economic, legal or family obligations, meaning that the motivator for travel is to work, visit a public institution or attend a family event (Shaw and Williams, 2004). There could also be a place or live obligations, where the tourist wants to experience a particular place in real life or a live event (Shaw and Williams, 2004).

According to Uysal and Jurowski (1993), there are push and pull factors that motivate people to travel. Push factors are internal socio-psychological motives such as the desire to travel, seeking adventure or relaxation by escaping everyday life (Uysal & Jurowski, 1993). The pull factors are external that arise from the destination (Uysal & Jurowski, 1993). It consists of tangible and intangible reasons for why a specific destination is attractive for a traveller, such as a historical attraction, food or the marketed image of the destination (Uysal & Jurowski, 1993). The push factors are useful when explaining the desire of the tourist to travel while pull factors are used to explain the choice of destination (Uysal & Jurowski, 1993).

There are several different motivators for travelling and also barriers that hinder people to travel. In figure 1 is a compilation of motivators based on the work of Boyd (1997).

Type of motivator	Description of motivator
Personal	The desire for new knowledge, improve self-esteem, change in routines, improve health and family research.
Social	Interaction with friends and desire to cultivate new relationships.
Adventure	The desire for exploration and challenge.
Business/Professional	Work related traveling, scientific expeditions, and educational trips.
Cultural	The desire to explore history, art, religion, language etc. of different people.
Environmental	The desire to visit new places and experience new scenery.

Table 1. Different type of motivators for traveling. (Drafted by the researchers based on Boyd, 1997.)

Camineli (2018) categorizes travellers into two types. Those who travel for personal reasons and those who travel for business reasons (Camineli, 2018). The main difference between these two types is financial, as business travellers expense being paid by their employer, whereas leisure travellers might be price-sensitive (Camineli, 2018). In addition, business travel can be planned at any time, whereas leisure travel has to be planned carefully to match cost and time (Camineli, 2018). From travellers' different motivation factors, many types of tourism can be identified (Camineli, 2018). These types of tourism are compiled in figure 2 and are based on the work of Camineli (2018).

Types of tourism	Description of tourism
Business tourism	Traveling due to business, such as attending a conference. Usually the destination is beyond the traveller's choice.
Nature tourism	Traveling to visit a natural setting or wildlife.
Cultural tourism	Traveling for the history and lifestyle of a location.
Social tourism	Traveling with other people or to meet people.
Recreational tourism	To obtain new experiences and get away from the daily routine. This can be either to relax from the stress created by work or to escape from city life.
Active tourism	Travelling to join activities such as climbing a mountain or simpler to learn a new language.
Sports tourism	Visiting a place to participate in or to observe a sporting event.
Health tourism	Aim to improve someone's health.
Adventure tourism	Offering a challenge or an adventure such as hiking a tropical forest.
Volunteer tourism	This type of tourism has gained popularity in recent years, the aim of which is to assist local's lives. In general, defines volunteers with purpose to "do something good".
Agritourism	Offering of accommodation such as experience of farm life, leisure activities and activities associated with the environment.

Table 2. Different types of tourism. (Drafted by the researchers based on Camineli, 2018.)

Another type of tourism is related to agriculture. Agritourism, as it is called, differs from one country to another. In some places, it is just an offering of accommodation, and in other places, agritourism offers the experience of farm life to tourists. The most suited explanation of agritourism is that accommodation also includes leisure activities, cultural events, and activities associated with the environment. In some countries, this type of tourism is in primary phases, whereas in other countries it has existed for many years like Sweden, in which agritourism accounted for 20% of tourism (Papanis, & Kitrinou, 2011). The reason for explaining more of agritourism is due to the fact that the study is within Sweden and 20% is a significant number, thus it is an important type of tourism in Sweden.

2.2.1 Travel Barriers

Even though a motivator traveller is more likely to succeed in overcoming obstacles and visit the destination of its preference, some barriers might affect the choice of the final destination or the choice of becoming a tourist in the first place (Dolnicar, 2005; Camineli, 2018). The two significant barriers are time and cost (Dolnicar, 2005; Camineli, 2018). In order to plan a trip, it takes time to search for accommodations, transportation mode, and commitments such as a job that might limit the duration of travel. Further, financial commitments and low budget availability can affect the destination (Dolnicar, 2005; Camineli, 2018). Other considerable obstacles are health, family stage, i.e. families with young children or family commitment and fear of political stability or crime rate (Dolnicar, 2005; Camineli, 2018). Camineli (2018) also points out that age is another factor that affects someone's decision to travel.

Additionally, Papanis & Kitrinou, (2011) found out that about 17% of the participants chose Lesbos island (agritourism in Lesbos island was considered in their study) as a destination because of the low-cost transportation and accommodation. In addition, barriers may vary between different types of tourism. For instance, adventure tourism will not consider safety to the same extent as someone who wishes to travel for cultural reasons (Dolnicar, 2005). Another barrier that can be considered is the structure's advantages and disadvantages. For example, there might be long distances with inadequate transport infrastructure in rural areas (Almstedt et al., 2016).

Dolnicar (2005) conducted a study about perceived risk regarding tourism. The finding showed that travellers are concerned about political risks such as terrorism and political instability, environmental risks such as natural disasters, lack of healthcare and clean food/water (Dolnicar, 2005). Another issue is the planning risk, as not all tourism operators are reliable, which could lead either not to travel or not to leave the host country (Dolnicar, 2005). Lastly, concern about their property at the risk of theft is a barrier to leaving their home (Dolnicar, 2005). Although those risks are less conserved on domestic travel, on the other hand, when it comes to overseas travelling, there is a significant concern about the above factors (Dolnicar, 2005).

Tourist activity is closely connected to the environment (Holder, 1988; Green, 1990; Ogarlaci and Tonea, 2012). Due to the standardization that tourism entails, the host country could lose cultural values and authenticity (Holder, 1988; Green, 1990; Ogarlaci and Tonea, 2012). Traveling also increases pollution through emission from the vehicle used to travel

(Holder, 1988; Green, 1990; Ogarlaci and Tonea, 2012). These problems could potentially hinder tourists from travelling to specific destinations and therefore create travel barriers (Holder, 1988; Green, 1990; Ogarlaci and Tonea, 2012). These barriers are that some destinations become less attractive due to the standardization or that environmental consciousness inhibits tourists from travelling longer distances (Holder, 1988; Green 1990; Ogarlaci and Tonea, 2012).

Furthermore, natural disasters or terrorist attacks can happen beforehand without permitting tourists to travel in the first place (Higgins-Desbiolles, 2020). Such examples are the Tsunami that occurred in 2005 in the Indian Ocean region and the terrorist attack on 9/11 in the United States in 2001 (Higgins-Desbiolles, 2020).

Hall C. et al. (2020) stated that during the 20th century, diseases had affected many countries. However, no disease has affected all countries worldwide at the same time (Hall C. et. al., 2020). An outbreak of disease can damage the country's economic tourism and social impact. For instance, such a negative impact occurred in 2015 in Korea, which due to an illness, the estimated tourist loss was $ 2.6 billion (Hall C. et. al., 2020). Therefore, pandemic COVID-19 is a disease not similar to previous cases, as it causes problems to the tourism industry globally (Hall C. et. al., 2020).

2.3 COVID-19 impact on tourism

The first patients with COVID-19 disease were diagnosed in December 2019 in the city of Wuhan (Yang T. et al., 2021) and until 16 December 2020, the disease has been spread through 200 counties, counting 71.58 million cases and about 1,619,000 deaths (Yang T. et al., 2021). Despite the risk of death from the infection, it also psychologically affects people worldwide (Yang T. et al., 2021).

One of the significant barriers is the COVID-19 pandemic, which has negatively affected the tourism industry (Kreiner & Ram, 2020). Crisis in the tourism industry has occurred many times before (Sönmez et al., 1999; Blake & Sinclair, 2003; Hall, 2010). However, there was no similar crisis compared to the one caused by pandemic COVID-19 from an economic perspective (Hall et al., 2020). Over time tourism destinations have been affected by natural and human causes but overcome by developing strategies (Kreiner & Ram, 2020). Nevertheless, COVID-19 is considered a unique crisis, not similar to other crises (Kreiner & Ram, 2020). Firstly, the negative impact on travelling and hospitality has affected tourism worldwide (Kreiner & Ram, 2020). Besides, there has been a significant collapse of

the economy (Kreiner & Ram, 2020). Data from the "World Tourism Barometer and Statistical Annex", released by UNWTO in January 2021 showed that there was a 74% drop in international arrivals in 2020 in comparison to 2019 (UNWTO, 2021). This reduction was due to the travel restriction and the massive drop in demand that the COVID-19 pandemic entailed (UNWTO, 2021). The estimated loss in export revenues was 1.3 trillion USD, which is more than 11 times an enormous loss than recorded during the global economic crisis in 2009 (UNWTO, 2021). Furthermore, there is no knowledge, nor can someone predict when this ongoing pandemic will be overcome (Kreiner & Ram, 2020).On the other hand, it has the potential to form modifications in some tourism sectors and set the fundamentals for new habits (Kreiner & Ram, 2020).

The future impact of the COVID-19 pandemic on the industry sector is impossible to predict, but according to the latest survey conducted on the "UNWTO Panel of Experts" almost half of the respondents (45%) predict an improvement in 2021 compared to last year, 25% predict a similar impact as last year and 30% believe that the result will be worse for 2021 (UNWTO 2021). The overall opinion about the significant rebound for tourism in 2021 has worsened among the panel of experts within UNWTO since October 2020 (UNWTO 2021). In the last survey conducted in October 2020, 79% of the respondents believed in recovery during 2021 (UNWTO 2021). However, the survey in January 2021 shows that 50% of the respondents believe that a rebound will not happen until 2022, while the remaining half still see the potential for a rebound in 2021 (UNWTO 2021). Reasons for believing in a rebound during 2021 are based on expectations of a gradual reversal of the COVID-19 pandemic. This is due to the rollout of a COVID-19 vaccine, improvement in travellers confidence and a reduction of travel restrictions. (UNWTO, 2020).

Another impact of COVID-19 in tourism, according to Hall C. et al. (2020), in a short-term period, has made changes in consumer and industrial behaviour, such as risk assessment, economic capacity and willingness to travel, participating in activities and use of transport modes. In addition, the accommodation sector for the week of 21 March of 2020 reported a 50% decline compared to the same week in 2019 (Hall et al. 2020). Furthermore, for tourists in the meantime, COVID-19 has affected their destination, as there were changes to transport links and connectivities between countries (Hall et al. 2020). Also, it affected tourists' health security, as using other links to reach their destination could affect their health insurance (Hall et al. 2020).

In the long run, COVID-19 will affect transportation as many changes have occurred on distribution and connections between regions (Hall et al. 2020). Further, it will affect

people's choice of destination and the usage of transport mode. In addition, changes will occur in health security requirements, and changes will occur in consumer behaviour (Hall et al. 2020). As in many regions, quarantine restrictions have been applied (Hall et al. 2020). There is a chance for some people to keep being in quarantine even after the end of the mandatory quarantine, leading people to isolation and affecting even the most willing travellers (Hall et al. 2020). In addition, some destinations might lower the cost in term to increase visitors and employment, thus more outbreaks of the disease of COVID-19, whereas others might increase restrictions (Hall et al. 2020). On the other hand, it might increase competition in telecommuting and local and domestic travel (Hall et al. 2020). In addition, Higgins-Desbiolles F. (2020) states that this situation might be a chance for the tourism industry to reshape and set a new better infrastructure for the future of the industry and the environment.

In addition, Sweden has been affected by COVID-19 as well. Due to the ongoing situation, Sweden has set it as mandatory for inbound travellers to present a negative COVID-19 test (Sweden, 2021), which can also be identified as a barrier.

2.4 Information Communication Technology

Technologies have become an essential part of the tourism industry and tourism e-commerce (Wang et al., 2017). Accommodations, airlines, and attractions have adopted technologies to replace traditional face-to-face service strategies (Wang et al., 2017). Moreover, technologies affect travellers' decisions to travel as they can be problem-solving for them and may offer effective and significant learning outcomes (i.e. educate about history), enjoyment (i.e. cultural events), and experience (Wang et al., 2017). For instance, it improves the communication between the demand and supply side (Pitoska E., 2013). In addition, technologies provide travellers with efficiency, convenience, and greater control (Wang et al., 2017). Technologies assists the demand side to access accurate information and, finally, the best prices within the market (Pitoska, 2013). Also, it increases reservations in hotels and sales in general within the industry (Pitoska, 2013).

According to Papanis & Kitrinou (2011), information and communication technologies are vital elements to support the alternative types of tourism. Further, they state that remote Information Communication Technologies can provide diversification and innovation in those areas and support the economic growth of rural and island areas (Papanis

& Kitrinou, 2011). On the other hand, they identify the problem that many rural areas do not have the necessary infrastructure to support remote tourism (Papanis & Kitrinou, 2011). Nevertheless, Zaidan (2017) states that even though some places lack e-tourism infrastructure and embrace the internet at slow rates, the impact it has is significant, making more and more countries investing in e-tourism. Besides, according to Pitoska (2013) e-tourism is the digitalization of the tourism industry and its infrastructure, thus information communication technologies and e-tourism are considered the same.

The advantages of E-tourism is that it provides successful information in time, more accessible communication with suppliers and comparison of prices (Pitoska, 2013). Also, emerge competitiveness between touristic industries by providing transparency, speed, flexibility and variety of choices for the customers (Pitoska, 2013).

Rui-Gomez et al. (2018) identified that many purchases had been made through e-tourism. However, the various infrastructure between countries divide regions between more and less developed in terms of e-tourism. In addition, digitalisation transformed the tourism sector, changing the entry barriers, assisting in price transparency and competition, optimising cost and increasing production efficiency.

2.5 Digitalization of transportation

Governments worldwide shut down parts of the society to reduce social contact between people aiming to minimize the outbreak of the COVID-19 pandemic (Sulkowski, 2020). Due to this situation, there has been virtualization of the economy and social life resulting in less transportation worldwide (Sulkowski, 2020). For example, many schools are teaching from a distance, and many people work from home (Sulkowski, 2020).

Xu et al. (2020) identified two types of digitalization that might help with tourism: digital tourism and virtual tourism (Xu et al., 2020). Digital tourism has been the main focus of tourism authorities and enterprises since the 1980s (Xu et al., 2020). The main reason is that it assists tourism administrative departments with supervision and services (Xu et al., 2020). In addition, it provides unique functions for enterprises such as displaying images and product sales and services for individuals such as food, accommodation, shopping and entertainment (Xu et al., 2020). Besides, digital tourism is a computer application system offering precise real-time information (Wang C., 2011; Xu et al., 2020). It provides updated information in time with the help of technical support such as remote sensing, geographic

information system, global navigation satellite system, communication technology, data mining, network/internet technology and so on (Wang C., 2011; Xu et al., 2020). Wright C. (2015) refers to digital tourism as a solution for individuals to escape from the daily routine, feel relaxed and enjoy nature.

Virtual tourism is based on virtual reality-based computer technology, 360-degree panoramic experience technology and 3D animation technology (Xu et al., 2020). In contrast with traditional tourism, tourists might sense the same experience with real tourism without leaving their home (Xu et al., 2020). Yang et al. (2021) defined a "virtual tour" as a three-dimensional world that can offer the same or exceed a visitor's experience, as it represents an actual destination or attraction (Xu et al., 2020, Yang et. al. 2021). Furthermore, virtual tours may improve an individual's motivation to become a tourist and assist in choosing the proper destination for a vacation, as individuals are able to choose the virtual destination (Xu et al., 2020, Yang et. al. 2021). In addition, virtual reality provides a sense of presence and the feeling of being involved and active, as it offers individuals to navigate and interact with the environment (Xu et al., 2020, Yang et. al. 2021).

According to researchers, virtual reality can be an alternative solution and similarly affect the tourism experience (Yang et al., 2021). It can provide a variety of images and sounds that the brain receives and responds to (Yang et al., 2021). Virtual reality has been argued to provide the same sense of exposure to nature for isolated people and help them reduce stress and improve their psychological health (Yang et al., 2021). This kind of technology has been used since 2001, aiming to improve individuals' health and is considered a tool of reducing patients' stress (Yang et al., 2021). Therefore, virtual reality is suggested as a solution tool to help with the COVID-19 situation (Yang et al., 2021).

In addition, the potential positive impact of virtual reality technology on tourism had been identified in the 1990s, and from 2000s, it was used to represent interplanetary voyages, fantasy worlds and theme park experiences (Yang et al., 2021). However, nowadays, the use of virtual reality in tourism is more beneficial as it gives the possibility of planning, management, marketing, and heritage preservation (Yang et al., 2021). Moreover, as mentioned, it gives the option to visit a place before arrival and afterwards if needed to extend the experience (Yang et al., 2021). Another critical factor is that it minimizes the distance between travellers and destinations, as individuals do not have to use transportation to arrive at the destination (Yang et al., 2021). Furthermore, based on the Technology acceptance model (TAM) virtual reality, it has to be noted that virtual reality has a positive effect in terms of perceived usefulness and perceived ease of use (Yang et al., 2021). Virtual

tours also offer two dimensions of security (Xu et al., 2020; Yang et al., 2021). First, virtual tours are safer than natural tourism, for example, a safari experience (Xu et al., 2020; Yang et al., 2021). Second, cultural relics, facilities and attractions cannot be vandalized by visitors (Xu et al., 2020; Yang et al., 2021), and ecotourism can be protected from extinction, as people will not interact with it (Wang C. 2011).

In their research, Yang et. al. (2021) tested whether presence, telepresence, enjoyment, and involvement are positively associated with an increased people's satisfaction with virtual tour experience and defined psychological stress as a negative factor (Yang et. al., 2021). The results showed that individuals perceived increased satisfaction with all the above factors (Yang et. al., 2021). Also, found out that with virtual tours, there was a reduction of psychological stress (Yang et. al., 2021).

Due to COVID-19 restrictions, many museums have adopted those methods to exhibit their collection and allow people to become tourists. Some museums are using 360-degree virtual reality, audio guides, and AI technology (Nowakowski, 2021). At the moment, many museums in Stockholm offer this service and exhibit some collections for free (Nowakowski, 2021). Furthermore, more museums are offering virtual tours in order to entertain tourists who are stuck at home (Romano, 2020). More than 2500 museums worldwide offer the chance to educate and entertain people virtually, while at the same time, travellers can enjoy their lunch or by having coffee on their couch (Romano, 2020). Some of the most famous museums are the British Museum, Guggenheim Museum, National Gallery of Art, Musee d'Orsay etc (Romano, 2020). . Except for museums, other attractions offer the same possibilities as the New's York Metropolitan Opera (Romano, 2020). According to Xu et. al. (2020), virtual technology is being used by Museums, offering tour guides, explaining services and offering the possibility of taking photos with just a click of their mouse. Also, it can become a means of a visit by important people without risk of their lives such as princes and princesses (Xu et. al., 2020).

Moreover, in May 2020, the Ohio Pharmacy Resident Conference had to be cancelled due to the COVID-19 pandemic (Rush et al., 2020). Many alternative options were tested, such as a virtual poster presentation, recorded podium presentation and a remote conference (Rush et al., 2020). After testing the option, a remote conference was held with the help of video technology as it could help without cost and provide the same experience with an in-person presentation (Rush et al., 2020). Some changes were made to manage the way that conferences' presentations went from face-to-face to virtual utilizing popular platforms (zoom, Video communication, etc.) (Rush et al., 2020). Secondly, there were tutorial/practise

sessions in order to hold the conference without unwanted errors (Rush et al., 2020). The necessary IT technology was established in the respective institutions to troubleshoot any related problem (Rush et al., 2020). Thirdly, it provides the possibility of evaluating each other's presentations and digitally saving them using an online assessment form (Rush et al., 2020). This change allowed recording presentations and adding them to the archive in a digital database (Rush et al., 2020). Moreover, Gothenburg, the second-largest city in Sweden, has taken the chance to present the city's history and places through virtual reality (All events, 2021).

Virtual reality is so helpful that other industries have adopted it as well. For example, Volvo uses virtual reality to offer customers the chance to do a test drive or customize the car they want to buy without visiting any dealer shop (Volvo, 2021).

Working from home is also a phenomenon that is increasing due to the COVID-19 pandemic (Gottlieb et al., 2020). Teleworking is used to minimize travelling and reduce interactions between coworkers to adhere to the social distancing restrictions implemented during the pandemic. (Gottlieb et al., 2020).

The topic of digitalization in tourism has gained popularity in Sweden, as can be seen in a project driven by Tillväxtverket and Swedish Tourism called “Visit the Future” (Tillväxtverket, 2021). The aim of this project is to increase and support the use of digitalization within tourism to strengthen competitiveness and contribute to a sustainable development in a rapidly changing world (Tillväxtverket, 2021).

Even though technological solutions can improve the quality of life for people during the pandemic, there are some limitations (Porpiglia, 2020). Human contact, emotions and affections are close to impossible to reproduce with an online platform (Porpiglia, 2020). Several formal and informal interactions are at risk to disappear, hindering the opportunities for networking (Porpiglia, 2020). In addition, even before the pandemic, Wang et al. (2017) identified potential problems from technology such as frustration, anxiety, stress, isolation and dissatisfaction.

2.6 Industrial readiness for change/digitalization

Understanding change within the tourism sector requires an understanding of the behaviour of the consumer and residents in the host country, governmental involvement

(Dredge, 2010) and the perception of the companies operating in the sector (Dredge et al., 2013).

Consumer behaviour research focuses on understanding the consumers' activities, decisions, ideas and experiences that satisfy the needs of the consumer. It includes the decision process and several other activities involved in consuming, obtaining, and disposing of products or services (Solomon, 1996; Engel et al., 1995). According to Cohen, Prayag & Moital (2014), there are ten different and interconnected critical concepts for understanding consumer behaviour within the tourism sector. These are *motivation, decision making, self-concept and personality, values, attitudes, perceptions, expectations, trust* and *satisfaction*. *Motivation* is defined as the biological and psychological needs that the consumer inhibits and is often described with a push-pull approach. The consumers are pushed by their internal needs and pulled by the external attributes of the destination (Yoon & Uysal, 2005). *Decision making* is a complex subject. The general view is that consumers are rational decision-makers that follow the sequence from the attitude that leads to intention and creates behaviour (Decrop & Snelders, 2004; Decrop, 2010). The complexity of decision making for tourists comes from the fact that it involves several decisions about various elements of the vacation route (Decrop & Snelders, 2004), some that are made before the arrival and others that are made at the destination (Cohen, Prayag & Moital, 2014).

Self-concept and personality define the tourist cognitive understanding about themselves and qualities that lead to stimulus responses around the tourist. *Self-concept and personality* have an essential role in decision making, product choice, purchase behaviour, risk-taking, attitude and perceptions (Kassarjian, 1971). A *value* is a belief the consumer holds about a specific product or service. Values influence the consumer because it makes them believe a product or service is more personally or socially preferable than other products or services (Rokeach, 1973). Attitudes are learnt behaviour and affect the consumers' perception. It is measured by the consumer's favorableness or unfavorableness of certain things or events (Schiffman & Kanuk, 1997; Ajzen & Fishbein, 2000). *Perception* is the process of selecting, organising and interpreting stimuli in a valuable and consistent way. It is based on motivations, values and previous experience and determines what the consumer expects (Schiffman & Kanuk, 1997).

Further, the consumers' *expectations* influence satisfaction, where higher expectations make it harder for the consumer to be satisfied (Cohen, Prayag & Moital, 2014). Trust is created by exceeding the expectations of the consumer (Fam et al., 2004) and is crucial for determining future behaviour (Kim, Chug & Lee, 2011). *Trust* is considered either an attitude or a behavioural intention (Cohen, Prayag & Moital, 2014).

The majority of studies on residents' perception of tourism have focused on social, environmental, cultural, and economic factors (Chiang & Huang, 2012). Economic benefits

with tourism have a positive and direct impact on the support from the residents (Jurowski et al., 1997). Furthermore, the economic benefits increase the tolerance for the harmful effects of cultural and social factors (Wu, 2003).

The use of technology and satisfaction of it derives from the traveller's technology readiness. Technology readiness is defined as *"the propensity to embrace and use new technologies for accomplishing goals"*. This factor is an essential determinant to consumer behaviour in adopting technologies and is crucial as it sets the basis for understanding travel behaviour. Nowadays, people are travelling more often with digital and virtual solutions. Thus technology readiness is highly associated with tourism. In order to achieve technology readiness, there is an evaluation of quality, satisfaction, experience and future behavioural intentions. Moreover, it has to be mentioned that factors shaping technological behaviour may vary from country to country and cultures (Wang et al., 2017).

According to Wilson et al. (2001), governmental support is crucial for tourist development. This is because of the government's responsibility for the political stability, safety and infrastructure of the country (Quian, 2010).

Mobey, 2007 has created a six-step model for change. The first step is to establish a sense of urgency, and here it is essential to institute the need for change and make it apparent for all stakeholders involved. The second step is to create a guiding coalition. Here, the agenda, rules and network are defined concerning the communities values. Step three is to develop a vision and strategy. The future and what is sought after to be achieved is articulated. The fourth step is about addressing cultural issues. This is done by blocking opposition or switching roles if needed. The next step is to manage the transition. Here, the sponsor needs to be informed by using selected reports and symbols that represent success. The last step is to institutionalise the change. Desirable attitudes and behaviours are recognised within the community and rewarded.

3. Method

3.1 Research Design

According to Collis & Hussey, 2014 the first thing to do is to identify the research paradigm. The research paradigm is a model that regulates how the research is conducted. It is based on people's philosophies and understanding of the world (Collis & Hussey, 2014). There are two main paradigms, positivism and interpretivism. Within positivism, the belief is that reality is independent of the researcher, and the objective is to find theories based on the empirical research conducted (Collis & Hussey, 2014). There is also an understanding that everything is measurable and quantitative methods based on statistical analysis are usually used (Collis & Hussey, 2014). Quantitative data refers to data having a numerical form. Interpretivism originated from the opinion that positivism was insufficient for capturing data within social science (Collis & Hussey, 2014). In accordance with the interpretivism paradigm, the social context is impossible to separate from the people being studied, and their perception of the activities needs to be taken into account (Collis & Hussey, 2014). The belief is that social reality is not objective but rather highly subjective (Collis & Hussey, 2014). Therefore, the researcher must consider how their subjectivity and the subjectivity of the target group is affecting the research (Collis & Hussey, 2014). Any research that does not use statistical analysis of quantitative data is concluded to be interpretive research (Collis & Hussey, 2014).

Instead, the data obtained through qualitative methods are interpreted as qualitative research data. Qualitative data is defined as data in nominal (named) form (Collis & Hussey, 2014). This study will focus on collecting both qualitative, quantitative data and adhere to the interpretive paradigm. With the help of an analytic hierarchy process (AHP), some qualitative data will be translated into ratio scaled data which is more reminiscent of quantitative data. The reason for this approach is to break down the complexity of intangible factors entailed in qualitative methods (Wedely, 1990). In addition, a qualitative approach brings flexibility to the research process and allows for new and unpredicted information to arise (Bryman & Bell, 2015).

The primary purpose of this research is to measure if Sweden is ready for the digitalization of transportation. Therefore, the measurements of readiness need to be defined

and applied to the case of Sweden. In this study, readiness is measured by technological response and readiness, the supply and demand of e-tourism, customer acceptance, and the attitude of the stakeholders operating in the tourism industry. With e-tourism, we refer to a digitalized approach to tourism. To answer the above question, firstly, we examined whether digitalization can be an alternative option for travelling utilizing literature. Then, having answered this question positively, we investigated which type is more ready to turn into a digital approach.

The theoretical framework is used as a foundation for the questions in the interviews. The empirical data collected for the research is from interviews with experts within the tourism industry. According to Ericsson & Charness (1994), an expert is somebody with deep knowledge, skill and experience in a particular field, either through practice or education, and this definition is adopted in this research.

Based on the above, our research topic belongs to the positivism paradigm, as we gather numbers, and our findings are based on statistical data.

3.2 Data collection

Data collection is divided into two categories. Primary data were collected through interviews with experts within the tourism industry in Sweden, and secondary data collected through scientific articles, books and online publications. The focus is on qualitative data, which were analyzed partly through a quantitative method. According to Collis & Hussey (2014), this form of data generally takes an outside perspective on the research question and provides a broad perspective for people's choice, and this is what makes this approach important (Mangan et al. 2004). Further, a quantitative approach is a dominant approach in logistics research (Näslund 2002, Halldorsson & Aastrup 2003). In addition, these two approaches, quantitative and qualitative, could be a good complement to each other. Also, logistics research can benefit from a mixed method approach as it is a complex environment (Näslund 2002, Halldorsson & Aastrup 2003). Thus, in this assignment, a mixed method will be used in order to provide as accurate data as possible.

3.2.1 Primary data

Primary data is obtained by the researcher, often through interviews, experiments or surveys (Collis & Hussey, 2014). In this research, primary data were collected through both

structured and semi-structured interview formats. Interviews are conducted by the researcher asking the participants questions to find out how they feel, think or do. Within an interpretive paradigm, the objective of the interviews is to analyse understandings, attitudes, opinions, etc., that the participants have in common (Collis & Hussey, 2014). According to Collis & Hussey (2014), in-depth interviews with people holding prime positions with knowledge can be applied in both a positivist and interpretive paradigm. A large sample is unnecessary because the aim is to get an insight, not generalise the sample to the population. In order to collect the data for analysing it in a quantitative way, structured questionnaires have to be used for the participants, asking the same question in the same order (Collis & Hussey 2014). According to Patel & Davidsson (2011), two key concepts need to be considered before the interview: the degree of standardisation and structuring. Standardisation defines how much responsibility the interviewer has regarding the design and sequence of the questions. The structure of the interview questions shows the freedom degree that participants have of expressing their views and the flexibility of interpreting their answers by the researcher. A lower degree of standardisation and structuring opens up the possibility of collecting knowledge that the researcher had not thought was significant beforehand. In order to collect data for the AHP method, the questions in the interviews need to be close-ended (Wedley, 1990).

A qualitative approach will determine whether travellers to Sweden are ready to adopt digital tourism to replace physical movement. Interviews were held with people considered experts within tourism. The reason for choosing this approach was that not all travellers are considered experts, and by conducting a survey and distributing a link might be accessed from not validating candidates and providing false reports. In addition, the focus was on inbounding tourism and domestic tourism.. Thus interviews were adopted as the most beneficial method to get the valid response for our research object. According to Collis & Hussey (2014), an interview provides a better understanding, accurate communication and gathers in-depth information. In the first part of the interview, structured questions were used, asking the expert to rank the readiness of adopting a digital approach for different types of tourism. This data were analysed through the AHP method. In the second part of the interview, semi-structured questions were used to create a discussion regarding the subject. Within this study, many participants were asked to participate. However, only seven have agreed to participate, of which 6 participants were considered valid, as the seventh participant did not agree with the method and argued regarding the research topic. Below there is a table (table 3) with the valid participants with the valid sample, which from now on we call it

‘panel of experts’ as the sample is for a larger group of people, whereas a panel of experts is used to describe people with exceptional knowledge and opinion who need to evaluate something (Laidlaw 2014).

Respondent	Title	Date	Length of interview
Participant 1	Tourism Researcher	20/4/21	25 minutes
Participant 2	Tourism Researcher	22/4/21	45 minutes
Participant 3	Professor in tourism studies	28/4/21	35 minutes
Participant 4	Senior position head of development, special topic: tourism events	28/4/21	50 minutes
Participant 5	PHD in tourism	29/4/21	30 minutes
Participant 6	Researcher and teacher within tourism studies	30/4/21	40 minutes

Table 3: Respondents in the study

3.2.2 Secondary data

Data obtained from an existing source that can be used to create the theoretical framework of the research are considered secondary. When researching an interpretivist paradigm, the theoretical framework becomes vital to argue why the topic is essential (Collis & Hussey, 2014). Therefore, secondary sources were used to create the study's theoretical framework when the research objectives were defined. During the data collection from secondary sources, peer-reviewed scientific articles, books and UNWTOs database about tourism and COVID-19 impact on tourism were used. A peer-reviewed article means that an expert has reviewed the article within the same area before being published (Cambridge Dictionary, 2021), making the source more reliable. The majority of the articles were found using the search engines "Google scholar" and "supersearch" provided by the University of

Gothenburg's library. Common keywords that were used were *"tourism"*, *"e-tourism"*, *"COVID-19"*, *"travel motivation", "travel barriers", "Digitalization of tourism", and "Virtual tourism"*.

Secondary data regarding the tourism industry were collected aiming to investigate and understand the topic in depth, and utilise this information as a baseline for our research. Therefore, the literature review assisted our research to clarify why the tourism industry is essential and highlight important factors that impact the industry. Then, the focus was on travel motivators and barriers to better understand why people travel. Hence, it was essential to define e-tourism aiming to find out if it has the possibility to assist travellers' needs while minimizing travelling, which was the answer to the first research question. Lastly, data from secondary sources were collected regarding the behaviour of important stakeholders within the tourism industry. This data is essential to understand better how the stakeholders operate and if the industry is ready for change.

3.2.3 Data analysis process

After completing the interviews and collecting the necessary data, the data analysis was made with the Analytic Hierarchy Process (AHP) system. This method was developed in the 1970s by Dr Thomas Saaty in order to organize and analyze complex data. The AHP system is a pairwise comparison, which uses a quantifying approach to decision criteria made by experts' experience. In addition, respondents compare the relative importance of each pair of data with the help of a designed questionnaire. For instance, when somebody is willing to buy a new car, they have to set down which features are more important (i.e. safety, comfort, style, etc.) and evaluate them (Adams 2017).

Same for our data analysis, as we tested similar data, we found out which type of tourism is more likely or suitable to change into digitalization. This method of analysis was adopted because digitalization cannot apply to all types of tourism. Hence, this study separates the types of tourism that are easier to adopt this alternative and the others that are not ready yet.

AHP uses a pairwise comparison between qualitative or quantitative criteria to determine and rank the relative importance between each criterion (Dey, 2003). Therefore, the first step was to determine essential alternatives that can be used in the analysis. In this study, these alternatives were types of tourism that are compared to technological readiness in Sweden. Next, these alternatives were compared to determine the factor weight of each

alternative. After that, the data were used to evaluate each alternative relative to the total weight of all alternatives, and the alternative with the highest total weight in our case was considered the alternative that is almost ready for digitalization of travel motivator and tourism (Teehankee, 2009).

One advantage of the AHP method is that the analysis does not always need statistically significant sample sizes (Dias & Loannou, 1996). This is because the data are based on the expert's perceived perception and understanding of the topic (Schot & Fischer, 1993; Golden et al., 1989). Many conjoint analysis methods put relatively high cognitive pressure on the respondents as they were asked to compare options with several different attributes and levels within these attributes. This is not the case with the AHP method, as the respondents were not asked to make comparisons between several different options but instead to focus on one comparison at a time. Therefore, the respondents were less likely to apply mental shortcuts, where they could disproportionately focus on one attribute, making the result less prone to errors (Schot & Fischer, 1993).

3.1 Limitations

Due to the COVID-19 pandemic, there is a limitation to collect data from tourists coming to Sweden. Therefore, the focus on collecting empirical data is on experts within the field. The time restraint for this paper and the panel of experts that it was hard to find is another limitation, as it is challenging to find experts in such a short time. Another limitation is that one of the research questions has more aspects to evaluate, which requires further research. Another limitation in this study is the number of different types of tourism. In addition, fewer types of tourism might have provided us with a better consistency ratio. Nevertheless, since we are not experts, we could not combine types of tourism with similar characteristics. Nor could we decide to exclude some of them in this study.

3.3 Research quality

Research quality is mainly measured by two concepts, *reliability* and *validity*. According to Collis and Hussey (2013), *"Reliability refers to the accuracy and precision of the measurement and absence of differences if the research were repeated"*. *"Validity refers to the extent to which a test measures what the researcher wants it to measure and the results*

reflect the phenomena under study" (Collis and Hussey, 2013). One way to make sure that the research has high validity is to do an analysis of the methods used for collecting the data. This analysis is done from the theoretical framework, where the researcher makes sure that the questions formulated in the interviews are based on the literature studies (Patel and Davidsson, 2010). To make sure that the research has good validity the selection of literature for the theoretical framework is made with the research object in mind. Thereafter, the questions for the interviews are formulated based on the theoretical framework.

Critique against research conducted by qualitative methods is that the collected data is analyzed by interpretations. These interpretations are affected by the participants and the researchers past experience and knowledge, making the results more subjective in comparison to quantitative methods. Therefore, qualitative methods are at risk for low reliability as the collected data can be misinterpreted (Bryman and Bell, 2015). Also, the different infrastructure and culture between countries, means that the results for Sweden might not apply in other countries. An interview template will be used to make sure that there is a good routine during the interviews. When it comes to validity, we can be assured that the sample will not include people irrelevant to the subject as the participants for the interviews are selected based on their knowledge within the topic,thus calling them 'panel of experts'. According to Bryman and Bell (2015), there are four benchmarks that more accurately measure the trustworthiness of qualitative research then reliability and validity. These are; *conformability, dependability, transferability* and *credibility*.

Conformability is an important concept for qualitative research that measures how biased the participants are regarding the results of the research. It is desired to have low conformability as qualitative research has the tendency to be affected by subjectivity (Bryman and Bell, 2015). As the interviews will be conducted with experts that do not have any financial or material gain regarding the results of the study we believe that conformability will be low.

Dependability can be defined similar to reliability, i.e. how similar the results would be to the previous study if the research were conducted again (Bryman and Bell, 2015).As the study depends on a panel of experts, we believe that the findings will be quite similars, as experts share the same knowledge. On the other hand, the consistency ratio.. There was also a problem with high consistency ratio in the AHP method that might entail low dependability. This will be discussed further down in the paper.

Transferability outlines to what extent the results of the research is generalizable (Bryman and Bell, 2015). In this research, geographical differences are limiting the applicability of the results to Sweden.

Credibility measures to what extent systematic errors are excluded from the results. Systematic errors are assessed as consistent and are therefore deemed to be present if the research would be repeated (Bryman and Bell, 2015). Before the selection of participants, we made sure that the participants are considered "experts". Also, the questions asked in the interviews were based on the research objective. Furthermore, we did not record the interviews so that the participants will feel more comfortable. However, after the interview, we asked them if the data we collected was accurate, in order to avoid misleading data from our research. In addition, there was an exclusion of using data from interviews that were not fully completed.

3.4 Ethical considerations

When conducting research there are some ethical issues that need to be taken into consideration. Ethics refers to the principles or moral values that shape the code of conduct of the research. It covers how the research is conducted and how the results are presented (Collis & Hussey, 2014). There are several different aspects of ethics that need to be considered and in table 4 we conclude the ethical issues that have been taken into consideration and the approach taken in this research. The table is based on the work of Collis & Hussey, 2014.

Ethical issue	Approach in this research
Voluntary participation	Participants are informed that participation is voluntary and no financial or material rewards is used to induce people to participate.
Anonymity	Every participant has the right to be anonymous and is informed of this before the interview.
Confidentiality	Information can be made confidential if the participant wants it to.
Honesty & transparency	Participants were informed of the research object beforehand and the researchers strived for honesty and transparency when communicating with every involved stakeholder.
Dignity	The researchers show respect to the participant and will not try to coerce the participant to answer questions.
Deception	No lies or misleading behavior are used before, during or after the interview.

Table 4: Management of ethical issues (Drafted by the researchers based on Collins & Hussey, 2014)

4. Empirical data

4.1 Analytic Hierarchy Process

In order to analyze our data and figure out which is the most likely or suitable type of tourism to integrate a digital approach, we used the analytic hierarchy process (AHP) system. As we explained earlier the AHP is a quantifying approach to decision criteria made by expert's experience. With the help of a matrix, respondents compare the relative readiness of each pair. The question asked to respondents was "Which type of tourism is more ready to turn into a digitalization in comparison to another type of tourism?". The same question was repeated for all the types of tourism in comparison to each other. An example of the question is as follows: "Is the *business type* of tourism more ready to turn into digitalization in comparison to *nature type* of tourism?", after responding to this one, then the respondent had to reply to "Is the *business type* of tourism more ready to turn into digitalization in comparison to the *cultural type* of tourism?" and so on. The same pattern was used until each respondent rated all the pairs of tourism types. Once the question was made, the respondent had to mention which of the two compared types is more ready to turn into digitalization and rate with a number from 1 (equal) to 9 (extremely ready to turn into digitalization), the rating system can be seen at table 5.

The panel of experts was n=7, from which n=6 were classified as a valid panel of experts, since n=1 was unable to fill out the matrix and commented that once you remove the element of travel then each type cannot be identified as tourism. All participants were relevant to the subject matter and are considered experts according to the definition above within the tourism industry.

All the participants were provided with the same clarifications, and any further information needed was granted. To be more precise, the clarification of digitalization was provided as by that we mean digital tourism and virtual tourism, also, the explanation of them were provided. Also, we underlined that our purpose is only to suggest digitalization as an alternative way to reduce harmful emissions in the environment and not turn entirely into a digital form, as we both (us and the participants) agree that this is not something that can happen. Additionally, all the participants were asked their age because younger people are more adaptive to innovations and therefore have an increased likelihood of being acquainted with the relevant financial technologies (Blackburn 2011, Lee & Shin 2018).

Thus, we asked their age in case there was a considerable gap between respondents' answers. However, all participants answered almost in the same way and there was not a significant difference between their responses, thus any discussion regarding the age seemed irrelevant.

Rating	Meaning	Description
1	Equal	Both types have equal chances
3	Moderate	One of the types is slightly more likely that the other one
5	Strong	One of the types is strongly more likely than the other one
7	Very Strong	One of the types is very strongly ready compared to the other one
9	Extremely ready	One of the types is strictly more ready than the other one

Table 5: AHP ranking system (self made based on literature)

In table 6 are the summarized data from all the valid interviews that we gathered. In this table, it can be observed how participants responded to the question of "which type is more ready to turn into digitalization". Participants had to feel the row columns after the number "1". As mentioned above number "1" states that both types have equal chances. Thus the pairwise of the same tourism type is equal to "1". Once the participant filled the row-column, the vertical column could automatically be filled with the opposite ranking. The opposite ranking is as follows (1/3, 1/5, 1/7, 1/9), thus if one of the participants would rate a pairwise with 7 then on the same pairwise with the opposite question i.e. "Is the *nature type* of tourism more ready to turn into digitalization in comparison to *business type* of tourism?" automatically it would be filled with 1/7. In addition, each individual matrix can be found on the appendix part.

Types of tourism	Business	Nature	Cultural	Social	Recreational	Active	Sports	Health	Adventure	Volunteer	Agricultural
Business	1,00	7,50	3,83	5,67	6,17	7,33	4,33	7,33	7,33	6,83	6,50
Nature	0,14	1,00	0,18	0,60	0,53	0,75	0,33	0,78	0,87	0,37	0,50
Cultural	0,37	5,83	1,00	2,17	3,83	4,00	3,50	4,83	5,00	5,17	4,50
Social	0,32	3,00	0,74	1,00	2,00	2,83	1,16	2,25	2,42	2,09	2,76
Recreational	0,18	2,67	0,40	1,85	1,00	3,06	1,76	2,14	3,50	1,56	2,00
Active	0,16	2,33	0,38	0,54	0,86	1,00	0,61	1,39	1,50	2,07	2,53
Sports	0,35	4,83	0,51	3,20	1,76	3,00	1,00	2,25	2,67	2,20	2,87
Health	0,16	1,67	0,25	0,81	2,00	2,87	3,29	1,00	3,20	1,42	2,56
Adventure	0,14	1,67	0,24	1,72	0,44	0,88	0,72	1,26	1,00	0,84	1,29
Volunteer	0,15	4,00	0,32	1,75	1,11	2,08	1,31	1,87	2,89	1,00	1,22
Agricultural	0,16	3,50	0,34	1,72	0,67	1,30	1,18	0,96	2,44	1,22	1,00
SUM	**3,13**	**38,00**	**8,19**	**21,02**	**20,36**	**29,09**	**19,19**	**26,06**	**32,82**	**24,77**	**27,72**

Table 6: summary of data collected

Once the data were combined and calculated, we had to make the normality calculation in order to get our answer in which type is more ready to turn into digitalization. In table 7, we have ranked all the different types of tourism. On the top of the table it is presented the type of tourism that is most ready to turn into digitalization according to the experts' answers and at the bottom the ones which are the least ready.

Ranked	Types of tourism	Type weight	type in %
1st	Business	0,27729	27,64%
2nd	Cultural	0,15586	15,55%
3rd	Sports	0,09575	9,52%
4th	Social	0,08342	8,33%
5th	Recreational	0,07582	7,75%
6th	Health	0,0743	7,55%
7th	Volunteer	0,06497	6,47%
8th	Agricultural	0,05486	5,46%
9th	Active	0,0515	5,14%
10th	Adventure	0,04083	4,06%
11th	Nature	0,02541	2,53%

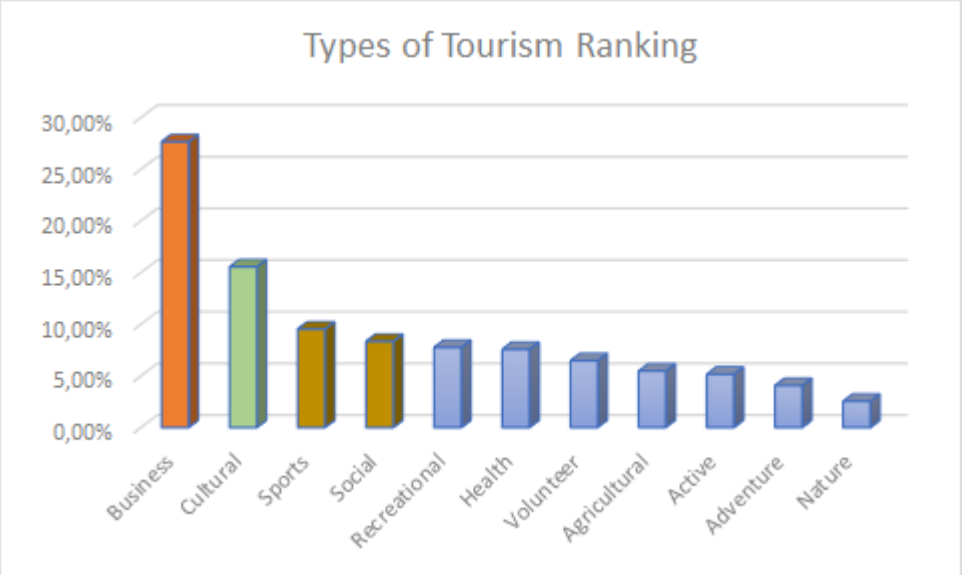
Table 7: Ranked types of tourism

The table shows that the top three ranked types of tourism that are more ready to turn into digitalisation in comparison to the other types are **1)** the **business** type of tourism, **2)** the **Cultural** type of tourism, and **3)** the **Sports** type of tourism. The least three likely are **1)** the **Nature** type of tourism, **2)** the **Adventure** type of tourism, **3)** the **Active** type of tourism. The business type of tourism compared to other types of tourism is more ready to turn into digitalisation. For a better understanding, graph 1 displays the ranking between the different types of tourism. Orange indicates the readiest category to turn into digitalisation as an alternative way of travelling. Then green displays the second more ready type, and brown shows the other two types with similar potentials to digitalise. Further discussion on ranking will be in the discussion chapter below..

After the normality calculations were done, we had to calculate the consistency ratio. The consistency ratio shows how compatible the respondents are with their answers (Saaty, 1980). Our consistency ratio was 0.779, as table 8 shows.

λ max	22,76
Ratio index n=11	1,51
Consistensy index	1,176
C. ratio	0,779

Table 8: Consistency ratio



Graph 1: Types of tourism ranking

4.2 Qualitative data

Once the data was collected for the AHP analysis, we asked the participants whether they wanted to be asked three more questions. All the participants were motivated to answer and help us further in our study.

Is a digital approach for tourism a good solution for environmental problems?

Tourism researcher (Participant 1)

Yes, you would avoid C02 emission by reducing travelling. But you also have to look at

emission from the technology that will be used. That will differ depending on how you power the technology. Either way, if you can avoid transport that is high in co2 emission, it will be good for the environment.

Tourism researcher (Participant 2)

I believe that it is not the solution but it could be one part of the solution, especially at the moment. If you look at the indicators, they measure growth as success which causes many problems through mass tourism. Tourism itself needs traveling, where more and more tourism becomes experience based and I don't see that digitalization will be able to replace that. It is possible that these types of tourism could be implemented in a local environment.

Professor in tourism studies (Participant 3)

Simply yes, I believe some technological solutions are a great idea. But it is a simple and not complete solution because a part of tourism is to travel for experience and it will be hard to find technology that could replace it.

Senior position head of development, special topic: tourism events (Participant 4)

That depends on what type of energy you use for tech and type of mode for transport. More than 10% of total emission worldwide is due to the internet, so where the energy for the technology is from is important. For example, if it is electricity produced by coal in comparison to traveling by bicycles then a digital approach would be worse for the environment. In general there are less emissions with a digital approach but there are always exceptions that need to be taken into consideration.

PHD in tourism (Participant 5)

It could be a good solution from an environmental aspect as it reduces emission. A digitized approach does still have emission by creating and powering the technology. On another hand it could be seen as a threat as tourism is dependent on people to visit places.

Researcher and teacher within tourism studies (Participant 6)

Yes, I believe it is a good solution. This is one direction that could make people travel less. One way to do this is to reduce traveling with digital technology. Now with the pandemic we have seen that it is possible. Companies have been starting to look at how they could earn money through digital traveling and that contributes to that direction.

Do you think that COVID-19 gives the tourism industry the opportunity to reshape and correct the things that were wrong?

Tourism researcher (Participant 1)

It is an opportunity with a possibility to do right. It brings a possibility to plan tourism better when it starts to open up again. It is important to look at how the marketing is done, what offers you have and how you work with the local community. Perhaps Sweden shouldn't market to China or the USA as they are far away, it is better to market to more local places to reduce the traveling distance when it starts to open up again.

Tourism researcher (Participant 2)

There is some potential, but when the pandemic is over people will travel again. The question is how will we adapt tourism in the future. Measuring growth as success within the tourism industry is causing problems with mass tourism. The strong economic perspective dominating the industry is the main problem. A digitized approach could be an add-on for regular tourism. The main point is that we need to rethink the success paradigm and not only focus on growth. Things might be worse after the pandemic as people have a greater desire to travel. There is no easy solution and the way of thinking is a big problem.

Basically everyone writes about covid within tourism. In academia you have two schools of thought. One that can't wait to go back to business as usual. The others see it as a way to rethink the criterias for success. I do hope that the pandemic could lead to a transformative change. Economic thinking will push it back to business as usual where governments and companies operating within the tourism sector will be lobbying for increasing traveling.

Professor in tourism studies (Participant 3)

It certainly has the opportunity to reset and provide relief to places that are overcrowded. There are definitely some places that will take this opportunity to plan better and realign with sustainability. For other places this will not happen due to tourism being the biggest economy so they will try to increase tourism. The question is if they are mostly looking for an economical outlook or a more sustainable one.

Sweden took a fairly different approach during the pandemic. Sustainability has been part of Sweden's tourism for a long time and Sweden hasn't had a problem with

overcrowding. Sweden seems to be positively using the pandemic to move forward with tourism, making it even more sustainable in the future.

Senior position head of development, special topic: tourism events (Participant 4)
Tourism private sector will probably not have enough money to do this fix by themself. Take Sweden for example which is basically socialism, without subsidies some companies won't make it at the moment. Then of course you have some types of tourism that are doing quite well but in general there is a tricky situation.

PHD in tourism (Participant 5)
Absolutely, tourism has been impacted by mass tourism and overcrowding. With the COVID-19 pandemic there has been a lot of resetting, therefore locations have an opportunity to revive with nature. COVID-19 has changed the dynamics of tourism, it might not reshape the sector entirely but could help with reducing emission.

Researcher and teacher within tourism studies (Participant 6)
As mentioned before, the pandemic has given several opportunities and has made us see how life is without traveling. Business tourism will probably never be the same as it works well in a digital format. It won't disappear but traveling for business will reduce. There will be an alternative to attend meetings and conferences digital. We do want to travel to meetings and conferences but we also see how much time we save to not travel. If you go digital you would miss out on networking and lobbying but the advantage is that it is more time efficient. We have had time to reflect on our traveling habits. We won't stop traveling but will question traveling more. It will be easier to prioritize traveling, there will be some changes but it might not be huge. It will also depend on location as this pandemic has had a transformative effect but it will not have the same for everyone. For tourism in general I am not that positive. Both big and small businesses still want the profit from tourism. If they can find a way of making profit through digital traveling it could work but it is not sure that this will happen. The businesses won't make changes unless there is pressure from legislation or market demand.

In your opinion, what are the single biggest barriers for adopting a digital approach for tourism in Sweden?

Tourism researcher (Participant 1)

The single biggest barrier is the demand side, meaning, what we as travellers want to do. The needs we want to fulfill with traveling. Most of us don't want to sit at home. We want to travel to fulfill our needs.

Tourism researcher (Participant 2)

I don't see a lot of barriers for Sweden. Sweden has the infrastructure, the thing though is that digital tourism you do from home and the Swedes don't really want to stay home. There are definitely opportunities for business tourism. Sweden is strongly nature based when it comes to tourism, people travel to Sweden mainly for nature and culture. There is potential in some types of tourism but not in others. For outside activities the potential is small as people want to experience the place they visit.

The biggest barrier for adopting a digitized approach for tourism is that you could not switch most types, you can use digitalization to promote most types but not exchange.

Business is much more likely to be adopted and can also increase participation. The thing that digitalization of tourism for business tourism doesn't have is networking. This causes the level of attention to be much lower, but at the same time it does have the possibility to attend more conferences. In the future there will probably be a blend, where people could attend both physically and digitally. For example, digitalization has a lot of potential for business tourism but not so much for nature tourism as people travel to see nature in real life. The pandemic has increased the attractiveness for nature tourism as they can't travel at the moment. Nature tourism also depends on where, as it could be a staycation, like just going outside of Gothenburg or staying in Sweden. So, if it is about global or local tourism needs to be taken into consideration. Local nature tourism has far less impact in a digitized approach. Cultural tourism is possible as you have the possibility to visit cultural places digitally but the only one I see a lot of potential for is business tourism, the rest of them are pretty much the same.

We should not forget that there is a large divide for technology. Only developed countries have the possibility to go digital so not all of the countries have the same infrastructure which could cause problems with discrimantion. In Sweden it is easy as Sweden has a great technological infrastructure.

Professor in tourism studies (Participant 3)

The single biggest barrier is the need for experience. Traveling is about touching, experiencing, and interacting with people. Some digital tools could partly replace it. For

example, virtual reality works well but it isn’t clear if it's an alternative to traveling or makes people want to travel more. Tourism has moved from experincal to transformative where people travel to alter their point of view. Travellers want to develop new tastes for things and gain motivation to learn new things regarding food and culture. The question is how you would put that in a digital format.

Senior position head of development, special topic: tourism events (Participant 4)
I think it is the human will to change. Normally people don't want to change, everything goes in this direction due to the pandemic and tech is boosted by this. The willingness to switch is the single biggest barrier, but the longer the pandemic continues the less barriers there will be as a digitized approach becomes more normalized.

PHD in tourism (Participant 5)
Tourism in Sweden is nature based where people travel to interact with nature. It could be a challenge convincing the tourist to change their product preference. It would be easier in places that aren't that nature based.

Researcher and teacher within tourism studies (Participant 6)
There will be a need for supply from companies and the question is if it is profitable enough, why would they replace a product when they already have a profitable one. The other problem is the tourists. They want the experience in real life, you get some aspect of experience digital but not all of it.

5. Discussion

This study examined whether Sweden is ready to adopt digitalization as an alternative way of travelling. In addition, examine which type of tourism is more ready to use a digital approach as an alternative method of travelling. In the following section, first, we will discuss the results of the AHP method which answers which types are and which are not ready to use a digital approach of travelling. Then, we will discuss whether digitalization is a solution and whether it can be an alternative method of travelling and what are the barriers to adopting it.

5.1 Analytic Hierarchy Process analysis

As mentioned before and observed from the tables, the business type of tourism was the one most ready to turn into digitalization. The second most ready is cultural and the third is sports. Based on the result we can say that *business* type along with *cultural* type has a big difference in comparison to the other types of tourism as together account for almost 44% of the results. Moreover, it is important to state that business type in comparison to culture has almost double the chances to turn into digitalization as an alternative type of travelling. Moreover, this is something we were expecting, as in our literature we provided examples, that digital tourism and virtual tourism has been embraced by museums and conferences (Rush et. al., 2020). Also, according to Participant 6, business tourism won't be as it used to be, as few people want to attend or have the time to travel in order to attend a conference. Additionally, according to Participant 2, a digitized approach provides a chance to attend more conferences.

Additionally, Participant 4 acknowledged that Gothenburg's film festival had triple the income in comparison to other years, something which assist's cultural type tourism as a potential type that might adopt digitalization as an alternative type of tourism. Furthermore, many museums in Stockholm exhibit collections with the help of digitalization (Nowakowski, 2021), something that set the fundamentals to keep this alternative way after the pandemic and reduce travelling.

In addition, the *social* type of tourism has been ranked in the fourth place, nevertheless, it was quite close to *sports* type, thus we can assume that these two types of tourism have quite the same chances to turn into digitalization.

Another pair which was quite close is the *recreational* and *health* types of tourism. Both were about 7,6%. A significant observation is that *recreational tourism* and *active*

tourism had quite a difference, despite the fact that their descriptions were quite similar both according to the literature and noted by the experts interviewed.

The least ready types to turn into digitalization are nature tourism which was ranked last, adventure tourism which was the second last, and the third one is active *tourism.* Along with *active* tourism is *agriculture* which was ranked with more chances in comparison to *active* with 0.3 percentage points. All these four types are categorized by elements that involve the presence of the tourist, and as experts described it is hard to transfer the feeling of doing something into digitalization, thus it is logical to be in the last places of readiness.

On the other hand, the literature about virtual reality claims that it provides a sense of presence and provides the same sense of exposure to nature (Yang et al. 2021) , thus someone might want to investigate more how virtual reality and nature type can interact with each other. Nevertheless, the finding showed that digitalization cannot replace the feeling of being in nature.

The data collected from the interview characterized as invalid were not utilised for generalization. However, it is wise to state that the participant mentioned that only business tourism is the one that is ready to turn into digitalization and was ranked as extremely ready in comparison to other types of tourism. Something that aligns with our results.

The consistency ratio from our data was higher than the generally accepted threshold (0.779>0.1) meaning that the respondents were not particularly consistent in their answers. The reasons for this we believe is that the experts selected for the interviews do not focus on all of the different types of tourism but rather more on one or a few types as well as there were 11 different categories used in the interviews which is quite much for AHP based interviews. Also that there are several different elements in each category that the respondents need to take into consideration making some comparisons complex.

5.2 Digitalization of tourism as an solution for environmental problems

The traveling that tourism entails causes several problems, extending from the pollution of traveling to negative impact on the host countries. Traveling increases pollution as the vehicles used to travel emit emissions (Holder, 1988; Green, 1990; Ogarlaci and Tonea, 2012). Moreover, the negative impacts on the host country include, for instance, overcrowding, noise and litter (Haley, et. al. 2005) as well as the risk of losing cultural values

and authenticity (Green 1990; Ogarlaci and Tonea, 2012). In the interview with Participant 1, the problems of C02 emission were brought up. According to this respondent, there was a possibility to reduce emissions from traveling by integrating a more digitized approach to tourism. Avoiding transportation that is high in C02 emissions is advantageous for the environment but it is crucial to take the emission that arises from the use of technology into consideration. Participant 4 and 5 also brought up the importance of what type of energy is used for powering the technology. The main reason is that more than 10% of total emission worldwide is caused by the internet usage and noted that the type of mode used for travelling also needs to be taken into consideration. This respondent concluded that, in general, there are still fewer emissions with a digital approach to travelling.

Traveling has a positive impact on the traveller and the host country that needs to be appraised. Most travelling opportunities are measured in economic terms, and tourism leads to economic growth worldwide (Elliot 1997; Shaw and Williams, 2004). Traveling also entails risk reduction through diversification and more cultural alternatives for the residents in the host country and travellers (Shaw and Williams, 2004). Participant 2 argued that the main problems from tourism and travelling stem from the way success is measured within the industry, where growth is the primary indicator for success, resulting in mass tourism. This incongruous is problematic as tourism's economic growth depends on mass tourism while mass tourism is adverse for the environment.

There are examples in the literature that support technology as a supplement to tourism and travelling, such as Museums giving tour guides through a digital platform or experiencing a place or participating in an event utilising Virtual Reality (Xu et al. 2020). According to Yang et al. (2021), Virtual Reality can provide the traveller with the same experience as natural tourism while staying home. Virtual tour experience seems to provide individuals with satisfaction and reducing psychological stress (Yang et al., 2021). However, none of the experts interviewed in our study seemed to fully share this viewpoint of virtual reality providing the same experience as nature tourism. The general view of the participants was that technology could be used as a supplement but never truly replace most of the types of tourism.It was also discussed that digitalization instead increases tourism as it invokes interest with the information it provides. In several interviews, the main focus was on the travellers' need to experience the event in real life. Technological solutions could be used to reduce environmental problems caused by tourism and travelling but only as a mitigation tool and not for replacing travelling altogether. The one type of tourism that mainly was believed

to be integrated with a digital approach was business tourism, where it was discussed in the interviews that it probably would be a combination of both at the same time in the future.

5.3 Does the COVID-19 pandemic give the tourism industry the opportunity to reshape and correct the things that were wrong

As we mentioned in the literature and as we explained to the experts during the interview, by reshaping and correcting the things that were done in the wrong way, we refer to the transportation problem caused by the industry, which accounts for 22% of emissions. Also, we refer to the exploitation of natural habitats and the overcrowding of such habitats.

The COVID-19 pandemic significantly decreased tourism worldwide during 2020 and have had a devastating effect on the tourism industry from an economic perspective (Hall et. al. 2020). There was a 74% drop in international traveling from 2019 to 2020 (UNWTO 2021). The pandemic has the potential to create changes in some tourism sectors and enforce new habits (Higgins-Desbilles, 2020; Kreiner & Ram, 2020). This aligns with the result of the interviews conducted in this study. There seems to be a common perception among the participants that this temporary break of international traveling could be advantageous for the tourism industry from a sustainability perspective and provide a chance to reshape the industry. Participant 1 discussed that the COVID-19 pandemic gives the possibility to plan tourism better when the industry operates and people start travelling again. This respondent argued that the way marketing is done could be revised, where it would be better to market more local places for reducing traveling distance. Participant 2 argued that it provided a possibility to rethink the strong economic perspective that is dominating the industry where success is measured through growth and is resulting in problems with mass tourism. Even though Participant 2 saw some potential for change within the tourism industry after the pandemic (s)he still believed that the economic thinking will push back business to its old tracks as governments and companies operating within the industry will be lobbying for an increase in traveling. Participant 3 argued that the pandemic does bring an opportunity to reset and also provide relief to locations that are overcrowded but for places where tourism is a large part of the economy this won't happen as they are too dependent on the cash flow that tourism brings. According to Participant 4 the private sector of tourism will not have enough money to improve the situation on their own and would need help from the government to establish a more sustainable industry.

To achieve change within the tourism industry there are several different stakeholders that need to be taken into account, such as the consumer, residents in the host country, the governmental involvement and the companies operating in the industry (Dredge et al. 2013). The economic importance of tourism is the cash flow it brings to the host country (Bunghes, 2016) and that is also the main reason for governments to be involved in the tourism sector (Elliot 1997; Shaw and Williams 2004). This advocates business going back to usual after the pandemic as these stakeholders will push for an increase in tourism due to economical gain. There is also a possibility that the COVID-19 pandemic has increased travellers desire to travel as they haven't had the possibility to do so during the pandemic according to Participant 2. This is another indication that it will go back to business as usual when the pandemic eases.

5.4 The single biggest barriers for adopting a digitized approach for tourism in Sweden

The tourism industry is affected by many elements such as consumers, residents in the host country, the government (Dredge, 2010) and the companies operating in the sector (Dredge et al., 2013). There were several different barriers brought up in the interviews conducted in this study. It was concluded that Sweden does have the infrastructure for a digitized approach for tourism, therefore this was not determined to be a barrier. Instead, the dominating barrier for adopting a digitized approach for tourism in Sweden according to the participants was the demand side. Customers do not only want to sit at home but rather travel to fulfill the needs according to Participant 1. The need to experience everything in real life is important as some elements are hard to integrate into a digital environment. This aligns with the argument Porpiglia (2020) has, that some elements were lost with a digitized approach such as human contact, emotions and affections as these are almost impossible to reenact with an online platform. An example of this is the lack of possibilities for networking in a digitized platform that is important within the business type of tourism according to Participant 2. Digital tools could be used to partly replace some elements but it is hard to tell whether technology such as virtual reality could be used to replace traveling or if it would make people want to travel more. According to Participant 4, the human will to change, is the single biggest barrier. The COVID-19 pandemic is making technology a more normalized approach as people get used to this way of living and therefore there will be less barriers the

longer the pandemic continues. An example of this is the phenomena of working from home that have increased during the COVID-19 pandemic to minimize traveling and interaction between coworkers (Gottlieb et. al., 2020), companies seem to see this approach working which might make it a common way of operating even after the pandemic. Something that needs to be taken into consideration is that there are some formal and informal interactions that are at risk to disappear with a digitized approach that could hinder the opportunity for networking (Porpiglia, 2020). This aligns with Wang et. al. (2017) argument that satisfaction from and the use of technology is derived from the traveller's technology readiness.

The need for traveling stems from several different travel motivators, which all are situational and also differs from individual to individual (Uysal & Jurowski 1993). All of these different factors entail complexity and make it problematic to determine a general cause as to why adopting a digitized approach for tourism in Sweden would be adversely.

Participant 6 discussed the supply side of a digitized approach for tourism. According to this expert, it needs to be profitable for the companies operating within the tourism industry to adopt a digitized approach. The profitability is partly due to the demand side as there needs to be customers willing to pay for the product. The other problem is why the companies would change their product when they already have a profitable one. It is either pressure from legislation or change in market demand that would make companies change.

First step for change is a sense of urgency (Mobey, 2007). It can be stated that the COVID-19 pandemic created this urgency for change within the tourism industry due to the restrictions it entailed (Hall et al. 2020). If these changes will be institutionalized or if the tourism industry will go back to business as usual is hard to tell at this point. There seems to be some support for a more technological approach of tourism even post-covid as well as business partly going back to normal.

6. Conclusion

The tourism industry, as it seems, offers many benefits to societies, mainly economic development. This development can be seen in the trading and consumption of goods and services, investments, and employment promotion. Furthermore, the internet has been identified as a critical element associated with tourism, as many products and services have been sold online, and travellers may find real-time and accurate information easily. In Sweden, tourism is considered a vital industry, too, as it accounts for almost 3% of gross domestic products and 33% of all international earnings in northern Europe. In addition, Sweden was ranked among the top 50 most visited destinations in the year 2018.

On the other hand, the tourism industry is responsible for increasing emissions, both international and domestic tourism. Even though there have been measures in reducing emissions and being more efficient per passenger per kilometre, it is forecasted that by 2030, tourism will account for 21% of transport emissions. In addition, many tourist destinations are facing problems, as tourists do not respect nature and the landscape, and the tourism industry tries to expand using natural habitats without considering the harmful effects of their actions. Moreover, emissions have been identified as a negative variable to people's health.

At the moment, the problematization for the tourism industry is the COVID-19 pandemic. As stated before, more people travel abroad due to globalisation, and there is a high risk of spreading diseases. Nevertheless, COVID-19 has a negative impact on society because of the restrictions that obligate or recommend people to stay at home, resulting in increased stress, anxiety, and other harmful effects on people's health.

To fill in our research, we gathered data from scientific articles, sources gathered online, and interviews with experts in the tourism industry, and as experts, we consider "somebody with deep knowledge, skill, and experience in the particular field, either through practice or education".

Based on the above we concluded on our first research question whether digitalization can be an alternative option of travelling in order to reduce transportation. According to the literature, we found that tourists, in general, have motivators to satisfy but also barriers to face. Along with the transportation problem, we found out that digitalization can assist in reducing transportation, thus harmful emission in the environment, and at the same time, it can be an alternative to people that cannot overcome their barriers.

Then, we decided to investigate whether digitalization can apply in Sweden. Regarding technological infrastructure, we found that Sweden is ready to adopt such an

alternative way of travelling. Furthermore, we found that further investigation has to be made to know if the demand and supply stakeholders are ready to adopt such a way.

Lastly, we found out that the most suitable types to turn into a digital approach are 1) Business, 2) Cultural, and 3) Social. Nevertheless, these three types of tourism consist of different elements, thus further investigation has to be made to see which elements in each type can be satisfied. This wide and general view of the tourism industry that was used in this study caused problems with the consistency ratio in our AHP method but it is important to state that despite the non-consistency in our results, the main focus of our study was, in general, to identify which types of tourism that are more ready to turn into digitalization as an alternative type of travel and to do this a wide approach was needed. All types of tourism consist of different elements and this assisted as an obstacle to identify the types of tourism based on literature. Our objective was to identify the more suitable types of tourism that are ready to integrate a digital approach which turned out to be business, cultural and social. Based on that someone can proceed in further research and provide more narrow results in the mentioned types of tourism. Thus in the next chapter, we suggest some topics for further research.

6.2 Further research

Based on all the above we concluded to the the follow research topics, in case someone wants to extend this study:

1. Which elements are satisfied by digitalization in the business/cultural/social type of tourism?
2. Are people willing to adopt digitalization as an alternative way of traveling in the business/cultural/social type of tourism?
3. Which countries have a similar infrastructure as Sweden and can be considered ready to adopt a digital approach?

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Appendix

Appendix 1: Individual's ranking

Participant 1(Tourism researcher)

Types of tourism	Business	Nature	Cultural	Social	Recreational	Active	Sports	Health	Adventure	Volunteer	Agricultural
Business	**1**	8	6	8	8	8	5	8	8	8	8
Nature	1/8	**1**	1/4	1	1/3	1	1/5	1	1	1	1
Cultural	1/6	4	**1**	4	3	4	1	3	4	4	4
Social	1/8	1	1/4	**1**	1/3	1	1/5	1/2	1	1	1
Recreational	1/8	3	1/3	3	**1**	3	1/3	3	3	3	3
Active	1/8	1	1/4	1	1/3	**1**	1/5	1	1	1	1
Sports	1/5	5	1	5	3	5	**1**	5	5	5	5
Health	1/8	1	1/3	2	1/3	1	1/5	**1**	1	1	1
Adventure	1/8	1	1/4	1	1/3	1	1/5	1	**1**	1	1
Volunteer	1/8	1	1/4	1	1/3	1	1/5	1	1	**1**	1
Agricultural	1/8	1	1/4	1	1/3	1	1/5	1	1	1	**1**
Sum	2 3/8	27	10 1/6	28	17 1/3	27	8 3/4	25 1/2	27	27	27

Participant 2 (Tourism researcher)

Types of tourism	Business	Nature	Cultural	Social	Recreational	Active	Sports	Health	Adventure	Volunteer	Agricultural
Business	**1**	7	5	8	7	8	7	8	6	5	5
Nature	1/7	**1**	1/5	1	1	1	1/8	1	1	1/5	1/8
Cultural	1/5	5	**1**	1	2	2	2	2	2	1	1
Social	1/8	1	1	**1**	1	2	1/5	1	1/5	1	1
Recreational	1/7	1	1/2	1	**1**	2	1	2	2	1	1
Active	1/8	1	1/2	1/2	1/2	**1**	1	1	1	1/5	1
Sports	1/7	8	1/2	5	1	1	**1**	1/5	1	1	1
Health	1/8	1	1/2	1	1/2	1	5	**1**	1	1/5	1
Adventure	1/6	1	1/2	5	1/2	1	1	1	**1**	1/5	1/5
Volunteer	1/5	5	1	1	1	5	1	5	5	**1**	1
Agricultural	1/5	8	1	1	1	1	1	1	5	1	**1**
SUM	2 4/7	39	11 2/3	25 1/2	16 1/2	25	20 1/3	23 1/5	25 1/5	11 4/5	13 1/3

Participant 3 (Professor in tourism studies)

Types of tourism	Business	Nature	Cultural	Social	Recreational	Active	Sports	Health	Adventure	Volunteer	Agricultural
Business	**1**	7	3	3	5	7	3	7	7	7	5
Nature	1/7	**1**	1/5	1/5	1	1	1	1/3	1	1/3	1/3
Cultural	1/3	5	**1**	1	5	7	7	5	7	5	3
Social	1/3	5	1	**1**	1	5	5	3	5	3	5
Recreational	1/5	1	1/5	1	**1**	1	1	1/3	3	1/3	1
Active	1/7	1	1/7	1/5	1	**1**	1	1/5	1	1/5	1/5
Sports	1/3	1	1/7	1/5	1	1	**1**	1/5	1	1/5	1/5
Health	1/7	3	1/5	1/3	3	5	5	**1**	5	1	3
Adventure	1/7	1	1/7	1/5	1/3	1	1	1/5	**1**	1/3	1/3
Volunteer	1/7	3	1/5	1/3	3	5	5	1	3	**1**	1
Agricultural	1/5	3	1/3	1/5	1	5	5	1/3	3	1	**1**
SUM	3 1/9	31	6 5/9	7 2/3	22 1/3	39	35	18 3/5	37	19 2/5	20

Participant 4 (Senior position head of development, special topic: tourism events)

Types of tourism	Business	Nature	Cultural	Social	Recreational	Active	Sports	Health	Adventure	Volunteer	Agricultural
Business	**1**	9	3	5	7	3	5	9	5	7	7
Nature	1/9	**1**	1/7	1/5	1/3	1/3	1/5	1	1/5	1/3	1/3
Cultural	1/3	7	**1**	5	7	1	5	7	5	7	7
Social	1/5	5	1/5	**1**	1/3	3	1	5	1	1/3	1/3
Recreational	1/7	3	1/7	3	**1**	5	3	1/3	3	1	1
Active	1/3	3	1	1/3	1/5	**1**	1/3	5	1	3	3
Sports	1/5	5	1/5	1	1/3	3	**1**	5	1	3	3
Health	1/9	1	1/7	1/5	3	1/5	1/5	**1**	1/5	1/3	1/3
Adventure	1/5	5	1/5	1	1/3	1	1	5	**1**	3	3
Volunteer	1/7	3	1/7	3	1	1/3	1/3	3	1/3	**1**	1
Agricultural	1/7	3	1/7	3	1	1/3	1/3	3	1/3	1	**1**
SUM	3	45	6 1/3	22 3/4	21 1/2	18 1/5	17 2/5	44 1/3	18	27	27

Participant 5 (PHD in tourism)

Types of tourism	Business	Nature	Cultural	Social	Recreational	Active	Sports	Health	Adventure	Volunteer	Agricultural
Business	**1**	5	5	1	7	9	1	9	9	9	9
Nature	1/5	**1**	1/7	1/5	1/5	1/7	1/7	1/3	1	1/7	1
Cultural	1/5	7	**1**	1	5	5	1	7	7	9	7
Social	1	5	1	**1**	9	5	1/5	3	7	7	9
Recreational	1/7	5	1/5	1/9	**1**	1/3	1/5	1/5	1	3	3
Active	1/9	7	1/5	1/5	3	**1**	1	1/9	1	7	7
Sports	1	7	1	5	5	1	**1**	1/9	1	3	5
Health	1/9	3	1/7	1/3	5	9	9	**1**	7	5	5
Adventure	1/9	1	1/7	1/7	1	1	1	1/7	**1**	1/3	3
Volunteer	1/9	7	1/9	1/7	1/3	1/7	1/3	1/5	3	**1**	3
Agricultural	1/9	1	1/7	1/9	1/3	1/7	1/5	1/5	1/3	1/3	**1**
Sum	4	49	9	9 1/4	36 7/8	31 3/4	15	21 2/7	38 1/3	44 4/5	53

Participant 6 (Researcher and teacher within tourism studies)

Types of tourism	Business	Nature	Cultural	Social	Recreational	Active	Sports	Health	Adventure	Volunteer	Agricultural
Business	**1**	9	1	9	3	9	5	3	9	5	5
Nature	1/9	**1**	1/7	1	1/3	1	1/3	1	1	1/5	1/5
Cultural	1	7	**1**	1	1	5	5	5	5	5	5
Social	1/9	1	1	**1**	1/3	1	1/3	1	1/3	1/5	1/5
Recreational	1/3	3	1	3	**1**	7	5	7	9	1	3
Active	1/9	1	1/5	1	1/7	**1**	1/7	1	4	1	3
Sports	1/5	3	1/5	3	1/5	7	**1**	3	7	1	3
Health	1/3	1	1/5	1	1/7	1	1/3	**1**	5	1	5
Adventure	1/9	1	1/5	3	1/9	1/4	1/7	1/5	**1**	1/5	1/5
Volunteer	1/5	5	1/5	5	1	1	1	1	5	**1**	1/3
Agricultural	1/5	5	1/5	5	1/3	1/3	1/3	1/5	5	3	**1**
SUM	3 5/7	37	5 1/3	33	7 3/5	33 3/5	18 5/8	23 2/5	51 1/3	18 3/5	26