



Instituto de Geografia
e Ordenamento do Território
UNIVERSIDADE DE LISBOA

Escola Superior de Hotelaria e Turismo do Estoril
Instituto de Geografia e Ordenamento do Território da Universidade de
Lisboa

Mestrado em Turismo e Comunicação

The SARS-CoV-2 pandemic and tourist's views on the need to rethink tourism

Mariana Almeida Gramaxo Tavares Santos

Dissertação orientada por Maria de Lurdes Santana Calisto

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Abstract

Tourism has been a target of substantial technology investments to keep pace with the acceleration of globalisation and the increasingly demanding needs of consumers. Since tourism is an activity constantly adapting to social and economic adversities, the atypical situation of the SARS-COV-2 pandemic has highlighted the need to question tourism habits. The moment of global lockdown resulted in the partial or total cancellation of travel and leisure experiences and even cast doubt on consumers' habits as tourists in the sense of environmental and social sustainability. Therefore, it is feasible to agree that this pandemic has forced businesses and all entities to rethink tourism to respond to new demands and maintain related business activities. New alternatives have been implemented in restricted periods of constraint, such as the provision of virtual museums or visits to a virtual street.

Given that this technological reality is increasingly pervasive in consumers' day-to-day life and that the SARS-CoV-2 pandemic has been accelerating some processes regarding the reformulation of the tourism activity, this dissertation aims to study what personal characteristics and attitudes influence tourists' intention to experience VT in a post-pandemic period. Based on a sample of 229 individuals, the survey's results suggest that younger tourists, who perceive VT as an alternative for conventional tourism in atypical situations and value authenticity in VT, are the ones with higher interest to experience virtual tourism. A cluster analysis revealed two clusters, named "the digital youngsters" and "the conservative adults". Theoretical and practical implications are derived.

Keywords: Tourism, Virtual Tourism, Virtual Reality, Virtual Experience, Pandemic, Authenticity

Resumo

O Turismo tem vindo a ser alvo de inúmeros investimentos a nível tecnológico, de forma a acompanhar a aceleração da globalização e das necessidades, cada vez mais exigentes, dos consumidores. Uma vez que o turismo é um setor em constante adaptação às adversidades sociais e económicas, a situação atípica da pandemia SARS-COV-2 sublinhou a necessidade de questionar o turismo. O momento de confinamento mundial traduziu-se na anulação parcial ou total de viagens e experiências de lazer, e chegou a colocar em dúvida os próprios hábitos dos consumidores enquanto turistas, no âmbito da sustentabilidade ambiental e social. É viável concordar, portanto, que esta pandemia obrigou as empresas e todas as entidades a repensar o turismo, para conseguirem responder às novas procuras e à sobrevivência de negócios relacionados. Novas alternativas têm vindo a ser implementadas em períodos de confinamento restritos, como a disponibilização de museus virtuais ou visitas a uma *virtual street*.

Uma vez que esta realidade tecnológica é cada vez mais transversal ao dia-a-dia do consumidor, e já que a pandemia SARS-COV-2 tem vindo a acelerar alguns processos no que toca à reformulação do setor turístico, o estudo pretende analisar se os turistas reconhecem a urgência em repensar o turismo e adotar a Realidade Virtual como alternativa, ao perspetivar situações atípicas. Com o recurso a uma amostra de 229 pessoas, os resultados do questionário sugerem que turistas mais novos, que veem o TV como uma alternativa ao turismo convencional em situações atípicas e que valorizam a autenticidade no TV, tendem a ser os que têm maior interesse em experienciar virtualmente o turismo. Uma análise de clusters revelou dois grupos independentes, chamados de “os jovens digitais” e “os adultos conservadores”. As implicações teóricas e práticas são derivadas.

Palavras-chave: Turismo, Turismo Virtual, Realidade Virtual, Pandemia, Autenticidade

Abbreviation list

<i>CL</i>	Cluster
<i>ICT</i>	Information and Communication Technologies
<i>IoT</i>	Internet of Things
<i>VE</i>	Virtual Environment
<i>VR</i>	Virtual Reality
<i>VT</i>	Virtual Tourism
<i>VW</i>	Virtual World

1. Introduction

As it is common knowledge, the SARS-CoV-2 pandemic has brutally affected the world's economy from 2020 to the current year. In order to prevent the virus dissemination, many measures were implemented, such as lockdown, social distancing, the use of a surgical mask and the constant hand disinfection, along with the total or partial shutdown of several non-essential businesses, including the ones directly related to the tourism activity, like airlines companies, hotel businesses and all other types of accommodation, restaurants, *souvenirs* shops, among others.

Nevertheless, many saw this atypical pandemic situation as an opportunity to rethink new forms of work and practice tourism. Since technology plays an essential role for tourism stakeholders, many strategies have emerged during the pandemic. Because of the purpose of this research, it is interesting to underline the example of virtual visits to international museums (Mura et al., 2017), such as The British Museum and The National Gallery in London, The Musei Vaticani in Vatican City, The Louvre in Paris, the Theatre-Museum Dalí in Figueres, The National Museum of Natural History in Washington, The Calouste-Gulbenkian Museum in Lisbon, The RijksMuseum in Amsterdam, *inter alia*. These sorts of initiatives are in line with several studies about the practice of Virtual Tourism (VT) as an alternative to conventional tourism, giving a perspective of a “solution” to eventual future atypical situations that can have a negative impact as the pandemic had, and is currently having. Nevertheless, tourism activity faces new demands every time. New offers are always coming out, since the variety of types of tourists is continually growing, and the need to please them is stricter than before. This growing diversity in tourists’ requirements suggests the existence of a group of tourists that might be receptive to technological advancements and might be interested in having a virtual travel experience.

Technology represents a significant ally when it comes to travel and sharing experiences. However, several questions remain unanswered: How can we build a technological future? How can we recreate the non-virtual world in a virtual environment (VE)? Is that replacing conventional tourism?

Therefore, studying virtual reality (VR) models for tourism makes more and more sense nowadays since it represents an alternative to conventional tourism and can, in the future, reach a niche public, which for several reasons cannot travel, providing accessible tourism for all. “The abundance of tourism-related VR content makes it easier for anyone

to experience virtual tours of cities and tourist attractions from anywhere in the world” (Tussyadiah et al., 2018, p.140) and “Travelling without the body can be easier and less frustrating for a paraplegic, especially if we take into account that at the moment many heritage and natural sites worldwide are not easily accessible (...) VR could offer alternatives for those who are disabled but who want a tourism experience.” (Mura et al., 2017, p.5).

This research will focus on the effects of the SARS-CoV-2 pandemic on tourism activity and consumption to understand their perceptions of VT; this is if there is any receptiveness to this technological side of tourism. This dissertation aims to study the influence of the travellers’ perception of VT (bearing in mind the concepts of technology and authenticity), as an alternative to conventional tourism, in their intention to experience it in a post-pandemic period. The more specific goals are: to explore what has changed in tourists’ consumption during the SARS-CoV-2 pandemic; to study the eventual change in the valuation of authenticity in the pandemic period; to analyse the role played by VR during the pandemic restrictions; to explore differences based on tourist characteristics regarding the acceptance of technologies in the tourism experience; and, to identify the main barriers to the use of these technologies by tourists.

The fact that this dissertation has been developed during a pandemic situation is the main reason this topic was chosen. Since this dissertation’s topic was picked in a very premature pandemic context, it was possible to observe social and structural difficulties, where people were forced to stay at home, and the tourism industries were forced to cancel activity. Other than that, VT was always relevant to the researcher, given the horizons it can broaden to tourism itself. The current context revealed to be an opportunity to develop research around it, exploring new trends and future demands caused by the atypical situation described in the following chapters.

Regarding the dissertation structure, the first two chapters constitute the theoretical part of the work, starting with the SARS-CoV-2 pandemic and its effects, followed by the chapters about VT and the question of authenticity. The following is the chapter on methodology, where the data collection method and the proposed conceptual model are presented. The next chapter will focus on the results, sample characterisation, descriptive analysis, hypothesis validation and k-means cluster analysis. The last two chapters will discuss the results and implications of the research for the future and present conclusions, limitations, and future research recommendations.

2. The SARS-CoV-2 pandemic and its global repercussions on tourism

2.1. The pandemic

Covid19 was a severe and highly contagious disease first noticed in 2019 in Wuhan - China that eventually left its area of origin and reached the rest of the world (Akpan^b et al., 2020; Gössling et al., 2020). Although the pandemic is still happening and causing lots of victims by the time this dissertation is being written, the truth is that many investigations took place during 2020 in order to understand and explore the effects of this virus not only on the economy and social life but also in the tourism activity. In order to manage the spread of the virus, almost all the countries implemented a series of restrictions such as lockdown for months (including home isolation and quarantine), social distancing, the closing of schools and universities and all types of businesses that were considered to be not essential, the cancellation of several events to ban the gathering of people, and the closure of national and international borders (Gössling et al., 2020; Page and Yeoman, 2006). Therefore, these restrictions have affected national economies, including the tourism activity, since there are lots of small and medium businesses and other organizations that depend on tourism to survive, such as restaurants, museums, coffee shops, and conventional stores (Gössling et al., 2020; Haywood, 2020). Gössling et al. (2020), Haywood (2020), and Ioannides and Gyimóthy (2020) present the aggressive effects of the pandemic on the world, stating that because of all the restrictions imposed due to the virus, around 75 million (and counting) people lost their jobs and turned out to be loaded in debt and unable to respond positively to their financial obligations; poverty became an evident and darker reality; travelling became impossible and dangerous, when possible; hundreds of thousands of small-to-medium-sized enterprises were forced to close due to several imposed lockdowns; some of them forever.

Additionally, more than 25 cruise ships were full of infected people by 26th march 2020 (Gössling et al., 2020) and some of them had to remain at sea, unable to find a port that would allow them to dock (Zwanka and Buff, 2021); lots of people could not return home, because they were trapped in hotels and held in quarantine isolation; restaurants were forced to close, remaining only the take-away service in some of them (Akpan^a et al., 2020; Zwanka and Buff, 2021); bankruptcies also followed these last events, in

particular with airlines such as FlyBe on 5th March 2020, Scandinavian Airlines on 17th March 2020, Singapore Airlines on 27th March 2020, Virgin on 30th March 2020 and even tour operators, as the German TUI on 27th March 2020, also looked for financial help of the state. As Gössling et al. (2020, p.2) concluded, “tourism moved from overtourism to nontourism”. These are just a few examples of the many negative consequences that the pandemic provoked, and to tourism-dependent countries, the effects felt were even worse.

Tourism has already been exposed to a vast range of crises in the past, even some not directly related to health issues, such as the terrorist attacks, as the ones in the USA (in 2001) and France (in 2015); the Severe Respiratory Syndrome (SARS) in 2003 (Page and Yeoman, 2006); the global economic crisis between 2008 and 2009; the Middle East Respiratory Syndrome (MERS) in 2015, the Spanish Flu or *Influenza* between 1918 and 1919; the Asian Flu (H2N2) in 1957; the Hong Kong Flu in 1968; the Bird Flu in 2009 and the Ebola outbreak between 2013 and 2014 (Fan et al., 2018; Gössling et al., 2020; Keogh-Brown et al., 2010; Page and Yeoman, 2006).

However, none of these crises can be compared to the SARS-CoV-2 pandemic, since none has lasted this long, nor has it led several countries to close borders and ban travel, not to forget all the social restrictions, which led to a brutal decline of the tourism activity. Although tourism had survived all those crises mentioned above, even with economic consequences and shocks, evidence suggests that the recovery from the SARS-CoV-2 pandemic will be a difficult task and will not happen in the space of one year (Gössling et al., 2020; Ioannides and Gyimóthy, 2020).

Many authors have underlined the urgency of countries to plan for the response to a pandemic (Fan et al., 2018, Keogh-Brown et al., 2010; Gössling et al., 2020; Page and Yeoman, 2006). The epidemic case of Ebola, first detected in the Democratic Republic of Congo, which later proliferated to West Africa, created a negative overview perception of the African destinations for possible tourists, leading to a decline in tourist flow (Gössling et al., 2020). Therefore, Ebola was an example of how an epidemic can threaten the world and tourism. The coronavirus case turned out to be more severe than previous epidemics because it is highly contagious, and tourism travels would only contribute to its fast spread.

As Fan et al. (2018) had already stated, “few doubt that major epidemics and pandemics will strike again and few would argue that the world is adequately prepared” (p.129), pointing out one more time to the emergency of having a well-prepared plan for

this type of event. Page and Yeoman, back in 2006, investigated how the VisitScotland National Tourism Organization for Scotland had prepared for a flu pandemic, exploring the strategies and pre-tests plans. The authors urged to warn that “it is now a matter of time before the world faces a flu pandemic.” (Page and Yeoman, 2006, p. 1). Organizations like the World Health Organization (WHO) have been encouraging countries to develop contingency plans for the eventual case of a pandemic to strike, bearing in mind the consequences that come inevitably with it: the mortality, the economic impacts, the social measures, and its effects on tourism (Page and Yeoman, 2006).

By the very nature of a pandemic, international travel and tourism will be the first industries to be hit. Countries will issue travel advisories, recommending tourists avoid infected countries, which will evidently have a devastating impact on the world tourism industry. Further, some scientists believe that to quarantine a country and seek to reduce introduced cases of infection, it would be necessary to prevent around 95 per cent of all travel to and from that country. (Page and Yeoman, 2006, p.4)

Nowadays, persists the criticism about the lack of tools available, with consequences, as Gössling et al. claim, that “tend to be very economically disruptive” (2020, p.6). As Gössling et al. (2020) further state, the Covid19 crisis should lead to several conclusions and criticisms about how tourism growth repercussions have globally affected destinations and ignored the environmental limits. As they further state, “with the magnitude of the COVID19 pandemic, there is an urgent need not to return to business-as-usual when the crisis over, rather than an opportunity to reconsider a transformation of the global tourism system more aligned to the SDGs.” (Gössling et al., 2020, p.16). Therefore, this pandemic should thus be considered as an opportunity to rethink tourism growth and re-establish its model to a more sustainable and safer form.

In this line of thought, Ioannides and Gyimóthy (2020) call for attention to the concept “crisis”, stating that historically this word was originated from the ancient Greek language “κρίση”, which implies a judgement or some decision that must be made. As the authors state, “nowadays, a crisis implies that a turning point has been reached giving rise to the opportunity to institute varying degrees of change that may allow us to move away from the original trajectory and escape some of the problems associated with this.” (Ioannides and Gyimóthy, 2020, p.626). Additionally, as Haywood (2020) states, we all

look for answers and alternatives only in these atypical moments and situations. While science was doing its job as an informational mechanism and developing theories and later a vaccine against Covid19, tourism was facing the most significant challenge ever and was forced to reset (Stankov et al., 2020). Also, forced to live between quarantines, social distancing regulations restrictions, the use of the mask and disinfectant and lockdowns (Zwanka and Buff, 2021; Stankov et al., 2020), people started to question their priorities, their life trajectories, and their habits since their routines and plans were all destroyed by this terrifying event (Gössling et al., 2020; Haywood, 2020).

The pandemic restrictions have provoked the need to rethink tourism not only for businesses but also for tourists, the main characters in this activity (Ioannides and Gyimóthy, 2020; Stankov et al., 2020). This crisis was the perfect opportunity for consumers to move in a new direction and adopt sustainable life choices since “the beneficial effects of the crisis on global emissions and air quality are immediate and palpable.” (Ioannides and Gyimóthy, 2020, p. 630). The effects of Covid-19 restrictions on the environment in several parts of the world were evident. As Zwanka and Buff (2021) state,

Along the same lines as the personal health shift, the COVID-19 pandemic’s self-quarantines and mandatory quarantines cleared the water in Venice to the clearest in 65 years, markedly improved the air quality in New Delhi, India, and China’s air pollution of nitrogen dioxide gas (NO₂) decreased by 30% during the shutdown of the Wuhan province, leading the way for many to believe the ‘new normal’ of having less negative impact on the earth would be the preferred direction for the future. (2020, p.64)

Haywood (2020) claims that due to the travel impeachment and the imposition of every new restriction, people realized how dependent and reliable they were on tourism and travel plans. By this time, tourists are “wondering how to become wiser, not just in advocacy for travel and tourism, but in their collective responsibility to re-imagine tourism’s purpose, principles and transformative possibilities (...)” (Haywood, 2020, p.605). Additionally, Stankov et al. stated, “the global pandemic creates, ironically, that external change in the tourism ecosystem provides a space and time (in literal) for many consumers to reflect on their past and future travel behaviors.” (2020, p.3). Indeed, the idea of re-thinking tourism habits from a tourist point of view is an essential part of this study to understand what changed what will change during and after this atypical time.

During the pandemic, the need to re-adjust business models to the new reality became clear. According to several authors, it is tough to make tourist habits change, as there is such a broad range of offers and demands, which thus makes change a problematic task (Akpan^b et al., 2020; Haywood, 2020). However, change does not appear in one day, and several factors are needed to constitute an adaptational process. As Liedtka (2018) states, the need for change is led by the need to “design thinking”. Hence, creativity and new ideas and models play an important role in change. The concept of “design thinking” (Liedtka, 2018) is very relevant, as people are increasingly creative and able to re-imagine a situation that can no longer be what it used to be. It is an essential tool from a post-pandemic perspective. Haywood (2020) explores the necessity to develop a sustainable platform, urging the idea of future readiness to what we can consider being atypical and significantly changing for society, just like the SARS-CoV-2 pandemic. The author makes a historical reference to the Great Depression back in 1929 in the United States, stating that President Franklin D. Roosevelt himself had to act in favour of the change so that the crisis could end, and people could hope for brighter days to come (Haywood, 2020). Zwanka and Buff refer to the Great Recession (from 2000 to 2010) and state that “one notes research addressing many of the key issues we see unfolding as the COVID-19 pandemic spreads worldwide.” (2021, p. 59). Therefore, it is interesting how, during the pandemic, businesses and stakeholders dismantled the word *tourism* and gave it new perspectives and forms towards a new future. As Haywood (2020) claims, Covid19 has only brought up tourism problems to the top, such as the question of over-tourism, sustainability harms and environmental limits. As Akpan^b et al. state, “Moments like this, of course, inspire innovative ideas and technologies.” (2020, p.5). Hence, it is reliable to say that if there is a right time to act accordingly with sustainable development, that time is now.

2.2. Tourism businesses adaptation to the “new normal” – the role of technology

Following Akpan^b et al. (2020), there were a lot of small businesses that could not respond positively to the pandemic repercussions due, apart from economic issues, to the lack of adoption of technologies that could have made a difference concerning offer and demand. These authors totally support the embracement of technological advancements into the tourism activity, stating that “the outbreak of SARS-CoV-2 and Covid19 further imposes the need to digitize and move business activities to the virtual space, reinforces

the need to adopt state-of-art technologies as public health organizations continue to recommend social distancing to contain the spread of SARS-CoV-2.” (p.10). Notably, as the authors further state, due to the several disruptions to the operations in tourism caused by the pandemic, the need for a change appeared, in which technology could play a helpful role to sustain the small- and medium-sized businesses (Akpan^b et al., 2020). Virtual operations may enhance the businesses’ image and its “competitiveness, productivity, and business performance, and to ensure business survival.” (Akpan^a et al., 2020, p. 11). Moreover, Singhal and Sneader (2021), in their article, refer to Plato, who says “necessity is indeed the mother of invention.” (p.4), which can be directly related to the instant growth of digitalization during the pandemic, leading to new technological forms of business. As they further assert, “many executives reported that they moved 20 to 25 times faster than they thought possible on things like building supply-chain redundancies, improving data security, and increasing the use of advanced technologies in operations” (Sneader and Singhal, 2021, p.4). Therefore, technology is already seen as a part of the solution. Stakeholders and businesses can give new forms to their projects, responding to the adverse effects of the pandemic. Once the consumers began to look for online offers to buy and experience, the enterprises themselves had to switch their business model and offer online opportunities, especially during the pandemic restrictions. As far as the tourism business is concerned, how are these previous statements regarding virtual reality models applied? The next chapter will focus on how tourism marketing has grown by betting on advanced technologies as a new strategy to influence consumer behaviour and decision-making.

2.3. Changes on tourists’ requirements due to the pandemic

Zwanka and Buff (2021) explored the impact of the 2020 pandemic on consumer behaviour and marketing activities. Their primary conclusion was that marketers should be ready for the “long term behavioural shifts we could see from the COVID-19 pandemic of 2020” (2021, p.58). These scholars explore the concepts of “generation” and “generational cohorts”, stating that the first one is defined by the year of birth and the second one is defined on special events that occur in a specific space of time and have an impact on particular values of the society (Zwanka and Buff, 2021). The second concept is interesting to connect with significant events such as pandemics or terrorist attacks that generally impact tourism activity and practices. Significant events such as these provoke

a change in society and lead to a “decreased consumption in the long-term; with some (...) indicating they were no longer willing to over-consume, less likely to overspend, and more careful in their choices.” (Zwanka and Buff, 2021, p. 59). Considering the example of the Great Recession again, this event impacted consumer behaviour: “Spending was reduced in general; less expensive brands were purchased; concern for the carbon footprint increased as did environmental consciousness (...)” (Zwanka and Buff, 2021, p.60). Therefore, some changes in consumption and habits of society are expected to manifest after the pandemic restrictions (Page and Yeoman, 2006; Zwanka and Buff, 2021).

According to McKinsey’s surveys (Bhargava et al., 2020), the sentiment towards consuming and travelling after the pandemic crisis varies from country to country. Europe, for instance, remains pessimistic about the economic effects, stating that these probably will last longer than expected (Bhargava et al., 2020). European consumers tend to look for more virtual options to do their everyday life, from online shopping to restaurant delivery services (Bhargava et al., 2020; Zwanka and Buff, 2021). Akpan^b et al. added, “The behaviour of (...) customers is changing, and they are attracted to online shopping and other larger retail formats (...)” (2020, p.6).

During the pandemic, European consumers have adopted a wide range of alternative ways to stay at home, making researchers believe some will remain even in a post-crisis scenario (Bhargava et al., 2020). Up to 63% of Europeans have decided to shift their values, which has amended their forms of consumerism. Europeans started to give more importance to certain aspects of their consumption and put aside all sorts of elements that can be considered extras (Bhargava et al., 2020). Along with these results, Stankov et al. added that “The self-isolation and the limitations imposed on freedom of movement in light of COVID-19, like in any other recession, have led the consumers to return to more primary, essential and non-negotiable needs.” (2020, p.4). Subsequently, the future post-pandemic tourist would be more cautious and aware about how he or she will spend his or her money.

The whole situation around the SARS-CoV-2 pandemic has brought some questions about consumers’ habits and over-tourism effects on the planet to the fore. McKinsey’s study concluded that environmental sustainability is increasingly becoming a concern between consumers (not only Europeans but also Asians), influencing the consumer’s future behaviour (Bhargava et al., 2020; Ho et al., 2020). Moreover, as far as travel is concerned, it is a fact that the Europeans are more and more worried about

travelling by aeroplane. Although their reasons are not explicit, they could be due to the gatherings of people and the risk of contracting the virus or to environmental motifs (Bhargava et al., 2020).

Consumers worldwide have reported higher optimism about the effects of the pandemic in their lives and the economic situation of their countries, whereas, as seen previously, Europeans are much more pessimistic about it. The only country that appears to have a positive outlook and high intentions to consume is China (Ho et al., 2020). In 2020, it was verified that, in general, people did not travel that much due to safety issues and the implementation of too many restrictions, being China, again, the only exception to this (Ho et al., 2020).

In McKinsey's study (2020), an emphasis was given to the digital world and its role during lockdown restrictions which will somehow shape consumers' habits and daily routines. The integration of the digital into consumers' lives is more obvious nowadays since all the restrictions that came with the pandemic have obliged people to stay home, having thus more time to navigate and explore more alternatives for consuming products (Ho et al., 2020).

In their recent study, Ioannides and Gyimóthy (2020) explored consumer behaviour after a pandemic scenario in the USA (United States of America). Results revealed that after usual activities return to normal, most Americans are more likely to invest in national tourism and leisure and avoid travelling abroad. Other respondents are more inclined to close-to-home activities due to economic and safety reasons (Ioannides and Gyimóthy, 2020).

Singhal and Sneader (2021) use the expression "postwar" to describe the complex process the world will face after the pandemic ceases, both economically and socially speaking. Concerning travel, safety seems to be the key word for consumers. Restrictions, such as the lockdown, made potential tourists stay at home without any perspective about the day they could travel regularly and safely again. However, despite all the restrictions, Singhal and Sneader (2021) point out the national growth of domestic travel in comparison to the international one, referring that even business tourism was replaced by video conferences and remote work tools, which will make it harder to come back to what it was before the pandemic. As Stankov et al. state, "(...) that post-pandemic tourists will ask for more basic experiences insisting on domestic travel (stay-caution) (...)." (2020, p.5). Nevertheless, the authors claim that the desire for leisure and travel will not disappear because of Covid19. However, consumer behaviour might change due to the

constant use of technology and the desire to feel safe and confident about the destination (Singhal and Sneader, 2021).

What is not explicit is whether Virtual Reality could be a possible and acceptable alternative for those tourists who still do not feel safe to travel. The fact is that consumer behaviour, in general, has changed, at least during the pandemic restrictions, where people could not go out or travel. The main question is whether new forms of consumption are emerging with the pandemic, considering that Virtual Tourism could answer some new requirements. Apart from being a type of tourism that does not practice the prices that conventional tourism could have, Virtual Tourism constitutes a possibility for tourism consumption after the SARS-CoV-2. For this purpose, this dissertation will explore tourists' views regarding using this sort of technology in tourism in a pandemic panorama and the changes in their consumer behaviour.

3. Virtual Reality and Virtual Tourism

3.1 Definitions and applications

As Williams and Hobson (1995) first stated, knowing the background history of VR is essential to perspective its goals for society. The VR concept was primarily coined during the 70s to describe the theoretical approach to understanding the human being and the computer interface. According to Williams and Hobson (1995), the VR concept was intended to explain the possible relationship between humans and computers. The main goal of VR is to make the user believe that he or she is experiencing the “real world” he or she was supposed to be experiencing in real-life time, thus being also important the fact that the user should feel emerged into the virtual environment (VE) so that he or she forgets about the virtual feature of the experience.

Guttentag (2010) and Marasco et al. (2018) state that a VR experience can be described as a VE that can provide the user physical and technological immersion. Others define VR as a “computer-stimulated environment with and within which people interact” (Tussyadiah et al., 2018, p. 141). Considering that VE is also a very close concept to VR, Bogicevic et al. state that “Ideally, virtual environment provides a substitution to the real-world environment by enabling users to lock out physical world stimuli and fully immerse themselves in the virtual world.” (2019, p.55).

VR may also be used to enhance the tourists' experience. Virtual Tourism is an ever-growing concept, as there is a constant discussion (Bogicevic et al., 2019). Regarding all the scientific research and further discussion existing around this complex concept, remains the idea that this type of tourism has fewer costs than conventional travel, no borders, more safety, and no complications as far as travel bureaucracy is concerned. VR offers the user the possibility of travelling without moving physically, making the immersion in a VE possible, leading to a different tourism experience. Although there is no sole definition of Virtual Tourism (Mura et al., 2017), it is possible to claim that it aims to provide the user/tourist with a virtual and immersive experience, using several technological tools to make them feel emerged into a VE. Whether the tourist must travel to experience this sort of tourism or not remains an unanswered question.

For the purpose of this topic, immersion is an essential element in VR since it may be the more significant challenge: to emerge the user, making the user feel he or she is physically and emotionally into the VE, forgetting what is around in the non-virtual world (Williams and Hobson, 1995). As Guttentag (2010) states, immersion can be defined as the tourist degree of isolation from the non-virtual world, meaning total immersion into the VE. Williams and Hobson (1995) have stated in their early study that "Immersion is the degree of suspension of disbelief by the VR participant and is created through a field of view, panorama surrounding the participant, (...) where images react to the head and body movements (...)" (p.2). Hence, to make immersion in VR possible, it is vital that this sort of technology can stimulate the user's senses (Belisle and Roquet, 2020; Kourdis et al., 2019; Mura et al., 2017). Thus, the more sensory stimuli the VE gives, the more emerged the consumer would be.

The sensory stimulation is crucial to make the immersion of the user possible, not just in VR, but also in every tourist experience, as this stimulation is directly connected to the human brain, hence facilitating the process of memorizing the experience and making it more appealing and positive (Belisle and Roquet, 2020; Guttentag, 2010; Kourdis et al., 2019; Loureiro et al., 2020; Morie, 2006; Yung et al., 2020). The visual sense is the most valued when stimulating and persuading the tourist. Moreover, vision corresponds to the first-ever contact that the user has when visiting a place, entering a monument, or even getting out of the plane. So, this means that turning the VE appealing is vital to have a good image resolution and provide different perspectives inside the virtual space, accompanying each user's responses and respecting whatever he wants to

see and visit next. Since the application of some senses in VR is still being studied and explored, such as the touch or the smell, some improvements have already been made to help increase the sensation of textures of some walls, the shadows of buildings, spatial depth and there has also been made some investments on the transparencies, so the users can notice how close it may be to the non-virtual world we know (Guttentag, 2010; Yung et al., 2020). As far as VR equipment is concerned, some investments were already made so these sensorial stimuli can be more effective, such as the HMD (Head-Mounted Displays), which improves the image resolution to 4D, if possible, and facilitates the immersion process of the user, as it isolates the body from the physical place (Loureiro et al., 2020; Marasco et al., 2018; Yung et al., 2020). This tool also makes the interaction with other virtual tourists possible, which can be essential to increasing the user's satisfaction (Williams and Hobson, 1995).

The auditive element is equally important, as it makes the user pay more attention to what is around him or her. Hence, the VR must give spatial features to the sound inside a virtual experience to make the user perceive an external sound (Guttentag, 2010; Li and Peissig, 2020). Applying sound in a VE is not an easy task since the sound varies from environment to environment, so this technology has to be well prepared for the presence of possible echoes or sound vibrations that can appear after a user's response to some stimuli or will (Guttentag, 2010). Moreover, auditory acuity is a unique feature to each individual, meaning that each sound will be heard differently from user to user. VR also invests in HRTF (Head-related transfer function) to respond specifically to each user, which works as a sound channel. It makes it more specific and unique to each ear (Guttentag, 2010; Li and Peissig, 2020).

The touch is still challenging due to our nervous system complex mechanisms that make stimulating this element in VR more complicated. However, there has been a more exploratory investment of this sense in VR systems, using HSD (Hand-supported displays) that originate vibrations in video games, for example (Guttentag, 2010). Furthermore, there have been more investigations and experiences around special gloves and bodysuits that can make the force feedback possible in VE's (Guttentag, 2010). Despite its limitations, some studies already explore the use of specific devices to simulate some objects' weight through the sensation of pressure and thermal features.

Nevertheless, more challenging for VR than touch is undoubtedly the smell and the taste (Guttentag, 2010; Iwata et al., 2004). Besides being the two least valued senses, exploring them in VR systems is almost incognito. The olfactory stimulation, apart from

the other senses, is essential since it increases the sense of place and presence, not only in a VE but in every sort of tourist experience (Porteous, 1985). Therefore, it should not ever be discarded. The investigation into applying these two senses to VR is scarce. However, some ideas already exist, such as installing spray devices that can be activated in specific areas and targets in the VE or developing projects like the ‘Nasal Ranger’, a spray device that allows the user to manifest olfactive sensations (Mura et al., 2017). As far as taste is concerned, some projects are yet to be explored and developed, one of them the ‘Food Stimulator’ or the ‘Digital Taste Interface’ (Iwata et al., 2004; Mura et al., 2017). This interface is the first widget to stimulate the biting process inside a VE, constituting a small device that the user can insert into the mouth to feel different food textures (Iwata et al., 2004). This advanced device also has the auditory element since the sound of the biting is particular from user to user, and therefore it reveals to be as precise as possible (Iwata, 2004).

According to Guttentag (2010), it is possible that in the future, VR systems will be able to bet on surrounding sounds, humidity and heat controllers and an olfactory device that could stimulate the taste and provide textures of food. The author also states that VR future also reserves other devices such as BCIs (Brain-computer interfaces), which allows the user to communicate with a specific technological system within a virtual experience (Guttentag, 2010). There is no doubt that VR is already relevant for the video games industry, where devices such as HMDs are common among gamers. Besides, these devices are being adopted in learning, tourism, and destination marketing (Marasco et al., 2018). The progression made in this technological industry is visible in VR and augmented reality (a component of VR). For instance, Sony has developed some years ago the theoretical idea of creating a special device that could originate sensorial experiences through the stimulation of pulsations and ultrasounds, reaching neurons from specific areas of the brain (Guttentag, 2010), however, it is still an investigation to be done to make it realistic. Other than that, VR newest generation devices like Oculus Rift and Samsung Gear - visual devices that create a more tridimensionality environment - (Marasco et al., 2018; Mura et al., 2017), “represent cutting-edge tools for destination marketing efforts by allowing the creation of highly immersive and realistic virtual experiences.” (Marasco et al., 2018, p.2). Therefore, it is expected that these technological advances will have a significant impact on tourism experiences, helping potential tourists anticipate and be aware of the experience they will attend (Marasco et al., 2018).

It is essential to establish the differences between VT and other related concepts, such as eTourism and Smart Tourism. Kontogianni and Alepis state “(...) that e-tourism is focused on digital connections like linking consumers with businesses, while Smart Tourism is more about linking the physical world with the digital one by taking advantage of social media, cloud computing and IoT [Internet of Things].” (2020, p.4). However, as Marasco et al. state, VR works as an engaging tool for destinations, “encouraging potential tourists to come to visit their sites and attractions” (2018, p.1). In the destination marketing field, one should therefore talk about the concept of Virtual World (VW), which according to Marasco et al. (2018) have been defined as virtual environments where people can interact with each other. This is, VW works like an environment where the main goal is the improvement of social interaction. VW has been used in destination marketing to provide information about the destination and enable communication between users, thus promoting and attracting potential visitors (Marasco et al., 2018). Mura et al. (2017) state that “virtual experiences have existed since ancient times propelled by people’s imagination and fantasies (religious texts, novels, and paintings are examples of representations of virtual worlds).” (p.7). Thus, VR can play an essential role in several areas inside the tourism activity, such as planning, management, marketing, entertainment, education, accessibility, and heritage preservation, being this last one crucial, nowadays (Bogicevic et al., 2019; Guttentag, 2010; Kim et al., 2020; Marasco et al., 2018; Tussyadiah et al., 2018). Other than that, VR has been used as a “Web tourist information system” (Mirk and Hlavacs, 2015), which according to the authors, is helpful for potential visitors, helping them to map their vacation and having access to live cams that show the weather of the place at the moment, for instance.

The growing field of the virtual side of tourism has been revealed to be a helpful tool in filling the gaps tourism was suffering due to phenomena like globalisation and the rapid diffusion of information. As far as planning and management are concerned, VR can be an ally of work as a virtual space. VR has been proven to allow good communication between team members when sharing plans and ideas and getting feedback, working as a didactic virtual office. Authors like Villani et al. (2012) even claim the importance of VR as a “valid chance to overcome the limits related to the exposure in real life” (p.2), opening vast opportunities. VR has been proven to be an innovative tool to replace conventional brochures for marketing. It is interactive and can give a better perspective of the destinations (Bogicevic et al., 2019; Williams and Hobson, 1995). As Bogicevic et al. state, “findings demonstrate that a VR preview induces higher elaboration

of mental imagery about the experience and a stronger sense of presence compared to both the 360° preview and images preview, thereby translating into enhanced brand experience.” (2019, p. 55). VR can work as a better tool for selling a destination than simple images or pictures of the site, being more interactive and realistic. During the SARS-COV-2 pandemic in 2020, VR models applied to marketing have shown to play an essential role as an ally to tourism stakeholders and businesses, thus leading to a growing interest in investing in this sort of technology as an alternative to standard tools and models (Yung et al., 2020). Making use of VR in tourism marketing can turn the user's decisions more straightforward to make since he or she will be well informed and sensorially stimulated to build interest to travel to a specific destination (Yung et al., 2020), as Tussyadiah et al. call the “try before buy” (2018, p.141) strategy. The concept of “mental imagery”, explored by Bogicevic et al., is critical in tourism marketing, since “Mental imagery, or a perceptual representation of nonverbal information in memory, has been explored in marketing research as an important mechanism for processing of marketing stimuli.” (2019, p.56).

Kontogianni and Alepis (2020), Tussyadiah (2020) and Schiopu et al. (2021) recognize the need for the tourism activity to invest in advanced technologies, as these are constantly evolving, and the need to respond to the new demands is growing, being stricter than before. As some authors already stated earlier, we have reached a point where technology will create several sorts of experiences (Williams and Hobson, 1995). In 2013, Ho et al. claimed that technological advances could profoundly impact tourism businesses. However, they criticized the possibility that those advancements could replace any other sort of “human-based transactions” (2013, p.692). Nevertheless, avoiding any human contact is currently needed due to the SARS-CoV-2 pandemic, which might make using these technological advancements easier. Akpan^b et al. address this issue, claiming that using robots to replace human functions in serving customers could be a solution to social distancing and that take-away deliveries services done by drones “may now not seem too futuristic after all” (Stankov et al., p. 5, 2020).

Although many researchers claim that VT is without any doubt a replacement for conventional Tourism, the fact is that other studies such as Guttentag's (2010) state that VT would only be considered if the user travels to a destination to make use of this technology. This would mean that any virtual experience in tourism made in the country where the user permanently lives would not be considered Tourism. Conversely, Tussyadiah et al. claim that VR can only be seen as an actual substitute to conventional

travel if one talks about protected areas, where tourism could constitute a higher risk, constituting this sort of technology a “positive contribution to environmental sustainability” (2018, p.140).

As Akpan^b et al. (2020), Ioannides and Gyimóthy (2020), and Zwanka and Buff (2021) state, technology played an essential role during the pandemic restrictions, since the resort to Zoom and online meetings, and telework, changed most business models and plans, and in some European countries is still the adopted model. As the authors claimed, “These technologies became the survival strategy during the lockdown of communities by different levels of government meant to contain the spread of the coronavirus disease and enable management of operations and projects remotely or conducting business meetings without physical contact among employees.” (Akpan^b et al., 2020, p.4). Hope was a vital word and feeling throughout those terrific pandemic months. What kept hope alive was the need to get answers and solutions to this atypical event, and so, as Haywood states, the “desire to cooperate and bring the world back together again” (2020, p. 601). Hence, as the same author claims, “survival is determined by those who adopt the path of solidarity, in comparison to those who continue to travel down the path of disunity” (Haywood, 2020, p. 601), mainly when referring to the communities-as-destinations, that had not a strong voice in pre-pandemic times. However, the crisis played a crucial role in keeping all the nations together, and this union would never be possible without technology (Akpan^b et al., 2020). Therefore, the virtual world (VW) has helped build a community to increase awareness of the communities-as-destinations question and an environment where people could discuss the pandemic scenario they were living in. As some authors have written, “The use of technology during this pandemic has also enabled and fostered community and civic spirit” (Akpan^b et al., 2020, p.5).

These authors also believe that the adoption of these technologies by enterprises “have accelerated, projected, and magnified the impact technology can have on some organizations’ business models.” (Akpan^b et al., 2020, p.5). Indeed, Zwanka and Buff added that “(...) this could be a strong push to reorganizing how we work in the future to being hybrid of both work at the office and working remotely.” (2021, p.62).

Although there has been criticism about technology in businesses, since it can constitute in the future a “threat of substitution” (Buhalis et al., 2008, p.617) of human functions, the fact remains that in pandemic times, this replacement can play an important role, in preventing the virus dissemination and in business survival. There was, in fact, some concern about the adoption of a comprehensive technological system that could in

the future replace some human functions. However, some technological changes have already occurred, especially in the hotel business (Oh et al., 2013). Still, a balance must be found not to replace the human job or jeopardize the potential demand from older generations because the elderly public still desire human interaction since their use of technology is scarce (Ho et al., 2013). This last observation is interesting for this present study. One of the main goals here is to understand if opinions vary across generations when analysing the acceptance of new technologies in tourism.

According to Buhalis et al. (2008), the emergent type of tourist that is probably willing to test and enjoy the application of new technologies in tourism is the same tourist that is advanced technologically adept; therefore, he or she will be automatically in favour of adopting the virtual models in tourism. Given that businesses are already planning to implement advanced technologies, Buhalis et al. (2008), in his 12 years old research, already claimed that teleworking would become more and more usual along the lines of the tourist's telepresence since VR has proven to be able to provide a travel experience. This means, therefore, that for the author, teleworking would become an adopted system in several companies, since at the same time, new advances such as telepresence and virtual reality in tourism would exist.

It is also important to give VR the profile of working as a time machine, as Guttentag (2010) and Loureiro et al. (2020) refer. One of the best-known examples of this is the ROME REBORN programme, which uses Virtual Reality to recreate the ancient city of Rome. Thanks to the reconstructions made by computers, it is now possible to visit the city and the monuments, accompanied by a guide, which explains all its history. This is a clear example of how valuable and important VR can be, as far as heritage and history conservation are concerned, because stakeholders can recreate a city or a monument without jeopardizing the physical place (Bogicevic et al., 2019; Loureiro et al., 2020; Marasco et al., 2018;). As Guttentag (2010) says, "3D models can function as a valuable tool for heritage preservation because such virtual models can contain extremely precise and accurate data sets that theoretically can be stored indefinitely." (p.644). This means that VR allows us to keep the history and the physical aspect of a place safe and assure that it will never be deleted or forgotten. Hence, VR can be seen as a solution to over- and mass tourism, since places listed as UNESCO World Heritage Sites, for instance, are put at severe risk due to their status that attracts millions of visitors a year (Guttentag, 2010).

Furthermore, Mura et al. address this issue, stating that “(...) combined forms of virtual and non-virtual tourism may lead to more sustainable forms of mass tourism as travelling without the body may reduce the impacts of corporeal presence. This may be particularly appealing within a discourse of heritage preservation, especially with regard to tangible heritage.” (2017, p.5). Research reveals thus that VR can solve unsustainable tourism for those destinations that cannot cope with the number of visitors. Several authors believe VR can represent an essential shift of conventional tourism in the Covid-19 generation (Zwanka and Buff, 2021).

Potentially, virtual reality could bring us closer together as the COVID generation could see VR travelling with partners from other areas of the world as a way for us to be that much more involved in each other's lives. (Zwanka and Buff, 2021, p. 63).

3.2. Motivation and limitations of VR

According to Marasco et al. (2018), VR in tourism is a growing field in tourism. However, few studies have explored its effects on tourists' behavioural intention to visit a destination nor its successful effect on promoting a site. For Guttentag (2010), although there are controversial issues around VR, a considerable percentage of the public is interested in trying VR in tourism. As the author states, their motivations “may include personal push factors, such as the desire to escape one's daily routine, find excitement or novelty, or engage in social interaction.” (p.645). Additionally, Mura et al. state that “Virtual tourism not only problematizes the spatial nature of the tourism experience. It also challenges its temporal dimension as it contests the traditional idea that tourism is a temporal and temporary escape from work and the mundane routines of everyday life.” (2017, p.5). However, these “push factors”, as Guttentag (2010) refers to, can be reached but only until a certain level. VR can replace certain experiences, but it will never replace the physical place, as the previous author states. Stankov et al. added, “virtual tourism could serve just as a temporary fix, not a viable substitute to travel.” (2020, p.5). The VR model can work as what one calls a “getaway” since it complies with every precondition of motivations stated above. Despite not being able to replace completely physical travel, it is important to note what Mura et al. state: “what is real and not-real cannot be defined based on the corporeality of the experience.” (2017, p.7). Just because the virtual

experience does not have a physical side, that does not necessarily mean that the experience is not real, since this judgement is transversal and can depend on several factors.

So, the acceptance of VR depends on the user's motivations. As Guttentag (2010) states, if someone wants to visit a monument for work purposes and get to know its history and relevant information, they can accept VR as an excellent opportunity. VR works as an alternative for conventional tourism and a solution for possible constraints from the tourists' side: "(...) Lack of money, a lack of time, poor health, safety fears, concerns about managing in a foreign environment, perceived lack of skills for an activity, and an absence of desired travel partners (...)" (Guttentag, 2020, p.646). These constraints can be possible discouragements for conventional tourism, thus enhancing the usefulness of VR.

As far as the type of VR tourist is concerned, few studies have been made about the tendencies regarding the type of VR user in tourism (Mura et al., 2017). Guttentag (2010) advances with the possibility that the same individual that prefers watching a football game on TV instead of assisting the live game on the audience will probably have positive acceptance of VR models in tourism. Nevertheless, the central question is: Which target public are we talking about?

Guttentag (2010) points out different perspectives concerning issues around VR in tourism, one of which is: How receptive are tourists to VR as an alternative to conventional tourism? As Guttentag (2010) states, "most people want to see reality and not only virtuality", so what paper could VR play to make a difference in tourism? There are many limitations and questions around VR models, precisely because, as stated above, they cannot explore all the senses stimulations (Guttentag, 2010; Williams and Hobson, 1995). Yung et al. (2020) argue that the problem with VR systems on tourism is that the sense of presence in a VE is still not 100% effective. Thus, some businesses and stakeholders may still not trust that the use of these advanced technologies could effectively make a difference. This means that VR adoption in tourism is still low, eventually due to the lack of trust about its effectiveness and capacity to make a difference in tourism experiences.

Given that it is all about creating a virtual experience through developing a VE, this model suffers the stigma that it will never replace non-virtual travel, even though that is not the primary goal of the investment in VT. VT is a type of travel, as we also have leisure tourism, familiar tourism, business tourism, and others. It will never replace the

non-virtual places and experiences, but it can create new ones, virtually, with the help of technology, thus enhancing the acceptance of this type of travel in society (Guttentag, 2010; Kim et al., 2020; Kontogianni and Alepis, 2020).

Despite the investment costs on technology, one of the most recognized features of VT is that there are no transportation costs, no problems with bureaucracy, no concerns with the weather or time, little cultural shock and the experience is almost taken for granted. However, it is interesting to notice the conclusions of the 1990s study of Williams and Hobson (1995) that clarifies the idea that VR is not meant to replace conventional tourism but to create new experiences. The authors give the example of the Theme Parks, such as Disney World, that represent the creation of experiences made for the tourists to consume and feed their wishes. The goal of the Theme Parks was never to replace the physical world or other experiences but to create a fantasy experience different from what is usual.

3.3. The issue of authenticity in tourism and its interpretation on Virtual Tourism

As Guttentag (2010) states, “a user’s perception of the authenticity of a VR experience will be one factor influencing his or her acceptance of it as a conventional tourism substitute. VR experiences are inherently inauthentic if one evaluates them with an objective, criteria-based evaluation of authenticity, known as objective authenticity” (p.645).

Defining *authenticity* is a difficult task, and therefore it should be wisely approached and given the suitable possible definitions and contexts (Mura et al., 2017). Cohen (2007) tried to disassemble this concept by revealing its antonym, being something like *falsification*. Authenticity could be directly related to every sort of event and element that is conventional and traditional, that has not been touched or manipulated by humankind, maintaining, therefore, its original features and meanings (Cohen, 2007). When one thinks about authenticity, it probably comes to one’s mind something genuine, non-virtual, untouched, or honest. However, according to Cohen (2007), authenticity is also related to creativity, a unique work of art, for instance, something new that has never been seen before. When it comes to applying the concept of authenticity to tourism, the task becomes more complex since research shows how transversal and misleading this concept can be. Cohen (2007) claims that authenticity can be every sort of event that can occur during a travel experience: “Authenticity, in the proposed sense, also comprises on-

going situations and events, like a local uprising, revolution or even natural disaster, which a tourist may happen to witness-though he or she may not have bargained for this kind of authenticity” (Cohen, 2007, p.77). Hence, this event usually makes the whole experience authentic because no one would predict them to happen, and therefore nothing was indeed manipulated. Nevertheless, bearing in mind a tourist’s demands, he or she will always look for an authentic experience, hoping to get all that was previously thought he or she would live by the time of decision-making. The matter here is that the tourism marketers sell a destination by enhancing the most typical visited sites, referring to them as authentic, only because they turned out to be the icons of certain particular places, not meaning that they are indeed authentic *per se*.

In order to explore in-depth the concept of authenticity applied to tourism, it is relevant to reference MacCannell (1973), who explores its application on tourism, criticizing that there is not an authentic tourist experience without a bit of manipulative and staged scenarios and elements. He further explains that every sort of tourist experience is made of performances and shows to give the tourist the impression that he or she is living an authentic moment and create a sense of reality and transparency. Nevertheless, behind a very truthful and real experience can exist a lie, meaning one more time that even though an experience may seem authentic and genuine with no filters, it could have in reality been staged and transformed to make it more pleasant (MacCannell, 1973). According to MacCannell (1973), all the tourist scenarios and sites in particular “can be called a stage set, a tourist setting, or simply a set depending on how purposefully worked up for tourists the display is” (p.597), thus meaning that they are “designed to look natural” (p.597). The author finds that it is hard to evaluate whether a tourism experience is authentic or not.

Touristic consciousness is motivated by its desire for authentic experiences, and the tourist may believe that he is moving in his direction, but often it is very difficult to tell for sure if the experience is authentic in fact. (MacCannell, 1973, p.597); The touristic experience that comes out of the tourist setting is based on inauthenticity, and as such it is superficial when compared with careful study; it is morally inferior to mere experience. (...) the lie contained in the tourist experience, moreover, presents itself as a truthful revelation, as the vehicle that carries the onlooker behind false fronts into reality. (MacCannell, 1973, p.599)

Therefore, if conventional tourist experiences represent nothing more than a “staged authenticity” (MacCannell, 1973), it is worth considering whether conventional tourism and VT could be in the same spectrum of experiences since both of them represent a recreation of scenarios, manipulation of social elements and also a show for those who visit the destination.

Ning (1999) also explores the concept of authenticity in tourism studies, referring to the staged contexts. Moreover, he calls for attention to the concept of “intra-personal authenticity” to talk about the bodily feature of authenticity. There is a physical spectrum of authentic stimulations that the visitor can only reach *in loco*.

In this line of thought, Mura et al. (2017) claim that the stimulation of the five human senses is crucial to make a VE more appealing and thus authentic. In their study, they concluded that stimulation of the human senses is what triggers authenticity the most. As the authors state, apart from the visual feature of the experience (visiting and appreciating monuments and sights) and the hearing (music, sounds of everyday life of the site), the taste and the smell are also essential senses that affect the emotional response of the tourist in the experience (Mura et al., 2017). As they conclude, “This suggests that perceptions of authenticity may be activated by experiences that involve all the different senses of the human body. Indeed, the visual dimension is important in the experience of authenticity; yet, other senses, such as taste and smell, are equally important.” (Mura et al., 2017, p.7). According to Kim et al. (2020), however, the truth is that the concept of authenticity is transversal. There is no correct and precise definition of what we can consider authentic or inauthentic (Mura et al., 2017). Authenticity is a negotiable concept, and thus it depends on the tourist’s opinion and the experience itself (Cohen, 2007). Hence, what matters is the consumer’s opinion about tourism experiences.

Tourists’ perceived authenticity can vary according to some factors, “such as age, gender, nationality, education level, tourism style, and past travel experience (...) (Guttentag, 2010, p.645). So, this means that a set of sociological factors influence the perception of authenticity of each individual throughout a tourist experience. Budruck et al. (2008) developed an investigation of the perception of authenticity of Chelly Canyon visitors based on their sociodemographic features. The profile of the typical visitor was characterized as middle-aged, well-educated, and white. The first conclusion of their study was that one of the aspects that makes the visitors find the experience authentic is the simple possibility of taking pictures as the main *souvenir* of the destination (Budruck

et al., 2008). Other than that, one aspect that the visitors in their study referred to was that the less crowded the place is, the more authentic it can be, favouring a VR experience since the user does not feel the physical presence of other visitors.

Although VR can eventually bypass some of its limitations, there are a set of elements that do not seem to be replaced or sensed in a VE, as some travel motivations Budruck et al. (2008) found more likely to be perceived as authentic by tourists: experiencing the mother nature and the surrounding culture and, above all, being with the family. Therefore, VT experiences may not directly address family programmes, representing a significant limitation. The place identity is also an important factor when evaluating the level of authenticity of a tourism experience, which raises several questions about to what degree a VR experience represents the identity of the place.

Budruck et al. (2008) stated that the older the tourist, the more chances exist for him or her to perceive authenticity in fewer and simple experiences, maybe because technology represents something new and innovative and can evoke positive emotions and responses. However, according to the same authors, the higher the level of education, the less authentic the experience will be perceived, suggesting that younger and educated tourists will prefer non-virtual and physical experiences and discard virtual technology.

Baños et al. (2012) developed a virtual system dedicated to an elderly public, with the primary goal of providing sensations of relief and joy. They relied on vivid colours so the VE could be visually appealing and satisfying, which, together with quiet sounds and melodies, creates a relaxing scenario, in this case, a park. They set up a unique narration to evoke the user's autobiographical memories, making them remember specific places, smells, lights, temperatures, and people they were with. Baños et al. (2012) referred to this strategy as a form of interacting with the VE user to increase the level of emergence into the environment and make the whole experience more authentic. At the end of their experimentation, they concluded that the level of satisfaction was high and that the sense of presence was highly felt (Baños et al., 2012).

Kim et al. (2020) concluded that “authentic experience and subjective well-being are affected by simplicity, benefit, compatibility (...), informativeness, social interactivity, and playfulness (...)”, which means that the level of technology advancements also plays a significant role in defining the virtual experience. Kim et al. (2020) pay attention to the sensory dimension of the VR model in tourism. As described before, it can contribute to the positive feedback of the virtual experience, thus enhancing the level of authenticity. The authors also explored the concept of subjective well-being,

stating that this concept is also essential when it comes to evaluating the virtual experience. The example of a tourist that cannot travel due to health limitations can look at VT as an opportunity to collect authentic experiences and enhance his or her subjective well-being (Kim et al., 2020; Mura et al., 2017). Simplicity and advancements in technology will also positively influence the user's opinion about the experience's authenticity. People who are constantly connected with technology will be more receptive to virtual tourist experiences, with more expectations but positive feedback (Kim et al., 2020). The concept of "technology readiness" can be defined as "people propensity to embrace and use new technologies for accomplishing goals in home life and at work" (Kim et al., 2020, p.5). According to the authors, the readiness to use new technologies and their acceptance is significantly related to the user's personality, apart from sociological features. The user should be optimistic and innovative, reducing insecurities and concerns (Kim et al., 2020).

The stimulation of the sense of place increases the perception of authenticity in VT (Guttentag, 2010). When the sense of place and presence is high enough, the user "achieves a perceptual illusion of non-mediation. This means the user starts experiencing the VE as an actual, physical place" (Yung et al., 2020, p.3). Thus, understanding the sense of presence in a VE is about forgetting the physical world where the user is and remembering the experience as authentic and realistic rather than as virtual and manipulated. Yung et al. (2020), suggest that more investigation around the effects of tourists' sense of presence in VR should be done due to the lack of studies and empirical tests and the importance of measuring the grade of these stimuli, so we attempt to understand how advanced technology is. In their study about virtual environments, Villani et al. (2012) concluded that it is possible to experience a sense of presence in a VE. Despite representing a barrier, virtual technology has the power to interact with the user and emerge him or her into a virtual space. Many investigations in the area claim that the sense of presence in a VE is a very different feeling from the one a tourist experiences in a physical place. However, Villani et al. (2012) state that the secret is to give a VE a contextual narrative, to make it more appealing to a safer sense of presence, since what connects presence and the meaning of the experience is the emotion evoked: "From this perspective, a virtual experience could elicit a higher sense of presence if the meaning and the emotional engagement are higher than in real experience." (p.269).

Still, on the sense of presence, Tussyadiah et al. (2018) studied the effectiveness of this phenomenon on the gaming industry, which is constantly improving and

motivating the use of VR. The authors claim that “gamers” could be a critical public to every sort of VR experience on tourism, which could rapidly contribute to new ideas and innovative perspectives to this technology (Tussyadiah et al., 2018). Furthermore, they believe that VR experiences on tourism can lead to a better experience memory, which leads to consumer satisfaction with the trip. Their investigation towards VR experiences targeted several sightseeing places, one of them Portugal. They used several devices, being the HMD one of them. Tussyadiah et al. (2018) concluded that the sense of presence in a VR context happens when the artificial and technological features are unnoticed. Moreover, presence is also about “realism, transportation, immersion” (p.142); the fast response of the user’s movements and demands so that the tourist can remember it as a place; and the multisensory stimulation.

To sum up everything that has been stated so far, it is essential to underline the effects of the SARS-CoV-2 pandemic on tourism and the need, to re-imagine it and to re-invent new forms of travel and practices for the exact purpose of being able to respond positively to new requirements and, at the same time, to be prepared for eventual future events, which can brutally challenge countries’ economies and, specifically, tourism. The need for tourism to be re-imagined has demonstrated the need for businesses to invest in advanced technologies to create new experiences. The 2020 SARS-CoV-2 pandemic also demonstrated that many countries were not ready to respond to restrictions such as the lockdown. Thus, the need to create alternatives to travel and keep businesses able to survive.

4. Methodology

4.1. The data collection method

This dissertation aims to study the influence of the travellers’ perception of VT (bearing in mind the concepts of technology and authenticity), as an alternative to conventional tourism, in their intention to experience it in a post-pandemic period.

The method of data collection chosen was a questionnaire survey since it represented the best option to reach the primary goal of this study. The questionnaire survey was circulated in Facebook, Instagram, and Gmail to reach a heterogenic sample, especially in what comes to the age of the respondents.

A questionnaire survey relies on the information from respondents, and these can be randomly or purposely picked up, depending on the researcher's interest. It provides a clear and transparent research method to show how the information and data were collected and further analysed. One advantage is that questionnaire surveys can often be “re-analysed” by other investigators, leading to new perspectives and interpretations (Ivanov, 2018; Marshall, 2005). Therefore, questionnaires are a method of representing a population’s picture and patterns and allow the researcher to gather all types of information, such as “attitudes, meanings and perceptions among the population as a whole” (Ivanov, 2018, p. 233). Moreover, a questionnaire survey promotes the anonymity, which encourages honest answers from the respondents, thus resulting in more high quality data (Marshall, 2005).

A survey allows different types of analysis: descriptive research, explanatory research and evaluative research (Ivanov, 2018). The first one requires only the presentation of the results in a straightforward way, describing the data for single variables; the second one aims to explain patterns, using “causality” as a form to justify possible answers and relations between all the variables; and the third one serves to compare the survey findings with already existing literature, deductive ideas, and expectations (Ivanov, 2018). Therefore, a questionnaire survey revealed itself to be the best option to collect data about the topic of this dissertation under an explanatory design.

The Statistical Package for Social Sciences v.27.0 (also known as SPSS) was used to analyse the data collected through the questionnaire survey. As Griffith (2010) states, SPSS “is a piece of software that takes in raw data and combines them into new statistics than can be used as predictors” (p.31).

4.2. The design of the questionnaire

At the beginning of the questionnaire, it was guaranteed that all the answers were anonymous, and there were no right or wrong answers. Every person who opened the survey was formally asked if they accepted participating in the study.

The questions varied from simple Yes/No closed questions to choosing statements that best fit the respondents’ opinions with the option of inserting an open-ended answer and statements with Likert Scale type of answer. Given the size of the questionnaire (23 questions in total, with an average duration of 9:25 minutes), closed questions represented the best option to make it feasible since they are easier to reply to and avoid respondents

having to write extensively. Moreover, since not all respondents could master the central issue of the questionnaire and some of the questions could not be clear enough, closed ones could help clarify its meaning through the list of options given (Bryman, 2012).

The questionnaire survey tried to be as straightforward as possible, even when the topic could represent a limitation for some respondents, like the case of the definition of Virtual Tourism. The question regarding the knowledge of VT was included to understand the respondent's domain on the concept (Bryman, 2012).

The respondents were given the option of open-ended answers to avoid a lack of spontaneity in some of the questions, especially about authenticity in tourism and consumer behaviour. Bryman (2012) stated that open-ended answers are interesting, as the respondents can answer in their way and not be forced to answer just like the options they are given in a closed question. Further, just like the closed questions enhance good analysis material, open-ended questions enable not expected answers to be originated. Thus, they are helpful for the analysis since they create a new spectrum of ideas on which the researcher might have limited knowledge (Bryman, 2012). Once again, as open-ended questions are time-consuming for the respondents, and given the extended questionnaire size, only a couple of questions had the option "Other." to freely fill in.

The first part of the questionnaire is concerned with consumer behaviour during the pandemic and what change could be expected. These questions also aimed to understand if the pandemic restrictions have influenced future changes in the way people see the environmental limits in consumerism. As stated in previous chapters, Covid-19 effects on tourism raised questions about how we consume travel and problems like over-tourism and its evil influence on tourist landscapes. In summary, this group of questions aimed to check if the restrictions caused by the pandemic, such as the lockdown, the avoidance of the gathering of people, the social distancing and the temporary closure of some commercial establishments, have been having some effects on how people will consume from now on, bearing in mind habits that have been adopted throughout the pandemic period. Especially as far as tourism is concerned, the answers will also point out if travelling is a priority or an option for the respondent in a post-pandemic scenario. Still, on these set of questions, the questionnaire also approached the professional life of the respondents, asking if they were at some point of the lockdown in teleworking, which is helpful to relate to the acceptance of new technologies in tourism. The next set of questions, about Tourism and travelling, serve to understand what kind of tourists

answered the questionnaire. This is important to create a possible profile of the respondents as tourists.

Next, the concept of Virtual Tourism was presented to check what perceptions the respondents have of it. To do that, the respondent had to pick up the sentence that best described VT, in their opinion. Given the topic of this set of questions, here, the researcher also aimed to know if the respondents had ever had a VT experience and, if yes, whether they enjoyed it or not.

Since one of the main goals of this questionnaire survey was to explore the tourist perceptions on VT as a viable solution to conventional tourism in an atypical situation such as the SARS-CoV-2 pandemic, the respondents were asked if they agreed or not with that statement. Moreover, since authenticity represents a very discussed and polemic concept in tourism studies, especially in VT, the researcher wanted to know what elements the respondents, as tourists, consider essential so that a VT experience can be characterized as authentic.

It is important to note that many of these previously presented questions are attitude questions, where the Likert Scale is often used. The Likert Scale allows the researcher to access a broader perspective of the respondents' feelings about a specific issue and make more precise comparisons, rather than relying on single indicators (Bryman, 2012).

The last group of questions were, as Bryman (2012) names, the Personal Factual Questions, where the respondents were asked their education level and age. According to Budruck et al. (2008), these sociodemographic features can play an essential role in the perceptions of authenticity of an experience and can be interesting when analysing the data. Furthermore, respondents were asked their gender and occupation to explain if these variables predict their answers regarding VT.

Table 1 presents the questions, their respective sources from the literature and how the questionnaire is related to the research goals. The complete questionnaire is available in Figure 2 in the appendix chapter.

Table 1. Questionnaire questions, sources, and specific objectives

Question	Source	Specific objectives
1. Do you want to participate in the questionnaire?		
2. Do you consider that your consumption habits have changed during the pandemic period?	McKinsey and Company (2020)	Investigate what has changed in tourist consumption during the SARS-COV-2 pandemic period
3. If yes, to what extent do you agree/disagree with the statement: “The new consumption habits of any good or service of a personal nature will remain in my future consumption”?		Investigate what has changed in tourist consumption during the SARS-COV-2 pandemic period
4. Select the options you most identify with, in terms of consumption habits that you have adopted during the pandemic.	Dexus (2018) McKinsey and Company (2020)	Investigate what has changed in tourist consumption during the SARS-COV-2 pandemic period
5. Select the options you most identify with, in terms of consumption habits that will have weight in your future.		Investigate what has changed in tourist consumption during the SARS-COV-2 pandemic period
6. During the pandemic, were you teleworking (for a period longer than 1 month)?	Buhalis et al. (2008)	Investigate what has changed in tourist consumption during the SARS-COV-2 pandemic period
7. If yes, how did you feel about the outcome of your teleworking experience?		
8. Do you like to travel in tourism?		Explore differences based on tourist characteristics regarding the acceptance of technologies in the tourist experience
9. If yes, how often do you travel?		
10. Are you familiar with the concept of Virtual Tourism?		
11. If yes, select the option that best fits your idea of Virtual Tourism.	Kontogianni and Alepis (2020)	

	Guttentag (2010)	
12. Have you ever had any experience of virtual reality? (e.g., in tourism, video games, or other situations.)	Guttentag (2010)	Explore differences based on tourist characteristics regarding the acceptance of technologies in the tourist experience
13. Would you be interested in having a virtual tourist experience?		Study the possible change in the valuation of authenticity in the pandemic period
14. What might lead you to participate in a virtual tourist experience?	Guttentag (2010) Kim et al. (2020) Mura et al. (2017)	Study the possible change in the valuation of authenticity in the pandemic period
15. To what degree do you agree/disagree with the statement: “Virtual Tourism could become a solution for the tourism sector in future atypical situations, such as the case of the SARS-CoV-2 pandemic.”?		Analyse the role played by Virtual Reality in the pandemic period
16. To what degree do you agree/disagree with the statement: “Authenticity is an important element in this type of virtual tourism experience.”?	Budruck et al. (2008) Mura et al. (2017)	Study the possible change in the valuation of authenticity in the pandemic period
17. What elements can contribute to a virtual experience being considered “authentic”? (See all the answer options at the Appendix chapter)	Budruck et al. (2008)	Study the possible change in the valuation of authenticity in the pandemic period
18. To what degree do you agree/disagree that the following factors can be considered limiting to the use of virtual reality in tourism? (See all the answer options at the Appendix chapter)	Baños et al. (2012) Riva et al. (2007) Budruck et al. (2008)	Identify the main barriers to the use of these technologies by tourists Study the possible change in the valuation of authenticity in the pandemic period
19. To what degree do you agree/disagree with the following statements to	Baños et al. (2012)	Identify the main barriers to the use of these technologies by tourists

characterise a Virtual Tourism experience? (See all the answer options at the Appendix chapter)	Riva et al. (2007) Robillard et al. (2003) Slater and Steed (1999)	Study the possible change in the valuation of authenticity in the pandemic period
20. Please indicate your level of education.		Explore differences based on tourist characteristics regarding the acceptance of technologies in the tourist experience
21. Please indicate your occupation.		Explore differences based on tourist characteristics regarding the acceptance of technologies in the tourist experience
22. Please indicate your gender.		Explore differences based on tourist characteristics regarding the acceptance of technologies in the tourist experience
23. Please indicate your age.		Explore differences based on tourist characteristics regarding the acceptance of technologies in the tourist experience

Source: own

4.3. The sample

The sampling process was chosen for accessibility in an academic context, being a convenience sample. As Bryman (2012) states, the main problem about this type of sample is that “it is impossible to generalize the findings because we do not know of what population this sample is representative.” (p. 201). Nevertheless, this non-probability sample can originate interesting data and provoke further research or substantiate existing work (Bryman, 2012).

The survey was intentionally and conveniently circulated and sent to a public group on Facebook, in which most of the participants were up to 40 years old to assure the sample could include a relevant percentage of this population. Replies from respondents less than ten years old were not allowed since, as Ivanov (2018) states “it may be difficult to obtain accurate information from very young children” (p.154). Moreover, Ivanov (2018) points out the fact that having young respondents in the sample could be “ethically unacceptable” (p.154), since the content of the question could be too mature to be

answered by this group of participants, even though the topic of the questionnaire survey could be adequate and pertinent to them. Two hundred twenty-nine (229) valid responses constitute the sample.

4.4. Proposed conceptual model

Bearing in mind all the analysis done in previous theoretical chapters and the main goals of this study, a set of hypotheses were developed.

Haywood (2020) stated that the several restrictions due to the SARS-CoV-2 pandemic had a very atypical consequence on consumer behaviour. According to the same author, people realized how dependent they were on tourism and how suddenly plans could not happen, that they were sort of forced to rethink their habits, concluding that some change had to happen. Considering the adverse effects of the pandemic restrictions on the global economy and social life, consumer behaviour has changed. Tourists started to think about environmental limits and the changes that could bring tourism (Haywood, 2020; McKinsey & Company, 2020).

In Europe, consumers looked for more virtual options, from online shopping to take-away restaurant services, and they remained very cautious about out-of-home activities (Bhargava et al., 2020). Therefore, they looked for alternative ways to stay at home, making consumer behaviour changes obvious. Most of these changes also came with more consciousness of the environmental limits, which makes it possible to claim that most of these changes in consumption will remain in the future because of sustainable development. As Stankov et al. stated, “A post-pandemic tourism industry could benefit from more conscious consumers that are more aware of their unconscious behaviours, purchasing patterns, and increased ability to resist the promise of false happiness.” (2020, p.4). Therefore, an environmentally friendly consumption pattern might also influence new habits of travelling and VT.

Therefore, the first set of hypotheses is presented below.

H1: Changes in consumer behaviour during the pandemic are positively associated with the intention to experience Virtual Tourism.

H2: The higher the perception of VT as a solution for the problems of conventional tourism, the higher the willingness to experience it.

H3: The higher the consumption changes during the pandemic will remain in the future, the higher the intention to experience VT in the future.

Generational differences concerning VT have consistently been explored in the literature. Ho, Jeong and Baloglu (2013) point out the scarce use of technologies by older adults, which probably makes one wonder that these age groups would not be very receptive to a virtual reality experience in tourism. Therefore, the following hypotheses were developed:

H4: Age, gender and education level are associated with the intention to experience VT, as follows:

H4a: The older the age, the less interest the tourist has in VT.

H4b: Individuals with higher levels of education are more willing to experience VT.

H4c: Male gender has a higher intention to experience VT than the female gender.

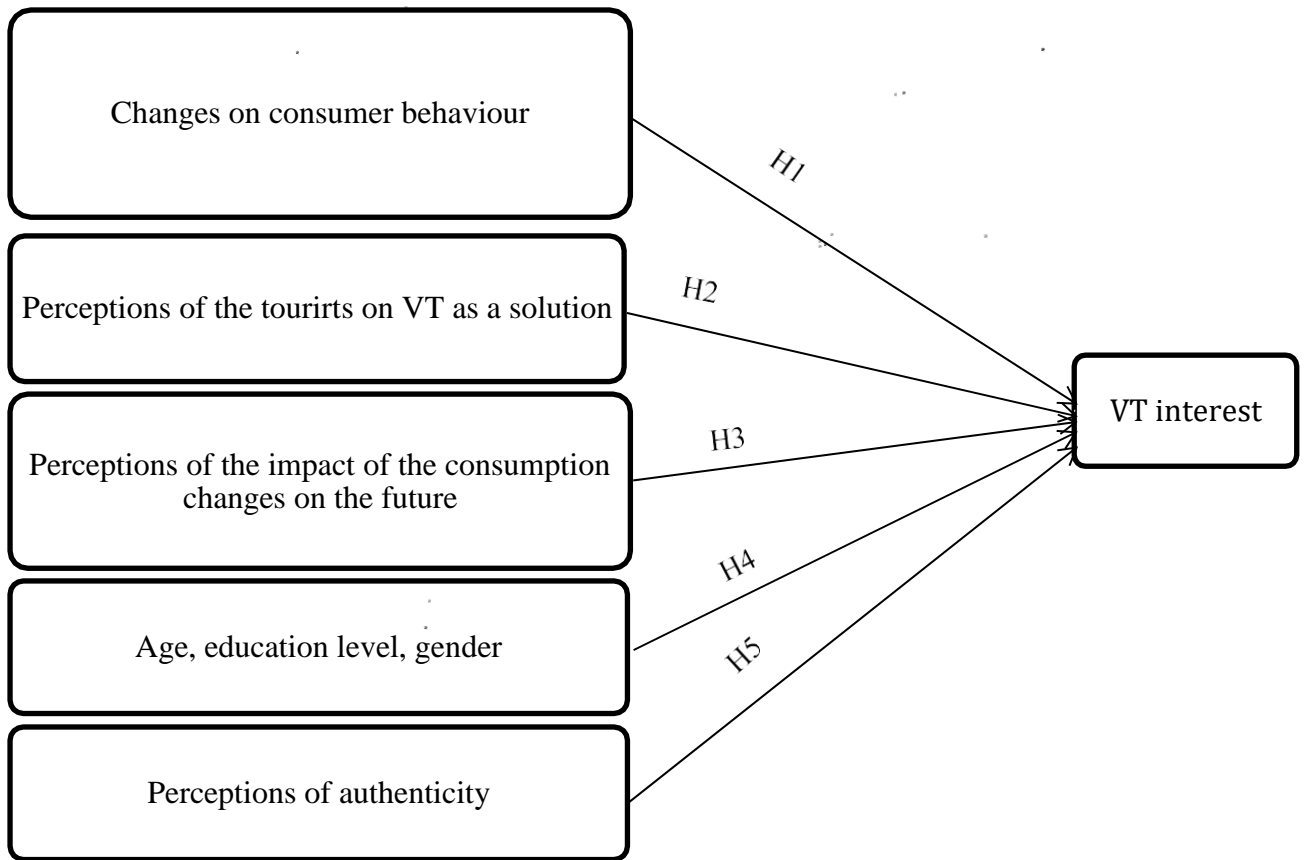
Finally, one of the relevant issues about how VR could reach an authentic perspective is the sense of presence in virtual environments, thus leading to the need to explore the human senses. Considering the studies of Baños et al. (2012), perceptions of authenticity in VT experiences influence their intentions to try it. In their investigation, Kim et al. (2020) also stated that an authentic experience and subjective well-being was most of the time related to simplicity, interactivity, and playfulness, which plays for technology somehow. Budruck et al. (2008) concluded that the older the tourist, the more chances there are for him or her to perceive authenticity in simple experiences. This might happen because this specific group of tourists might see technology as innovative, resulting in a positive experience.

On the other hand, Budruck et al. (2008) found out that the more educated the tourist is, the less authentic will the experience be. Guttentag (2010) and Budruck et al. (2008) defend that socio-demographic features can be behind the tourist perception of authenticity in tourism experiences. Characteristics like age, gender, education level, tourism style and past tourism experiences could influence one's knowledge about authenticity *per se*. For this purpose, the following hypothesis was developed:

H5: The perceptions of authenticity of VR in tourism affect the tourists' intention to experience VT so that the respondents to whom authenticity is an essential element in VT intend to experience it.

Figure 1 depicts the conceptual model to be tested.

Figure 1. Proposed conceptual model



Source: own

5. Results

5.1. Sample characterization

As the profile of the tourists of the sample is concerned, as it can be seen on Tables 2 and 3, the sample of 229 respondents mainly consists of young people, in the age group of 18-26 years old, with a bachelor's degree and most of them already employed (Table 4). Nevertheless, the sample includes all the other age groups, education levels and occupations defined in the questionnaire.

Table 2. Frequencies by Age scale

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25 years old	100	43,7	43,7	43,7
	26-35 years old	26	11,4	11,4	55,0
	36-45 years old	33	14,4	14,4	69,4
	46-60 years old	56	24,5	24,5	93,9
	+60 years old	14	6,1	6,1	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 3. Frequencies by education level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3d cycle or less	4	1,7	1,7	1,7
	Secondary education	45	19,7	19,7	21,4
	Bachelor's degree	111	48,5	48,5	69,9
	Master's degree	53	23,1	23,1	93,0
	PhD	16	7,0	7,0	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Most of the sample consists of respondents of the female gender (Table 5), representing 73.8% of our sample. Males represent only 24.5%, followed by the respondents who preferred not to answer, by those that do not identify themselves with any gender and by the ones who identify themselves with both genders presented (male and female).

Table 4. Frequencies by occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employed	94	41,0	41,0	41,0
	Retired	12	5,2	5,2	46,3
	Self-employed	25	10,9	10,9	57,2
	Student	79	34,5	34,5	91,7
	Unemployed	12	5,2	5,2	96,9
	WorkingStudent	7	3,1	3,1	100,0
Total	229	100,0	100,0		

Source: own, using SPSS

Table 5. Frequencies by gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	169	73,8	73,8	73,8
	I don't identify with any	1	,4	,4	74,2
	I identify with both	1	,4	,4	74,7
	Male	56	24,5	24,5	99,1
	Prefer not to answer	2	,9	,9	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Regarding the language, the respondents used to answer the questionnaire survey, as Table 6 shows, most answers were in Portuguese (95.2%). Only 4.8% were in English.

Table 6. Frequencies by language

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	English (United Kingdom)	11	4,8	4,8	4,8
	portuguese (Portugal)	218	95,2	95,2	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

5.2. Descriptive analysis

Regarding the questions concerned with consumer behaviour, habits and changes, Table 7 shows whether the respondent's consumption has changed during the SARS-CoV-2 pandemic. As observed, 87.8% (corresponding to 201 respondents) answered positively to the question, and the remaining 12.2% did not feel that their consumption had changed during this period.

Table 7. Frequencies by pandemic changes in consumption

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	28	12,2	12,2	12,2
	Yes	201	87,8	87,8	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Those who answered “yes” were asked if they thought those consumption changes could remain in the future after the pandemic period. From Table 8, it can be concluded that a large group (43.7%=100 respondents) agrees with the statement, but 24.9% revealed an undecided opinion. Only 0.9% strongly disagreed.

Table 8. Frequencies by the degree of agreement on the statement “The new consumption habits of any good or service of a personal nature will remain in my future consumption”

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	,9	1,0	1,0
	Disagree	28	12,2	14,6	15,6
	Undecided	57	24,9	29,7	45,3
	Agree	100	43,7	52,1	97,4
	Strongly agree	5	2,2	2,6	100,0
	Total	192	83,8	100,0	
Missing	System	37	16,2		
Total		229	100,0		

Source: own, using SPSS

Still, on this matter, we wanted to explore further how consumer behaviour and habits have changed, and for that purpose, a list of options was given, so the respondent could select the ones he or she identified the most with. Moreover, the respondents were also allowed to write an open-ended answer if they wanted to - tables 9 to 13 exhibit these results. Most of the respondents resorted more often to online consumption (68.1%) and opted not to go to public events such as parties and concerts (71.6%). On the other hand, the respondents in general still considered going to shopping centres (65.5%) and restaurants (75.1%) and did not aim to adopt a more environmentally friendly consumption (74.7%).

Table 9. Frequencies by online consumption

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	73	31,9	31,9	31,9
	Yes	156	68,1	68,1	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 10. Frequencies by the avoidance of shopping centres

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	150	65,5	65,5	65,5
	Yes	79	34,5	34,5	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 11. Frequencies by the avoidance of restaurants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	172	75,1	75,1	75,1
	Yes	57	24,9	24,9	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 12. Frequencies by the avoidance of events

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	65	28,4	28,4	28,4
	Yes	164	71,6	71,6	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 13. Frequencies by the adoption of an environmentally friendly consumption

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	171	74,7	74,7	74,7
	Yes	58	25,3	25,3	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Despite not having many consumer behaviours and habits changes during the pandemic, it was relevant to know whether the changes and new habits acquired will have some weight in the respondents' future consumerism - tables 14 to 21 present the respondents' views on each statement. As far as the control over the spending is concerned, it can be stated that 55% of respondents will not have that attention when consuming.

Table 14. Frequencies by the spending control in the future

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	126	55,0	55,0	55,0
	Yes	103	45,0	45,0	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

As far as travelling is concerned, it can be concluded that, for future matters, travel is indeed a priority and a possible option for the large proportion of the respondents. 62% see travel as a priority, and 89.5% see travel as an option. Only 38% claim that travelling is not a future priority, and 10.5% claim that travelling is not an option in the future post-pandemic scenario.

Table 15. Frequencies by considering that travel is not a priority

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	142	62,0	62,0	62,0
	Yes	87	38,0	38,0	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 16. Frequencies by considering that travel is not an option

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	205	89,5	89,5	89,5
	Yes	24	10,5	10,5	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Heading now to the attendance to public places, as observed in Tables 17 to 19, most of the respondents will continue to go to shopping centres (86%), restaurants (96.5%), and public events such as concerts or parties. However, this percentage is much lower than the others (57.6%).

Table 17. Frequencies by not attending shopping centres any time soon

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	197	86,0	86,0	86,0
	Yes	32	14,0	14,0	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 18. Frequencies by not attending restaurants any time soon

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	221	96,5	96,5	96,5
	Yes	8	3,5	3,5	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 19. Frequencies by not attending events any time soon

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	132	57,6	57,6	57,6
	Yes	97	42,4	42,4	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Concerning the environmental sustainability question (Table 20), most of the respondents will not adopt a sustainable consumption, being this percentage (56.7%) a bit lower than the one that represents the population that did not pay attention to an environmentally friendly consumption during the pandemic period (see Table 13).

Table 20. Frequencies by considering that consumption will be environmentally friendly from now on

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	132	57,6	57,6	57,6
	Yes	97	42,4	42,4	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

The following table presents how respondents feel regarding future consumption habits and behaviour changes. The large majority (97.4%) claim they will not make any change.

Table 21. Frequencies by considering future changes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	223	97,4	97,4	97,4
	Yes	6	2,6	2,6	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

As far as the travel frequency is concerned, most of our sample enjoys travelling for tourism (98.3%). However, the frequency that remains is less than two times a year, suggesting that this sample does not represent frequent travellers.

Table 22. Frequencies by the joy of travelling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	4	1,7	1,7	1,7
	Yes	225	98,3	98,3	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 23. Frequencies by travel frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 2 times a year	18	7,9	8,0	8,0
	2 to 4 times a year	87	38,0	38,7	46,7
	More than 4 times a year	120	52,4	53,3	100,0
	Total	225	98,3	100,0	
Missing	System	4	1,7		
Total		229	100,0		

Source: own, using SPSS

Because this study also focuses on the pandemic's influences on consumer behaviour and habit changes, it could be interesting to know if our sample was under a teleworking system during the lockdown and restrictions. As can be ascertained in Table 24, most of the respondents did telework (55.9%). In Table 25, it can be noted that a large

proportion of this sample was either somewhat satisfied (35.9%) or very satisfied (33.6%) with the outcome of this work system.

Table 24. Frequencies by teleworking experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	101	44,1	44,1	44,1
	Yes	128	55,9	55,9	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 25. Frequencies by telework outcome

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very dissatisfied	9	3,9	7,0	7,0
	Somewhat dissatisfied	19	8,3	14,8	21,9
	Neither satisfied nor dissatisfied	11	4,8	8,6	30,5
	Somewhat satisfied	46	20,1	35,9	66,4
	Very satisfied	43	18,8	33,6	100,0
	Total	128	55,9	100,0	
Missing	System	101	44,1		
Total		229	100,0		

Source: own, using SPSS

As Table 26 shows, only 33% of respondents showed knowledge of the concept of VT. From this group, the majority of respondents (57.6%) were inclined towards the VT definition of Guttentag (2010) (see Table 27), who states that VT includes a VE, where the tourist can navigate, interact and thus have a sensory experience, which suggests that the respondents have awareness on the importance of sensory stimulation on virtual environments to define VT as a feasible type of tourism. The second most chosen statement was from Kontogianni and Alepis (2020). They defend that VT is all about linking the physical world with the digital environment using all available tools, which reveals itself to be an interesting option to pick since the linking between the non-virtual world and the digital one is emphasised. Note one more time that all the options were correct, since the definition of VT, as it could be seen in previous chapters, has not a correct or incorrect answer since they all have elements in common such as the

connection between the physical environment with the digital one, representing the VE in the most realistic possible way.

Table 26. Frequencies by VT knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	153	66,8	66,8	66,8
	Yes	76	33,2	33,2	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Almost 60% (59.8%) of our sample never had a virtual reality experience (see Table 28), neither in tourism, video games, or other contexts.

Table 27. Frequencies by VT definitions options

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		132	57,6	57,6	57,6
	Virtual Tourism implies the use of Virtual Reality (VR), but it is only considered Tourism if the person travels to a destination in order to use this technology.	5	2,2	2,2	59,8
	Virtual Tourism includes the concept of Virtual Environment (VA), where the tourist can navigate and possibly interact, resulting in a sensory experience.	40	17,5	17,5	77,3
	Virtual Tourism is about linking the physical world with the digital, using Social Media, computing and the Internet.	34	14,8	14,8	92,1
	Virtual Tourism is the type of tourism that offers lower prices, no destination limits, no transport, greater security, no foreign language problems, no bureaucracy, no climate barriers and a guaranteed experience.	18	7,9	7,9	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 28. Frequencies by VR experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	137	59,8	59,8	59,8
	Yes	92	40,2	40,2	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 29 shows that a large proportion of the sample is not interested in experiencing a VR test in any context (72 respondents=31.4%). Nevertheless, 66 respondents were moderately interested (corresponding to 28.8%), and 60 respondents were either very interested (17%) or had a great interest (9.2%) in VT.

Table 29. Frequencies by VT interest

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No interest	72	31,4	31,4	31,4
	Slightly interested	31	13,5	13,5	45,0
	Moderately interested	66	28,8	28,8	73,8
	Very interested	39	17,0	17,0	90,8
	With great interest	21	9,2	9,2	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Along these lines, it would be interesting to know what could lead the respondents to participate in a Virtual Tourism experience. Tables 30 to 38 present the frequency of answers by motive. Table 30 shows that most respondents would attend virtual tourism because it could be an innovative experience for them (51.1%).

Table 30. Frequencies by considering VT is an innovative experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	112	48,9	48,9	48,9
	Yes	117	51,1	51,1	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 31 reveals that 71.2% would not experience VR as an alternative to conventional tourism. Additionally, 76% do not consider that VT would be an enriching

experience, and 82.1% would not experience it for the sustainable feature it could represent (Tables 32 and 33). Similarly, 76% believe that they would not participate in a VT experience considering the preservation of culture and heritage. Only a few (26.2%) believe that VT could constitute an appropriate alternative for people with reduced mobility.

Table 31. Frequencies by considering VT is an alternative for conventional tourism

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	163	71,2	71,2	71,2
	Yes	66	28,8	28,8	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 32. Frequencies by considering VT is an enriching experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	174	76,0	76,0	76,0
	Yes	55	24,0	24,0	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 33. Frequencies by considering VT is an environmentally friendly experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	188	82,1	82,1	82,1
	Yes	41	17,9	17,9	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 34. Frequencies by considering VT stands for culture and heritage preservation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	174	76,0	76,0	76,0
	Yes	55	24,0	24,0	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 35. Frequencies by considering VT is an appropriate experience for people with reduced mobility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	169	73,8	73,8	73,8
	Yes	60	26,2	26,2	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Concerning whether the respondents agreed with the statement “*Virtual Tourism could become a solution for the tourism sector in future atypical situations, such as the case of the SARS-CoV-2 pandemic*”, one may observe below in Table 36 that a significant proportion of responses are inclined to agree (78 respondents=34.1%) or strongly agree (7.9%) with the previous statement. However, 28.4% showed an undecided opinion, and 22.7% disagreed.

Table 36. Frequencies by considering VT is a solution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	16	7,0	7,0	7,0
	Disagree	52	22,7	22,7	29,7
	Undecided	65	28,4	28,4	58,1
	Agree	78	34,1	34,1	92,1
	Strongly agree	18	7,9	7,9	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 37 reveals that concerning the statement “*authenticity is an important element in this type of virtual tourism experience*”, most of the respondents agreed

(41.5%), followed by the percentage that strongly agreed (34.5%). Nevertheless, 18.3% of the answers revealed an undecided opinion on the presented statement.

Table 37. Frequencies by considering authenticity important for VT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	3,1	3,1	3,1
	Disagree	6	2,6	2,6	5,7
	Undecided	42	18,3	18,3	24,0
	Agree	95	41,5	41,5	65,5
	Strongly agree	79	34,5	34,5	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

The next set of tables presents a list of elements the respondents had to choose from to define what most contributes to an authentic tourism experience in VR. One can observe that the majority (67.2%) does not consider that visiting the site with a guide would turn the VR experience more authentic (Table 38), and 81.7% consider that preserving the archaeological resources of the site does not contribute to a more authentic experience (table 39) either. The only element chosen by the majority of the respondents was the *“realistic representation of the places and monuments to be visited”* (69%) – table 40.

Table 38. Frequencies by visiting the site with an interpreter guide

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	154	67,2	67,2	67,2
	Yes	75	32,8	32,8	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 39. Frequencies by the archaeological resources preservation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	187	81,7	81,7	81,7
	Yes	42	18,3	18,3	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 40. Frequencies by the realistic representation of the place and monuments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	71	31,0	31,0	31,0
	Yes	158	69,0	69,0	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

In what concerns how communicating with the locals and getting to know the culture of the visited site could increase the level of authenticity of the VR experience, 51,1% do not agree with the statement at all (table 41). Concerning the possibility of attending virtual programmes and activities during the VR experience, as shown in Table 42, a significant proportion of the sample does not consider that could turn the experience authentic (67.2%). The same happens with the statement that refers to the creation of a link with the identity of the place, in which most of the respondents (65.5%) answered that it does not help improve the experience to a certain level of authenticity (table 43).

Table 41. Frequencies by getting to know the culture and communicating with locals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	117	51,1	51,1	51,1
	Yes	112	48,9	48,9	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 42. Frequencies by attending to programmes and activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	154	67,2	67,2	67,2
	Yes	75	32,8	32,8	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 43. Frequencies by the creation of a link with the identity of the site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	150	65,5	65,5	65,5
	Yes	79	34,5	34,5	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Regarding the respondents that did not find any statement plausible to describe a VR tourism experience as authentic (4.4%), there are only two main ideas in common between answers. The first one refers to the respondents' feeling that sensorial exploration is essential in a VR system and that the user can be multi-stimulated, not just visually. One of the respondents added, *“The creation of conditions that stimulate the senses of the human body such as ‘smell’ (smell of local endemic plant species, smells of monuments), ‘hearing’ (typical sounds of the places to be visited such as streets, etc...), touch (through temperature) and ‘sight’.*” The second idea came from a respondent who added that *“smelling and touching”* would be important to classify the virtual experience as authentic. Only one respondent referred to the Head-mounted-display (or VR Glasses), however stating that *“it is very difficult for VR to provide an authentic experience, but with this tool, it could be somehow reached”*.

Still, on authenticity issues, a set of elements and negative statements were presented to the respondents in order for them to pick the ones they found more likely to represent a significant limitation in a tourism virtual reality experience. In general, the respondents were more likely to agree, or strongly agree, that facts like technical issues in VT (52.4% and 28.4%, respectively), VE not representing the reality (45.9% and 37.1%, respectively), only visual sense existing (44.5% and 28.8%, respectively), no authenticity (49.8% and 24%, respectively), sense of presence (40.2% and 35.4%, respectively) or emotions (33.6% and 21.4%, respectively), and not being able to take pictures in the experience (40.2% and 19.7%, respectively) could constitute a limitation to a virtual tourism experience (Tables 44 to 50).

Table 44. Frequencies by considering technical issues in VT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	,9	,9	,9
	Disagree	14	6,1	6,1	7,0
	Undecided	28	12,2	12,2	19,2
	Agree	120	52,4	52,4	71,6
	Strongly agree	65	28,4	28,4	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 45. Frequencies by considering VE is not real

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	14	6,1	6,1	6,1
	Undecided	25	10,9	10,9	17,0
	Agree	105	45,9	45,9	62,9
	Strongly agree	85	37,1	37,1	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 46. Frequencies by considering that only visual sense is available in VR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	,9	,9	,9
	Disagree	28	12,2	12,2	13,1
	Undecided	31	13,5	13,5	26,6
	Agree	102	44,5	44,5	71,2
	Strongly agree	66	28,8	28,8	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 47. Frequencies by considering VT is not authentic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	16	7,0	7,0	7,0
	Undecided	44	19,2	19,2	26,2
	Agree	114	49,8	49,8	76,0
	Strongly agree	55	24,0	24,0	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 48. Frequencies by considering there is no sense of presence in VR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	15	6,6	6,6	6,6
	Undecided	41	17,9	17,9	24,5
	Agree	92	40,2	40,2	64,6
	Strongly agree	81	35,4	35,4	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 49. Frequencies by considering there are no emotions in VR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	1,7	1,7	1,7
	Disagree	59	25,8	25,8	27,5
	Undecided	40	17,5	17,5	45,0
	Agree	77	33,6	33,6	78,6
	Strongly agree	49	21,4	21,4	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 50. Frequencies by not being able to take pictures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	13	5,7	5,7	5,7
	Disagree	33	14,4	14,4	20,1
	Undecided	46	20,1	20,1	40,2
	Agree	92	40,2	40,2	80,3
	Strongly agree	45	19,7	19,7	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Respondents were presented with a set of statements. They were asked to determine to what degree they agreed with each one to characterise a Virtual Tourism experience, bearing in mind that most of them never had one. The mode of answers to the statements that refer to VT not being authentic, having possible technical constraints, no communication between people, and not being realistic compared to the real world is of agreement. Nevertheless, the mode answer to the statements that refer to VT as an environment that can provoke anxiety or relaxing emotions was undecided. Tables 51 to 56 show in more detail the frequencies of answers to each statement in specific.

Table 51. Frequencies by considering VR is not authentic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	,9	,9	,9
	Disagree	20	8,7	8,7	9,6
	Undecided	76	33,2	33,2	42,8
	Agree	84	36,7	36,7	79,5
	Strongly agree	47	20,5	20,5	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

Table 52. Frequencies by considering there could be technical constraints

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undecided	26	11,4	11,4	11,4
	Agree	139	60,7	60,7	72,1
	Strongly agree	64	27,9	27,9	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 53. Frequencies by considering there is no communication in VR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undecided	57	24,9	24,9	24,9
	Agree	129	56,3	56,3	81,2
	Strongly agree	43	18,8	18,8	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 54. Frequencies by considering VT is not realistic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	,9	,9	,9
	Disagree	12	5,2	5,2	6,1
	Undecided	31	13,5	13,5	19,7
	Agree	122	53,3	53,3	72,9
	Strongly agree	62	27,1	27,1	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 55. Frequencies by considering VR can cause anxiety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	15	6,6	6,6	6,6
	Disagree	66	28,8	28,8	35,4
	Undecided	81	35,4	35,4	70,7
	Agree	54	23,6	23,6	94,3
	Strongly agree	13	5,7	5,7	100,0
	Total	229	100,0	100,0	

Source: own, using SPSS

Table 56. Frequencies by considering VR can be relaxing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	3,1	3,1	3,1
	Disagree	38	16,6	16,6	19,7
	Undecided	109	47,6	47,6	67,2
	Agree	61	26,6	26,6	93,9
	Strongly agree	14	6,1	6,1	100,0
Total		229	100,0	100,0	

Source: own, using SPSS

5.3. Hypothesis validation

As presented in section 4.4. (Figure 1, “VT Interest” is the dependent variable on the conceptual model. Using a Univariate Regression Linear Model in SPSS, the dependent variable and the independent variables will be analysed to retain or reject the previously presented hypotheses.

Regarding the independent variable “Consumption Change?” that represents whether consumer behaviour has changed or not during the pandemic, Tables 57 and 58 show that there is not significant difference enough to admit that the consumption changes can influence a higher interest in VT (p-value of 0.081).

Table 57. ANOVA^a for Consumption change

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5,375	1	5,375	3,065	,081 ^b
	Residual	398,040	227	1,753		
Total		403,415	228			

a. Dependent Variable: VT interest?

b. Predictors: (Constant), Consum change?

Source: own, using SPSS

Table 58. Coefficients^a for Consumption Change

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	3,000	,250		11,988	,000
	Consum change?	-,468	,267	-,115	-1,751	,081

a. Dependent Variable: VT interest?

Source: own, using SPSS

Therefore, results suggest that the independent variable (consumption change) does not predict the dependent variable (VT interest). Therefore, **H1 should be rejected**.

Heading now to the hypothesis about tourists' perceptions on VT as a possible solution and alternative for conventional tourism in an atypical scenario like the SARS-CoV-2 pandemic, we shall look to tables 59 and 60. As the significance value is less than **0.05** (0.000), VT as a solution predicts VT interest. Table 60 shows that the correlation is moderate and positive, meaning that the respondents that believe that VT can be a solution for conventional tourism during an atypical situation like a pandemic tend to be the ones that show more interest in experiencing it. Therefore, **H2 should be retained**.

Table 59. ANOVA^a for VT as a solution

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69,867	1	69,867	47,549	,000 ^b
	Residual	333,548	227	1,469		
	Total	403,415	228			

a. Dependent Variable: VT interest?

b. Predictors: (Constant), VT as a solution?.3

Source: own, using SPSS

Table 60. Coefficients^a for VT as a solution

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	,973	,248		3,927	,000
	VT as a solution?.3	,516	,075	,416	6,896	,000

a. Dependent Variable: VT interest?

Source: own, using SPSS

H3 asserted that the consumption changes' impacts on future consumption affect the tourists' intention to experience VT. As shown in Table 61, the significance value is higher than 0.05 (0.548), thus suggesting that there is no statistical relationship between the two variables. Therefore, **H3 should be rejected**.

Table 61. ANOVA^a for the degree of agreement that consumption changes will have an impact on the future

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,620	1	,620	,362	,548 ^b
	Residual	325,333	190	1,712		
	Total	325,953	191			

a. Dependent Variable: VT interest?

b. Predictors: (Constant), Degree of agreement

Source: own, using SPSS

Table 62. Coefficients^a for the degree of agreement that consumption changes will have an impact on the future

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	2,275	,411		5,538	,000
	Degree of agreement	,071	,117	,044	,602	,548

a. Dependent Variable: VT interest?

Source: own, using SPSS

As shown in Table 63, the significance value is lower than 0.05, which means that the relationship between age and VT interest is statistically significant. In other words, age predicts VT interest. In the table of coefficients (table 64), it can be observed that this correlation is negative, although weak, which means that the older the respondents, the least interested in experiencing VT. Therefore, **H4a should be retained**.

Table 63. ANOVA^a for age

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,473	1	9,473	5,459	,020 ^b
	Residual	393,941	227	1,735		
	Total	403,415	228			

a. Dependent Variable: VT interest?

b. Predictors: (Constant), AgeScale

Source: own, using SPSS

Table 64. Coefficients^a for age

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	2,935	,172		17,109	,000
	AgeScale	-,145	,062	-,153	-2,336	,020

a. Dependent Variable: VT interest?

Source: own, using SPSS

Heading now to the other ramifications of H4, as shown in tables 65 and 66, education level does not predict the dependent variable VT Interest since the significance value is higher than 0.05. Therefore, **H4b should be rejected.**

Table 65. ANOVA^a for education level

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,639	1	1,639	,926	,337 ^b
	Residual	401,776	227	1,770		
	Total	403,415	228			

a. Dependent Variable: VT interest?

b. Predictors: (Constant), Educationlevelscale

Source: own, using SPSS

Table 66. Coefficients^a for education level

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	2,895	,329		8,797	,000
	Educationlevelscale	-,097	,101	-,064	-,962	,337

a. Dependent Variable: VT interest?

Source: own, using SPSS

Looking at table 67, it can be observed that the relationship between gender (using a dummy variable) and VT interest is not statistically significant. Therefore, **H4c should be rejected.**

Table 67. ANOVA^a for gender

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,477	1	,477	,267	,606 ^b
	Residual	402,422	225	1,789		
	Total	402,899	226			

a. Dependent Variable: VT interest?

b. Predictors: (Constant), Genderscale

Source: own, using SPSS

Table 68. Coefficients^a for gender

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	2,711	,250		10,835	,000
	Genderscale	-,095	,184	a-,034	-,516	,606

a. Dependent Variable: VT interest?

Source: own, using SPSS

As far as the perceptions of authenticity in VT and its prediction of the dependent variable, table 71 shows that this relationship is statistically significant. As observed in the ANOVA table, the significance value is inferior to 0.05 (0.044). Table 72 shows that this correlation is weak but positive, meaning the more important the respondent finds the authenticity in VT makes it a unique experience, the higher the VT interest. Therefore, **H5 should be retained.**

Table 69. ANOVA^a for authenticity in VT

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7,181	1	7,181	4,114	,044 ^b
	Residual	396,234	227	1,746		
	Total	403,415	228			

a. Dependent Variable: VT interest?

b. Predictors: (Constant), Authenticity in VT?

Source: own, using SPSS

Table 70. Coefficients^a for authenticity in VT

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	1,843	,378		4,872	,000
	Authenticity in VT?	,186	,092	,133	2,028	,044

a. Dependent Variable: VT interest?

Source: own, using SPSS

5.4. K-means cluster analysis

A k-means cluster analysis was developed to group respondents with similar answers into clusters. The variables used for this cluster analysis were knowledge of VT, VR past experiences, VT as a solution for atypical situations, whether authenticity is essential in VT or not, consumption change during the pandemic, age and, finally, interest in experiencing VT.

Table 73 shows the two clusters that originated from the analysis in SPSS, resulting in two groups that differ from each other in almost all these variables. The first group (cluster 1) represents the younger respondents in our sample, with higher knowledge and interest in VT, a more extensive experience of VR, who values authenticity in VT and sees it as a solution for atypical situations. Cluster 2 represents the older generations. Despite considering authenticity an essential element to VT (though less than cluster 1), these tourists are not interested in experiencing VT. They tend to disagree that this virtual form of tourism could constitute a solution for conventional tourism practices during an atypical situation, such as a pandemic. These tourists have less VT knowledge and VR experience than the other cluster's members. Therefore, cluster 1 will be named "the digital youngsters" and cluster 2 "the conservative adults".

Table 71. Final Cluster Centers

	Cluster	
	1	2
VT knowledge	,4	,3
VR experience?	,5	,3
VT interest?	3,6	1,7
VT as a solution?.3	3,7	2,7
Authenticity in VT?	4,2	3,8
Consum change?	,8	,9
AgeScale	1,59	3,06

Source: own, using SPSS

After the k-means cluster analysis had been done, other comparisons were made to see where the two clusters differ in terms of other variables, aside from those in the cluster analysis.

Tables 74 to 82 show the frequencies of each of these variables for the two clusters separately. As observed, the digital youngsters (cluster 1) and the conservative adults (cluster 2) have similarities: the majority of the members in both groups do not consider that VR could be an enriching experience (CL1: 65.1%; CL2: 85.4%), and they do not believe that VT promotes culture and heritage preservation (CL1: 65.1%; CL2: 84.4%). They agree that the realistic representation of the visited places in VR is essential (CL1: 85.8%; CL2: 54.5%), but creating an identity with the virtual space was not important (CL1: 55.7%; CL2: 74%). When describing and seeking limitations in VT, both of the groups tend to agree or strongly agree that only the visual sense was stimulated in the VE (CL1: 68.9%; CL2: 77.2%) and that the probability of a virtual experience being not authentic was high (CL1: 64.2%; CL2: 82.1%). Both groups tend to consider that VT is not an alternative for tourism (CL1: 57.5%; CL2: 82.9%).

One difference between clusters is how VT could be an innovative experience. The digital youngsters consider VT to be an innovative experience (63.2%), whereas the conservative adults does not (59.3%). Another difference between the two clusters is about whether getting to know the culture and the local destination is an element that turns the tourism experience (virtual or non-virtual) more authentic or not. For this matter, the digital youngsters consider it essential (60.4%) and the conservative adults do not (61%).

Table 72. Frequencies by Innovative Experience for each cluster

Cluster	Number of Case		Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	No	39	36,8	36,8	36,8
		Yes	67	63,2	63,2	100,0
		Total	106	100,0	100,0	
2	Valid	No	73	59,3	59,3	59,3
		Yes	50	40,7	40,7	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 73. Frequencies by Enriching Experience for each cluster

Cluster	Number of Case		Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	No	69	65,1	65,1	65,1
		Yes	37	34,9	34,9	100,0
		Total	106	100,0	100,0	
2	Valid	No	105	85,4	85,4	85,4
		Yes	18	14,6	14,6	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 74. Frequencies by Culture and Heritage Preservation for each cluster

Cluster	Number of Case		Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	No	70	66,0	66,0	66,0
		Yes	36	34,0	34,0	100,0
		Total	106	100,0	100,0	
2	Valid	No	104	84,6	84,6	84,6
		Yes	19	15,4	15,4	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 75. Frequencies by Real Representation for each cluster

Cluster Number of Case			Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	No	15	14,2	14,2	14,2
		Yes	91	85,8	85,8	100,0
		Total	106	100,0	100,0	
2	Valid	No	56	45,5	45,5	45,5
		Yes	67	54,5	54,5	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 76. Frequencies by Culture and Locals for each cluster

Cluster Number of Case			Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	No	42	39,6	39,6	39,6
		Yes	64	60,4	60,4	100,0
		Total	106	100,0	100,0	
2	Valid	No	75	61,0	61,0	61,0
		Yes	48	39,0	39,0	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 77. Frequencies by Programmes Activities for each cluster

Cluster Number of Case			Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	No	62	58,5	58,5	58,5
		Yes	44	41,5	41,5	100,0
		Total	106	100,0	100,0	
2	Valid	No	92	74,8	74,8	74,8
		Yes	31	25,2	25,2	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 78. Frequencies by Identity Creation for each cluster

Cluster Number of Case			Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	No	59	55,7	55,7	55,7
		Yes	47	44,3	44,3	100,0
		Total	106	100,0	100,0	
2	Valid	No	91	74,0	74,0	74,0
		Yes	32	26,0	26,0	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 79. Frequencies by Only visual sense for each cluster

Cluster Number of Case			Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	Strongly disagree	2	1,9	1,9	1,9
		Disagree	16	15,1	15,1	17,0
		Undecided	15	14,2	14,2	31,1
		Agree	53	50,0	50,0	81,1
		Strongly agree	20	18,9	18,9	100,0
		Total	106	100,0	100,0	
2	Valid	Disagree	12	9,8	9,8	9,8
		Undecided	16	13,0	13,0	22,8
		Agree	49	39,8	39,8	62,6
		Strongly agree	46	37,4	37,4	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 80. Frequencies by no authenticity for each cluster

Cluster Number of Case			Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	Disagree	12	11,3	11,3	11,3
		Undecided	26	24,5	24,5	35,8
		Agree	53	50,0	50,0	85,8
		Strongly agree	15	14,2	14,2	100,0
		Total	106	100,0	100,0	
2	Valid	Disagree	4	3,3	3,3	3,3
		Undecided	18	14,6	14,6	17,9
		Agree	61	49,6	49,6	67,5
		Strongly agree	40	32,5	32,5	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

Table 81. Frequencies by Tourism Alternative for each cluster

Cluster Number of Case			Frequency	Percent	Valid Percent	Cumulative Percent
1	Valid	No	61	57,5	57,5	57,5
		Yes	45	42,5	42,5	100,0
		Total	106	100,0	100,0	
2	Valid	No	102	82,9	82,9	82,9
		Yes	21	17,1	17,1	100,0
		Total	123	100,0	100,0	

Source: own, using SPSS

6. Discussion

The literature review revealed the pandemic changed the way tourists as consumers behaved, and that tourism was practically forced to reset and to be re-thought to new perspectives and forms since the SARS-CoV-2 pandemic global repercussions implemented several restrictions that changed people habits and way of consuming (Akpan^b et al., 2020; Gössling et al., 2020; Haywood, 2020; Singhal and Sneader, 2021). The results of this study are coherent with the literature. Some changes in consumer behaviour were detected since some respondents admitted having resorted more to online consumption and paying more attention to the environmental issues, although this last one not for most of our sample. Moreover, habits like going to shopping centres or

restaurants and attending public events like concerts or parties were set aside because of the pandemic. Additionally, these results regarding consumption change caused by the pandemic support the results of the study conducted by McKinsey and Company (2020). They reported that Europeans generally adopted outdoor activities and do not intend to travel broadly so soon, while the pandemic still strikes. Moreover, consumption habits have changed so that people are more aware of what is necessary and what is considered extra, thus supporting the investigation by Zwanka and Buff (2021).

Respondents agree that technical issues in VT can represent a significant limitation and lack of interest to experience VR in tourism. Other than that, assumptions that classify virtual environments in VR as unrealistic were also present in the data collected. The fact that the respondents generally think that the only human sense stimulated in VT is the vision also constitutes a limitation to experience it, thus supporting the idea of Mura et al. (2017), who stated that the stimulation of the five human senses is what mainly triggers the sense of authenticity. This issue can also be related to what Budruck et al. (2008) conclude about small details that turn the tourism experience authentic to the visitors: visiting the site and interacting with locals, which also supports the concept of “intra-personal authenticity” explored by Ning (1999). Ning (1999) points out the physical dimension of the experience that triggers a unique sense of authenticity. The fact that tourists are not given the possibility of taking pictures as they would do in a conventional journey also represents a limitation to VT's interest, supporting what Budruck et al. (2008) concluded about tourism elements and details that make an experience authentic. Therefore, it can be concluded that simple actions that are taken for granted in a non-virtual experience, such as taking photographs or buying *souvenirs*, are such vital details in a travel experience (Budruck et al., 2008; Mura et al., 2017) that the acceptance of VT could result only from mere curiosity. Moreover, VT being classified as unauthentic and not promoting the sense of presence and the origination of emotions are generally agreed statements, following Guttentag (2010) and Tussyadiah et al. (2018), who stated that the sense of presence increases the perception of the authenticity of the experience.

According to the data collected, respondents agree that authenticity is an essential feature of a virtual tourism experience. They also generally believed that the realistic representation of the physical place in VR constitutes an essential factor in considering the virtual reality experience as authentic. Results support other studies, like Kim et al.'s (2020) and Mura et al.'s (2017), since respondents tend to agree that VT could represent

the closest to authentic tourism experience to the public that for health and physical reasons cannot travel, thus representing a possible alternative for them.

Our results suggest that tourists can be grouped into two segments (clusters) named the digital youngsters and the conservative adults. In summary, younger tourists with more digital and VR experience are more willing to experience VT than older, less technology-oriented tourists. This is consistent with the literature review. Even though Guttentag (2010) states that many people are interested in experiencing VT, Oh et al. (2013) concluded that older people tend to need more social interaction inside these contexts since their use of technology is slightly different null. On the other hand, Kim et al. (2020) claim that people who constantly use technology might be more receptive to VT experiences since they have more technology readiness. Nevertheless, studies like Baños et al.'s (2012) suggest that older adults are willing to experience innovative projects, and when they do that, they tend to enjoy it and reveal positive feedback.

7. Conclusions, limitations, implications and future research

The main objective of this research was to study the influence of the travellers' perception of VT (bearing in mind the concepts of technology and authenticity), as an alternative to conventional tourism, in their intention to experience it in a post-pandemic period.

Since the pandemic scenario was behind the choice of the topic for study, it was important to see how the consumption habits changed during the restrictions caused by the Covid19 consequences in society. It was verified that in fact some changes happened, but none of those will impact the future consumption intentions of the respondents. Moreover, regarding environmental limits, it was also curious that most of our sample did not show any interest in paying more attention to more environmentally friendly consumption options.

Results suggest that the interest to experience virtual tourism is predicted by the tourist's age, their perception that VT might be a solution for other situations such as the pandemic and their attitude towards the importance of authenticity in VT. Meaning younger tourists, who perceive VT as an alternative for conventional tourism in atypical situations, and that value authenticity in VT, are the ones with higher interest to experience virtual tourism. On the contrary, how the tourist changed consumption habits

during the pandemic, how they perceived that that change would remain for the future, their education level and gender are not predictors of VT interest.

As far as the limitations of this study are concerned, it is significant to refer that the large percentage of women in the sample can bias the results. Because women are more willing to participate in online questionnaire surveys than men (Smith, 2009), this might translate into the need in future studies to have a strategy for minimizing that discrepancy. Moreover, in their study, Lund and Gram (1998) referred to several elements that prevent the public in general from participating in surveys. Those elements could be directly related to the survey's title or length. In this specific case, the questionnaire survey was long, preventing some possible respondents from engaging. Additionally, as this is a convenience sample, results cannot be generalized.

The study's implications for theory mainly relate to the importance of generational issues in explaining VT interest, either as a result of age or experience (or lack of it) with other contexts of VR (e.g., games). Our results also suggest that tourists will not maintain the behavioural changes observed during the pandemic in the future and will return to past behaviours as soon as restrictions are lifted and safety assured. It would be interesting to explore how these intentions evolve after the pandemic for future investigations. Finally, our results have significant implications for the study of the relevance of authenticity in tourism, even in more technological environments. It is thus essential to explore this transversal concept more extensively. Future studies should also consider other data collection methods, such as interviews with consumers, to obtain new insights into these issues.

For tourism professionals, this research emphasises the need to re-establish travel and tourism and to invest in technologies that can provide exciting experiences, not only to the ones that cannot travel for health reasons but also for the ones that are receptive to virtual forms of tourism, an interesting market segment that we named 'digital youngsters'.

8. References

- Akpan^a, I. J., Abasifreke, E., Udoh, P., and Adebisi, B. (2020). Small business awareness and adoption of state-of-the-art technologies in emerging and developing markets, and lessons from the COVID-19 pandemic. *Journal of Small Business and Entrepreneurship*, 0(0), 1–18. <https://doi.org/10.1080/08276331.2020.1820185>
- Akpan^b, I. J., Soopramanien, D., and Kwak, D. H. (2020). Cutting-edge technologies for small business and innovation in the era of COVID-19 global health pandemic. *Journal of Small Business and Entrepreneurship*. <https://doi.org/10.1080/08276331.2020.1799294>
- Baños, R. M., Etchemendy, E., Castilla, D., García-Palacios, A., Quero, S., and Botella, C. (2012). Positive mood induction procedures for virtual environments designed for elderly people. *Interacting with Computers*, 24(3), 131–138. <https://doi.org/10.1016/j.intcom.2012.04.002>
- Belisle, B., & Roquet, P. (2020). Guest Editors' Introduction: Virtual reality: immersion and empathy. *Journal of Visual Culture*, 19(1), 3–10. <https://doi.org/10.1177/1470412920906258>
- Bhargava, S., Buzzell, C., Charm, T., Das, R., Fradin, M., Grimmelt, A., Mandel, J., Robinson, K., Pflumm, S., and Seid, C. (2020). A global view of how consumer behavior is changing amid COVID-19. *McKinsey and Company*, 1–15. <https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/a-global-view-of-how-consumer-behavior-is-changing-amid-covid-19>
- Bogicevic, V., Seo, S., Kandampully, J. A., Liu, S. Q., and Rudd, N. A. (2019). Virtual reality presence as a preamble of tourism experience: The role of mental imagery. *Tourism Management*, 74(February), 55–64. <https://doi.org/10.1016/j.tourman.2019.02.009>
- Bryman, A. (2012). *Social research methods*. 148, 148–162.
- Budruk, M., White, D. D., Wodrich, J. A., and Van Riper, C. J. (2008). Connecting Visitors to People and Place: Visitors' Perceptions of Authenticity at Canyon de Chelly National Monument, Arizona. *Journal of Heritage Tourism*, 3(3), 185. <https://doi.org/10.2167/jht045.0>
- Buhalis et al., D., and Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet-The state of eTourism research. *Tourism Management*, 29(4), 609–623. <https://doi.org/10.1016/j.tourman.2008.01.005>
- Cohen, E. (2007). Authenticity in tourism studies: Apres ia lutte. *Tourism Recreation Research*, 32(2), 75–82. <https://doi.org/10.1080/02508281.2007.11081279>

- Dean, M. C. (2017). Staged authenticity: Arrangements of social space in tourist settings. *The Political Nature of Cultural Heritage and Tourism: Critical Essays, Volume Three*, 79(3), 289–303. <https://doi.org/10.4324/9781315237749-16>
- Dexeus, C. R. (2018). The deepening effects of the digital revolution. In *The Future of Tourism: Innovation and Sustainability* (pp. 43–69). https://doi.org/10.1007/978-3-319-89941-1_3
- Fan, V. Y., Jamison, D. T., and Summers, L. H. (2018). Pandemic risk: How large are the expected losses? *Bulletin of the World Health Organization*, 96(2), 129–134. <https://doi.org/10.2471/BLT.17.199588>
- Gössling, S., Scott, D., and Hall, C. M. (2020). Pandemics, tourism and global change: a rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 0(0), 1–20. <https://doi.org/10.1080/09669582.2020.1758708>
- Griffith, A. (2010). *SPSS for Dummies*.
- Guttentag, D. A. (2010). Virtual reality: Applications and implications for tourism. *Tourism Management*, 31(5), 637–651. <https://doi.org/10.1016/j.tourman.2009.07.003>
- Haywood, K. M. (2020). A post COVID-19 future - tourism re-imagined and re-enabled. *Tourism Geographies*, 22(3), 599–609. <https://doi.org/10.1080/14616688.2020.1762120>
- Ho, J., Hui, D., Kim, A., and Zhang, Y. (2020). Cautiously optimistic : Chinese consumer behavior post-COVID-19. *McKinsey and Company*, March 5.
- Ioannides, D., and Gyimóthy, S. (2020). The COVID-19 crisis as an opportunity for escaping the unsustainable global tourism path. *Tourism Geographies*, 22(3), 624–632. <https://doi.org/10.1080/14616688.2020.1763445>
- Ivanov, S. (2018). Research methods for leisure, recreation and tourism. In *Anatolia* (Vol. 29, Issue 1). <https://doi.org/10.1080/13032917.2017.1383653>
- Iwata, H., Yano, H., Uemura, T., and Moriya, T. (2004). Food simulator: A haptic interface for biting. *Proceedings - Virtual Reality Annual International Symposium*, 51–57. <https://doi.org/10.1109/VR.2004.1310055>
- Keogh-Brown, M. R., Smith, R. D., Edmunds, J. W., and Beutels, P. (2010). The macroeconomic impact of pandemic influenza: Estimates from models of the United Kingdom, France, Belgium and the Netherlands. *European Journal of Health Economics*, 11(6), 543–554. <https://doi.org/10.1007/s10198-009-0210-1>
- Kim, M. J., Lee, C. K., and Preis, M. W. (2020). The impact of innovation and gratification on authentic experience, subjective well-being, and behavioral intention in tourism virtual reality: The moderating role of technology readiness. *Telematics and Informatics*, 49(January), 101349. <https://doi.org/10.1016/j.tele.2020.101349>

- Kontogianni, A., and Alepis, E. (2020). Smart tourism: State of the art and literature review for the last six years. *Array*, 6(January), 100020. <https://doi.org/10.1016/j.array.2020.100020>
- Kourdis, E., Papadopoulou, M., & Kostopoulou, L. (2019). The Fugue of the Five Senses and the Semiotics of the Shifting Sensorium. *11th International Conference of the Hellenic Semiotics Society, July*, 1–59.
- Li, H., Daugherty, T., & Biocca, F. (2002). Impact of 3-D advertising on product knowledge, brand attitude, and purchase intention: The mediating role of presence. *Journal of Advertising*, 31(3), 43–57. <https://doi.org/10.1080/00913367.2002.10673675>
- Li, S., & Peissig, J. (2020). Measurement of head-related transfer functions: A review. *Applied Sciences (Switzerland)*, 10(14), 1–40. <https://doi.org/10.3390/app10145014>
- Liedtka, J. (2017). Evaluating the impact of design thinking in action. *2017 Annual Meeting of the Academy of Management, AOM 2017, 2017-Augus(1)*, 1–48. <https://doi.org/10.5465/AMBPP.2017.177>
- Loureiro, S. M. C., Guerreiro, J., and Ali, F. (2020). 20 years of research on virtual reality and augmented reality in tourism context: A text-mining approach. *Tourism Management*, 77(August 2019). <https://doi.org/10.1016/j.tourman.2019.104028>
- Lund, E., and Gram, I. T. (1998). Response rate according to title and length of questionnaire. *Scandinavian Journal of Public Health*, 26(2), 154–160. <https://doi.org/10.1177/14034948980260020401>
- Marasco, A., Buonincontri, P., van Niekerk, M., Orłowski, M., and Okumus, F. (2018). Exploring the role of next-generation virtual technologies in destination marketing. *Journal of Destination Marketing and Management*, 9(December 2016), 138–148. <https://doi.org/10.1016/j.jdmm.2017.12.002>
- Marshall, G. (2005). The purpose, design and administration of a questionnaire for data collection. *Radiography*, 11(2), 131–136. <https://doi.org/10.1016/j.radi.2004.09.002>
- Mirk, D., and Hlavacs, H. (2015). *Virtual Tourism with Drones*. 45–50. <https://doi.org/10.1145/2750675.2750681>
- Morie, J. F. (2006). Virtual reality, immersion, and the unforgettable experience. *Stereoscopic Displays and Virtual Reality Systems XIII*, 6055(May), 60551X. <https://doi.org/10.1117/12.660290>
- Mura, P., Tavakoli, R., and Pahlevan Sharif, S. (2017). ‘Authentic but not too much’: exploring perceptions of authenticity of virtual tourism. *Information Technology and Tourism*, 17(2), 145–159. <https://doi.org/10.1007/s40558-016-0059-y>
- Neuburger, L., Egger, R., and Neuburger, L. (2020). Current Issues in Tourism Travel risk perception and travel behaviour during the COVID-19 pandemic 2020 : a case study of the DACH region pandemic 2020 : a case study of the DACH region. *Current Issues in Tourism*, 0(0), 1–14.

<https://doi.org/10.1080/13683500.2020.1803807>

- Ning, W. (1999). Rethinking authenticity in tourism experience. *The Political Nature of Cultural Heritage and Tourism: Critical Essays, Volume Three*, 26(2), 469–490. <https://doi.org/10.4324/9781315237749-27>
- Oh, H., Jeong, M., & Baloglu, S. (2013). Tourists' adoption of self-service technologies at resort hotels. *Journal of Business Research*, 66(6), 692–699. <https://doi.org/10.1016/j.jbusres.2011.09.005>
- Page, S., and Yeoman, I. (2006). How VisitScotland prepared for a flu pandemic: Lessons for businesses. *Journal of Business Continuity and Emergency Planning*, 1(2), 1–16. http://www.tomorrowstourist.com/pdf/avian_flu.pdf
- Porteous, J. D. (1985). Smellscape. *Sage Journals*, 9(3), 356–378. <https://doi.org/10.1177/095008048500900303>
- Riva, G., Mantovani, F., Capideville, C. S., Preziosa, A., Morganti, F., Villani, D., Gaggioli, A., Botella, C., and Alcañiz, M. (2007). Affective interactions using virtual reality: The link between presence and emotions. *Cyberpsychology and Behavior*, 10(1), 45–56. <https://doi.org/10.1089/cpb.2006.9993>
- Robillard, G., Bouchard, S., Fournier, T., and Renaud, P. (2003). Anxiety and Presence during VR Immersion: A Comparative Study of the Reactions of Phobic and Non-phobic Participants in Therapeutic Virtual Environments Derived from Computer Games. *Cyberpsychology and Behavior*, 6(5), 467–476. <https://doi.org/10.1089/109493103769710497>
- Schiopu, A. F., Hornoiu, R. I., Padurean, M. A., & Nica, A. M. (2021). Virus tinged? Exploring the facets of virtual reality use in tourism as a result of the COVID-19 pandemic. *Telematics and Informatics*, 60(January), 101575. <https://doi.org/10.1016/j.tele.2021.101575>
- Singhal, S. (2021). The next normal arrives: Trends that will define 2021 — and beyond. *McKinsey and Company*, January. <https://www.mckinsey.com/featured-insights/leadership/the-next-normal-arrives-trends-that-will-define-2021-and-beyond>
- Slater, M., Pertaub, D. P., and Steed, A. (1999). Public Speaking in Virtual Reality: Facing an Audience of Avatars. *IEEE Computer Graphics and Applications*, 19(2), 6–9. <https://doi.org/10.1109/38.749116>
- Smith, W. G. (2008). Does gender influence online survey participation? A record-linkage analysis of university faculty online survey response behavior. *ERIC ED501717*, 501717, 1–21. <http://files.eric.ed.gov/fulltext/ED501717.pdf>
- Stankov, U., Filimonau, V., and Vujičić, M. D. (2020). A mindful shift: an opportunity for mindfulness-driven tourism in a post-pandemic world. *Tourism Geographies*, 0(0), 1–10. <https://doi.org/10.1080/14616688.2020.1768432>
- Tussyadiah, I. P., Wang, D., Jung, T. H., and tom Dieck, M. C. (2018). Virtual reality, presence, and attitude change: Empirical evidence from tourism. *Tourism Management*, 66, 140–154. <https://doi.org/10.1016/j.tourman.2017.12.003>

- Villani, D., Repetto, C., Cipresso, P., and Riva, G. (2012). May I experience more presence in doing the same thing in virtual reality than in reality? An answer from a simulated job interview. *Interacting with Computers*, 24(4), 265–272. <https://doi.org/10.1016/j.intcom.2012.04.008>
- Williams, P., and Hobson, J. P. (1995). Virtual reality and tourism: fact or fantasy? *Tourism Management*, 16(6), 423–427. [https://doi.org/10.1016/0261-5177\(95\)00050-X](https://doi.org/10.1016/0261-5177(95)00050-X)
- Yang, F. X., and Wong, I. K. A. (2020). The social crisis aftermath: tourist well-being during the COVID-19 outbreak. *Journal of Sustainable Tourism*, 0(0), 1–20. <https://doi.org/10.1080/09669582.2020.1843047>
- Yung, R., Khoo-Lattimore, C., and Potter, L. E. (2020). Virtual reality and tourism marketing: conceptualizing a framework on presence, emotion, and intention. *Current Issues in Tourism*, 0(0), 1–21. <https://doi.org/10.1080/13683500.2020.1820454>
- Zwanka, R. J., and Buff, C. (2020). COVID-19 Generation: A Conceptual Framework of the Consumer Behavioral Shifts to Be Caused by the COVID-19 Pandemic. *Journal of International Consumer Marketing*, 0(0), 1–10. <https://doi.org/10.1080/08961530.2020.1771646>


9. Appendix

Figure 2. The questionnaire

15/12/21, 18:17 A pandemia da SARS-CoV-2 e a visão do turista sobre repensar o Turismo (Editar) Microsoft Forms

nterior

The SARS-CoV-2 pandemic and the tourist's view on rethinking Tourism



The following questionnaire aims to collect a series of answers for an intensive analysis, which will have significant weight in a Master's Thesis in Tourism and Communication, with the objective of studying the effects of the SARS-CoV-2 pandemic in the process of rethinking Tourism, so that, by envisaging future atypical situations such as the one referred to, all agents within the sector will be able to face these threats in a more effective and prepared manner. All responses will be anonymous and valid. Only respondents aged 18 or over will be allowed to answer.

All the information collected and the data that are subject to processing will be stored and processed confidentially in order to ensure confidentiality, anonymity and security, refraining from transferring them to third parties, unless expressly authorized by the same, in accordance with Law No. 58/2019 on the Protection and Circulation of Personal Data of Individuals. Therefore, this term of acceptance refers to the conditions and purposes inherent to the use of the data provided, which the holder declares to authorise and accept. It should also be mentioned that each person has their own perception of the topics under study, so there are no right or wrong answers.

Section 1

1. Do you want to participate in the questionnaire?

Yes

No

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2. Do you consider that your consumption habits have changed during the pandemic period? *

- Yes
- No

3. If yes, to what extent do you agree/disagree with the statement: "The new consumption habits of any good or service of a personal nature will remain in my future consumption"?

- | | Strongly agree | Agree | Undecided | Disagree | Strongly disagree |
|-------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Select the option | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

4. Select the options you most identify with, in terms of consumption habits that you have adopted during the pandemic. *

- I have resorted more to online consumption.
- I did not go back to establishments such as large shopping centres.
- I did not go back to establishments such as restaurants.
- I did not participate again in public events such as parties, concerts, etc.
- Due to the effects of the pandemic on the environment, my consumption habits paid much more attention to environmental limits.
- Other

5. Select the options you most identify with, in terms of consumption habits that will have weight in your future. *

- The control over my spending will be greater from now on.
- Travelling is not, in the near future, a priority.

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- Travelling is not, in the near future, an option.
- Even with deconfinement and relief from restrictions, I don't intend to go back to establishments such as large shopping centres any time soon.
- Even with deconfinement and relief from restrictions, I don't intend to return any time soon to frequent spaces such as restaurants.
- Even with deconfinement and relief from restrictions, I don't intend to return any time soon to attend public events such as parties, concerts, etc.
- My consumption habits will be increasingly attentive to environmental sustainability.
- Other

6. During the pandemic, were you teleworking (for a period longer than 1 month)? *

- Yes
- No

7. If yes, how did you feel about the outcome of your telework experience?

- | | Very satisfied | Somewhat satisfied | Neither satisfied nor dissatisfied | Somewhat dissatisfied | Very dissatisfied |
|--------------------|-----------------------|-----------------------|------------------------------------|-----------------------|-----------------------|
| Select the option. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

8. Do you like to travel in Tourism? *

- Yes
- No

9. If yes, how often do you travel?

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- Less than 2 times a year
- 2 to 4 times a year
- More than 4 times a year

10. Are you familiar with the concept of Virtual Tourism? *

- Yes
- No

11. If yes, select the option that best fits your idea of Virtual Tourism.

- Virtual Tourism is about linking the physical world with the digital, using Social Media, computing and the Internet.
- Virtual Tourism is the type of tourism that offers lower prices, no destination limits, no transport, greater security, no foreign language problems, no bureaucracy, no climate barriers and a guaranteed experience.
- Virtual Tourism implies the use of Virtual Reality (VR), but it is only considered Tourism if the person travels to a destination in order to use this technology.
- Virtual Tourism includes the concept of Virtual Environment (VA), where the tourist can navigate and possibly interact, resulting in a sensory experience.

12. Have you ever had any experience of virtual reality? (e.g. in tourism, in video games, or in other situations) *

- Yes
- No

13. Would you be interested in having a virtual tourist experience? *

1 (no interest)

2

3

4

5 (with great interest)

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	1 (no interest)	2	3	4	5 (high interest)
Select the option.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. What might lead you to participate in a virtual tourist experience? *

- It is an innovative experience.
- It can be an interesting alternative to conventional tourism in times of pandemic or other atypical situations.
- It can be an enriching experience.
- It is an environmentally friendly experience.
- It is an experience that allows the preservation of cultural heritage.
- It is an appropriate experience for people with reduced mobility.
- Other

15. To what degree do you agree/disagree with the statement: "Virtual Tourism could become a solution for the tourism sector in future atypical situations, such as the case of the SARS-CoV-2 pandemic"? *

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Select the option.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. To what degree do you agree/disagree with the statement "authenticity is an important element in this type of virtual tourism experience"? *

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Select the option.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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17. What elements can contribute to a virtual experience being considered "authentic"? *

- The visit to the site with an interpreter guide.
- The preservation of archaeological resources.
- The realistic" representation of the places and monuments to be visited.
- The opportunity to get to know the culture and communicate with local people.
- The participation in programmes and activities during the visit.
- The creation of a link with the identity of the place you visit.
- Other

18. To what degree do you agree/disagree that the following factors can be considered limiting to the use of virtual reality in tourism? *

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Technical difficulties in their use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The virtual environment does not represent reality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vision is the only exploited sense in these virtual environments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The experience is not authentic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It will be difficult to achieve a sense of presence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly agree	Agree	Undecided	Disagree	Strongly disagree

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It will be difficult to achieve a sense of presence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It will be difficult for the virtual environment to be able to evoke emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would not be possible to take photographs, as is usual on a conventional trip.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. To what degree do you agree/disagree with the following statements to characterise a Virtual Tourism experience? *

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
The experience is not authentic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There might be technical constraints.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is not possible to communicate with anyone or be accompanied by a guide, as on guided tours.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical aspect of the virtual environment might not represent the place as it actually is, in terms of lighting, locations, monuments, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Since it is a virtual environment, it is possible that it may provoke sensations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Since it is a virtual environment, it is possible that it may provoke sensations such as anxiety.

Since it is a virtual environment, it is possible that it provokes feelings of relaxation.

20. Please indicate your level of education. *

3rd cycle or less

Secondary education

Bachelor's degree

Master's degree

PhD

Other

21. Please indicate your occupation. *

Student

Employed

Unemployed

Self-employed

Employee

Retired

Other

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- Employed
- Unemployed
- Self-employed
- Employee
- Retired
- Other

22. Please indicate your gender. *

- Female
- Male
- I don't identify with any
- I identify with both
- I prefer not to answer

23. Please indicate your age. *

- 18-25 years old
- 26-35 years old
- 36-45 years old
- 46-60 years old
- +60 years old

Source: own, using Microsoft Forms

Table 82 Hypothesis test summary for clusters no.1

Hypothesis Test Summary for clusters no.1				
	Null Hypothesis	Test	Sig. ^{b,c}	Decision
1	The distribution of OnlineConsumption is the same across categories of Cluster Number of Case.	Independent-Samples Mann-Whitney U Test	,054	Retain the null hypothesis.
2	The medians of NoShoppinhCenter are the same across categories of Cluster Number of Case.	Independent-Samples Median Test	,392 ^d	Retain the null hypothesis.
3	The distribution of NoShoppinhCenter is the same across categories of Cluster Number of Case.	Independent-Samples Mann-Whitney U Test	,321	Retain the null hypothesis.
4	The medians of NoRestaurants are the same across categories of Cluster Number of Case.	Independent-Samples Median Test	,377 ^d	Retain the null hypothesis.
5	The distribution of NoRestaurants is the same across categories of Cluster Number of Case.	Independent-Samples Mann-Whitney U Test	,301	Retain the null hypothesis.
6	The distribution of Noevents is the same across categories of Cluster Number of Case.	Independent-Samples Mann-Whitney U Test	,980	Retain the null hypothesis.
7	The medians of Ecofriendlyconsumption are the same across categories of Cluster Number of Case.	Independent-Samples Median Test	,266 ^d	Retain the null hypothesis.
8	The distribution of Ecofriendlyconsumption is the same across categories of Cluster Number of Case.	Independent-Samples Mann-Whitney U Test	,207	Retain the null hypothesis.
9	The medians of Degree of agreement are the same across categories of Cluster Number of Case.	Independent-Samples Median Test	,812 ^d	Retain the null hypothesis.
10	The distribution of Degree of agreement is the same across categories of Cluster Number of Case.	Independent-Samples Mann-Whitney U Test	,430	Retain the null hypothesis.

b. The significance level is ,050.

c. Asymptotic significance is displayed.

d. Yates's Continuity Corrected Asymptotic Sig.

Source: own, using SPSS

Table 83. Hypothesis test summary for clusters no.2

Hypothesis Test Summary for clusters no.2																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	20	22	
Null Hypothesis	The medians of SpendingControl are the same across categories of Cluster Number of Case.	The distribution of SpendingControl is the same across categories of Cluster Number of Case.	The medians of TravelnoPriority are the same across categories of Cluster Number of Case.	The distribution of TravelnoPriority is the same across categories of Cluster Number of Case.	The median of TravelnoOption are the same across categories of ...	The distribution of TravelnoOption is the same across categories of ...	The median of Fnoshoppingcenters are the same across categories of ...	The distribution of Fnoshoppingcenters is the same across categories of ...	The median of FnoRestaurants are the same across categories of ...	The distribution of FnoRestaurants is the same across categories of ...	The median of FnoParties are the same across categories of ...	The distribution of FnoParties is the same across categories of ...	The median of Fsustainableconsumption are the same across categories of ...	The distribution of Fsustainableconsumption is the same across categories of ...	The median of NoFutureChanges are the same across categories of ...	The distribution of NoFutureChanges is the same across categories of ...	The median of Teleworking? is the same across categories of ...	The distribution of Teleworking? is the same across categories of ...	The median of Teleworking? is the same across categories of ...	The distribution of Teleworking? is the same across categories of ...	The median of Like to travel? is the same across categories of ...
Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	
Sig. ^{a,b}	,627 ^c	,537	,543 ^c	,457	,866 ^c	,962	,616 ^c	,489	,195 ^c	,098	,915 ^c	,810	,668 ^c	,574	,818 ^c	,520	,464	,801 ^c	,301	,246	
Decision	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	

a. The significance level is ,050.

b. Asymptotic significance is displayed.

c. Yates's Continuity Corrected Asymptotic Sig.

Source: own, using SPSS

Table 84. Hypothesis test summary for clusters no.3

Hypothesis Test Summary for clusters no.3											
	2	3	4	5	6	7	8	9	10	11	12
Null Hypothesis	The distribution of Innovative Experience is the same across categories of Cluster Number of Case.	The medians of TourismAlternative are the same across categories of Cluster Number of Case.	The distribution of TourismAlternative is the same across categories of Cluster Number of Case.	The medians of Enriching Experience are the same across categories of Cluster Number of Case.	The distribution of Enriching Experience is the same across categories of Cluster Number of Case.	The medians of Ecofriendly Experience are the same across categories of Cluster Number of Case.	The distribution of Ecofriendly Experience is the same across categories of Cluster Number of Case.	The medians of CultHeritageP reservation are the same across categories of Cluster Number of Case.	The distribution of CultHeritageP reservation is the same across categories of Cluster Number of Case.	The medians of HandicappedAppropriate are the same across categories of Cluster Number of Case.	The distribution of HandicappedAppropriate is the same across categories of Cluster Number of Case.
Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test
Sig. ^{b,c}	<,001	<,001 ^d	<,001	<,001 ^d	<,001	,024 ^d	,015	,002 ^d	,001	,084 ^d	,061
Decision	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.

b. The significance level is ,050.

c. Asymptotic significance is displayed.

d. Yates's Continuity Corrected Asymptotic Sig.

Source: own, using SPSS

Table 85. Hypothesis test summary for clusters no.4

Hypothesis Test Summary for clusters no.4											
	1	2	3	4	6	7	8	9	10	11	12
Null Hypothesis	The medians of InterpreterGuide are the same across categories of Cluster Number of Case.	The distribution of InterpreterGuide is the same across categories of Cluster Number of Case.	The medians of ResourcesPreservation are the same across categories of Cluster Number of Case.	The distribution of ResourcesPreservation is the same across categories of Cluster Number of Case.	The distribution of RealRepresentation is the same across categories of Cluster Number of Case.	The medians of CultureandLocals are the same across categories of Cluster Number of Case.	The distribution of CultureandLocals is the same across categories of Cluster Number of Case.	The medians of ProgrammsActivities are the same across categories of Cluster Number of Case.	The distribution of ProgrammsActivities is the same across categories of Cluster Number of Case.	The medians of IdentityCreation are the same across categories of Cluster Number of Case.	The distribution of IdentityCreation is the same across categories of Cluster Number of Case.
Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test
Sig. ^{a,b}	,432 ^c	,355	,016 ^c	,010	<,001	,002 ^c	,001	,013 ^c	,009	,006 ^c	,004
Decision	Retain the null hypothesis.	Retain the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.

a. The significance level is ,050.

b. Asymptotic significance is displayed.

c. Yates's Continuity Corrected Asymptotic Sig.

Source: own, using SPSS

Table 86. Hypothesis test summary for clusters no.5

Hypothesis Test Summary for clusters no.5

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	17	18	19	20	21	22	23	24	25	
Null Hypothesis	The medians of Technical issues in VT are the same across categories of Cluster Number of Case.	The distribution of Technical issues in VT is the same across categories of Cluster Number of Case.	The medians of VE not real are the same across categories of Cluster Number of Case.	The distribution of VE not real is the same across categories of Cluster Number of Case.	The medians of Only visual sense are the same across categories of Cluster Number of Case.	The distribution of Only visual sense is the same across categories of Cluster Number of Case.	The medians of Not authentic are the same across categories of Cluster Number of Case.	The distribution of Not authentic is the same across categories of Cluster Number of Case.	The medians of No sense of presence are the same across categories of Cluster Number of Case.	The distribution of No sense of presence is the same across categories of Cluster Number of Case.	The medians of No emotions in VR are the same across categories of Cluster Number of Case.	The distribution of No emotions in VR is the same across categories of Cluster Number of Case.	The medians of Not taking pictures are the same across categories of Cluster Number of Case.	The distribution of Not taking pictures is the same across categories of Cluster Number of Case.	The medians of Technical constraints are the same across categories of Cluster Number of Case.	The distribution of Technical constraints is the same across categories of Cluster Number of Case.	The medians of No communication are the same across categories of Cluster Number of Case.	The distribution of No communication is the same across categories of Cluster Number of Case.	The medians of Not realistic are the same across categories of Cluster Number of Case.	The distribution of Not realistic is the same across categories of Cluster Number of Case.	The medians of Anxiety are the same across categories of Cluster Number of Case.	The distribution of Anxiety is the same across categories of Cluster Number of Case.	The medians of Relaxing are the same across categories of Cluster Number of Case.	The distribution of Relaxing is the same across categories of Cluster Number of Case.
Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test	Independent-Samples Median Test	Independent-Samples Mann-Whitney U Test
Sig ^{a,b}	,863	,262	,184	,071	,003	,004	,002	<,001	,027	,037	,177	,088	,437	,211	,130	,134	,415	,492	,210	,052	,464	,157	,102	
Decision	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Reject the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	Retain the null hypothesis.	

a. The significance level is ,050.
 b. Asymptotic significance is displayed.

Source: own, using SPSS

Table 87. Hypothesis test summary for clusters no.6

	Null Hypothesis	Test	Sig. ^{a,b}	Decision
1	The medians of Educationlevelscale are the same across categories of Cluster Number of Case.	Independent-Samples Median Test	,321 ^c	Retain the null hypothesis.
2	The distribution of Educationlevelscale is the same across categories of Cluster Number of Case.	Independent-Samples Mann-Whitney U Test	,261	Retain the null hypothesis.

a. The significance level is ,050.

b. Asymptotic significance is displayed.

c. Yates's Continuity Corrected Asymptotic Sig.

Source: own, using SPSS

Table 88. Hypothesis test summary for clusters no.7

	Null Hypothesis	Test	Sig. ^{b,c}	Decision
1	The medians of Travelfrequency scale are the same across categories of Cluster Number of Case.	Independent-Samples Median Test	. ^a	Unable to compute.
2	The distribution of Travelfrequency scale is the same across categories of Cluster Number of Case.	Independent-Samples Mann-Whitney U Test	,213	Retain the null hypothesis.

a. All test field values are less than or equal to the median.

b. The significance level is ,050.

c. Asymptotic significance is displayed.

Source: own, using SPSS