Reaching Destinations Through Virtual Tourism – The Case of Romania

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Abstract

Tourism worldwide has been severely impacted by the Covid-19 pandemic, reason for which the Industry took a turn towards the new available technologies as for responding to the new requirements. Population volition and availability towards using virtual tourism during and after the pandemic in Romania has become a genuine research subject which timely enhanced by leadership and management teams altogether, could result into a healthy and sustainable tourism industry recovery, within the post-pandemic era. According to socio-demographic factors, virtual tourism proved to be an entertainment activity for people which cannot be actually immersed within the actual destination attractions A mixed-method approach will be used, results emphasizing the role of planned behavior within the people's destination choices. The research includes a PLS_SEM analysis which suggests the people willingness for virtual destination visits stuck, thus resulting that virtual tourism is an efficient manner as for promoting sustainable tourism actions.

Key words: virtual tourism, strategic management, Covid-19 pandemic
J.E.L. classification: J23, L83

1. Introduction

The unprecedented impact of the COVID-19 pandemic has reached the tourism industry on its one of the most prolific historical ascendent trendlines; the consequences deeply marked individuals, associations, institutions and organizations worldwide (Grossling et.al., 2021). According to the World Tourism Organization (UNWTO), there were reported several million in export revenues, along with social and private economic consequences (UNWTO 2021). The tourism sector has been subject to millions of job losses and livelihoods, thus becoming a driver for one of the most important economic crises of the century that could only be solved with the help of international and national bodies collaboration and cooperation.

The COVID-19 outbreaks were mainly due to non-isolation and unsupervised travelling, therefore the quarantine measures of social distancing and isolation, travel restriction, events cancellation and organizational closure were proved to be a viable solution for preventing the virus transmission (Cowling et.al., 2020; Lai et.al., 2020; Fong et.al., 2020). Despite the popularity of the measures across nations, the reduction of unnecessary trips and extensive stay-at-home periods led to decreases of national economic indices, employment loss and tourism industry decline (Sigala, 2020; Lau et.al., 2020).

Virtual tourism is widely presented by literature as one of the most viable solutions for the tourism industry recovery, since virtual travelling can be accessed by any stay-at-home individual which has access to technology and gadgets. The emerging tech industry provides for the use of virtual worlds (with applicability within the tourism industry altogether) the virtual reality (VR) and augmented reality (AR) applications which have the potential to empower not only the national but the global tourism industry at once.

Recent literature debates in regard with tourism virtual rejuvenation has not had the chance to align in research and opinions in regard to a singular and generally accepted view of virtual tourism

tools and functioning; for this reason, there are numerous references to virtual tourism but retrieved under names as cloud tourism, live broadcasting or live streaming. According to Burdea et.al. (2003), the augmented reality can be performed by enhancing the visitor's senses at the touristic site, by presenting computer-generated images that would further immerse the tourist's imagination in regard to the historical/present/future potential of the touristic site. Due to its interactions to the real environment, the augmented reality will not be considered for the development of the current study. On another hand, virtual reality (VR) generates 3D environmental captions that result into reality simulation, thus involving one or all of the visitor senses (Yung et.al., 2019); the new virtual environment (VE) created can derive from synthetic or real images (Beck et.al., 2019).

The sense of the verisimilitude provided by the VR techniques led towards a rise in it's popularity, since out/inside 360 degrees panoramic views that allow individual change and movement in any of the directions are at source of the general public affinity (Slater et.al., 2016; LaValle, 2016). The VR experience can be enjoyed while staying at home with the help of dedicated apps and any device such as computers and/or any smart devices. Pandemic was the cradle of important popularity gains for numerous socialization apps (Facebook, Twitter, Instagram, Tiktok, Wechat etc.) which allow live broadcasting and live streaming from basically any place and at any time; for this reason, virtual tourism through live broadcasting gained rapidly in importance, thus becoming a social trend (phenomenon) across the world. From its benefits gained not only (potential) tourists, but also travel and tourism agencies and touristic sites that were (in)direct involved. The live streaming is considered by the current research as a tool for virtual tourism.

The current research investigates the factors that are at source of individuals behaviors in regard to virtual tourism and their acquiescence in regard to the novelty of the virtual tourism tools and instruments. The aim of the study is to investigate within a post pandemic era the influence of virtual tourism on the entire sector. As of this writing, numerous economies are still under the process of economic recovery from the COVID-19 pandemic. We hypothesize that the uniqueness of the virtual tourism instruments can be positively quantified for the recovery of the touristic industry. To best of our knowledge, the current research is one of the few that relates to the study of the virtual tourism tools and effects within a post-pandemic era in Romania. The topic will be explored from the view of the theory of planned behavior, a popular approach across numerous scientifical fields (Fishbein, 2010). By using a mixed method approach, the topic will be analyzed based on a number of 169 survey responses that will be further quantified.

2. Literature review

2.1. The theory of planned behavior

As one of the most important theories of social-psychological behavior, the theory of planned behavior (TPB) was developed in regard to one's intention of performing and adopting a given social conduct; the theory includes a number of three factors among which one could count the attitude in regard to the required and/or expected behavior, subjective norms and the control perceived in regard to the expected behavior (Fishbein et.al., 2010). Numerous research fields such as physics, mathematics, archeology, agriculture, medicine, technology or management have been developing research by considering the aforementioned theory (Guo et.al., 2021; Liobikiene et.al., 2016; de Leeuw et.al., 2015). According to Ulker et.al., 2020), the tourism and accommodation industry has enhanced the use of the theory of planned behavior in order to explain intentions for supporting touristic activities or revisits (Erul et.al., 2020; Ulker et.al., 2020). The TPB can be also used for touristic behavioral predictions in regard to a given touristic site and/or activity (Han et.al., 2017). The technology impact on tourism industry has gained scholars focus, mainly due to travel facilitating applications as online booking, user-generated content (UGC) or social media (Ukpabi et.al., 2018; Amaro et.al., 2019; Confente et.al., 2018). The current research hypothesis is that virtual tourism, similar to on site tourism, can be partially assigned to the TPB theory within the post pandemic era.

2.2. The application of virtual tourism

Apart from a large areal of domains and industries (management, marketing, education etc.), the tourism industry potential could be visibly raised from the odds of mass adopting the use of VR (Guttentag, 2010); one of the mass scale VR uses could refer to marketing and promotion of touristic destinations, with no physical requirement on site from any of the visitors. Virtual reality provides the user with a deeper assessment of the gains and losses from destination choice, thus weighting on its decision process. Therefore, if considering the behavioral intentions, one could argue the importance of VR within the touristic destination decision making (Marasco et.al., 2018; Rahimizhian et.al., 2020). Moreover, qualitative VR promotion services could enhance the likelihood of touristic site future and/or re-visitation (Gibson et.al., 2018). Such a decision involves deeply the touristic site management intentions and strategies which could adopt up to a certain quality degree the use of virtual reality. Data shows that for the latter years, VR proved increased efficiency compared to traditional marketing tools such as brochures or pamphlets (Yeh et.al., 2017). Moreover, virtual reality could be provided by touristic sites as a stand-alone touristic products such as thematic parks and/ or festivals. Nonetheless, especially for certain age categories (and not only), virtual reality could be an educational but also an entertainment activity used for relieving quotidian stress.

As an educational tool for the tourism industry, VR could be an useful tool for museums, art galleries or rear exhibits which could provide a veritable experience for enthusiasts which for various reasons could not travel on site in time (Carrozzino et.al., 2010; Roussou, 2004). There is an increasing art industry trend to launch virtual tours for visitors (Louvre Museum, 2020).

In accordance to the ease of reach of a touristic attraction, virtual accessibility can be used as an interchangeable access form, especially for dangerous, expensive or out of reach destination sites (Guttentag, 2010; Gutu et.al., 2023). Moreover, the benefits of virtual reality could stimulate the well-being of certain social categories with travel impediments (medical, social, economic), but not least, could provide better preservation odds for endangered sites (Siriaraaya et.al., 2014; Tecau et.al., 2019). The immersive experience provided by the virtual reality technology is a viable touristic access alternative which could curtail visitations and save the global heritage (Beraldin et.al., 2005).

3. Research methodology

By taking advantage of the qualitative-quantitative complementarity, the current research could provide with a more comprehensive picture in regard to the benefits and use of virtual tourism (Denscombe, 2008; Fleckenstein et.al., 2020). The urgency of understanding the advantages and disadvantages of virtual tourism prioritized the data gathering methodology which included the launch of an online Google Forms survey which was distributed via various social platforms. The answers were required to be anonymous, and subjects agreed to voluntarily and pro bono to fill in the answers. The language used was Romanian; the survey was administered for a 2 weeks period, 20.04-04.05.2023 and 186 viable answers were collected. The current research is based on prior results practice and pragmatism; the authors used a non-probability sampling method that resides on accounting for a voluntary response. General Data Protection Regulation (GDPR) was respected, since the volunteers were guaranteed that no personal data would be requested and/or retained through the Form; a strict confidentiality was respected, while all data would be used solely for academic research.

The design of the questionnaire was intended to provide researchers and readers with a wider grasp on the virtual tourism realities, tools and methods, in dependance to a number of variables that would be further explained.

The questionnaire consisted of a number of fifteen items including demographical status. Vitual tourism items were assessed by using a 7-point Likert scale ranging from 1-7 (totally agree to disagree). The internal consistency of the scale for all the items was >0.80.

As for assessing the data, SmartPLS (v. 4.0.0) was used; the resulted models (as outer and inner) rely on the observable variables which are yielded to the latent variables.

4. Findings

The aim of the current research was to explore the use of technological tools within the (related) touristic activities in Romania, within the post pandemic era. The demographic characteristics of the current survey show that 72.8% of the respondents are women, and the wide majority of the respondents subscribe to the 18-30 age interval, as compared to 51-60 and over 60 years old which represent 4.4% of the total number. Respondents were asked to provide information in regard to the last degree or equivalent which they graduate, results showing an average of Highschool or equivalent diploma holders (69.8%) as compared to Doctoral and/or Postdoctoral degree holders which totalize 2.4%. as for the monthly income, the large majority has under 2000 Ron/month (an approximate equivalent of 500 EUR), while 26.6% of the respondents could gain up to 4000 Ron.

Table 1. Respondents demographic profile

Demographic data	Response category	Percentage
Gender	Masculine	27.2%
	Feminine	72.8%
Age	Under 18	4.7%
	18-30	79.9%
	31-40	5.3%
	41-50	5.9%
	51-60	2.4%
	Over 60	1.8%
Education	High school and equivalent	69.8%
	Bachelor degree and equivalent	23.7%
	Master's degree	4.1%
	Doctoral degree	1.8%
	Postdoctoral degree	0.6%
Monthly income (RON)	Under 2000	60.9%
	2000-4000	26.6%
	4001-10000	11.2%
	Over 10000	1.2%

Source: own developments

As further results will show, Romanian population is not very familiar with the virtual tourism tools and uses, most of them having previous information in regard to virtual streaming and 3D glasses.

Table no. 2. Respondents' attitudes towards the use of virtual tourism

	Frequency of scale						
	Strongly disagree (%)	**Disagree (%)**	**Slightly disagree (%)**	**Neutral (%)**	**Slightly agree (%)**	**Agree (%)**	**Strongly agree (%)**
Travel desire	13.6	8.3	9.5	17.2	25.4	11.8	14.2
Browsing travel destination (frequency)	10.1	11.8	18.9	20.7	22.5	7.7	8.3
Willingness to use virtual tourism	10.1	25.4	16.6	20.7	18.3	7.1	1.8
Virtual tourism attitudes	16.6	12.4	17.2	20.1	16.6	11.8	5.3
(alternative and entertainment)	14.2	11.2	17.8	20.7	21.9	9.5	4.7
Social norm	24.9	15.4	14.8	17.2	12.4	13	2.4
Perceived behavior to control virtual tourism access	8.9	5.9	13.6	24.3	18.3	19.5	9.5

Source: own developments

In regard to willingness to travel of the respondents and visit touristic sites, data shows that within the post pandemic era, 26.2 very aspire or aspire to travel, while 21.9% do not aspire (at all) to travel. When about the frequency of browsing pictures/video/online descriptions of touristic attraction, 39.5 indicated that sometimes, often and very often perform such activities. The willingness to use virtual tourism by using the advantage of technological advancement and its ease of reach, respondents' responses tend to strongly disagree, disagree and slightly disagree (52.2%).

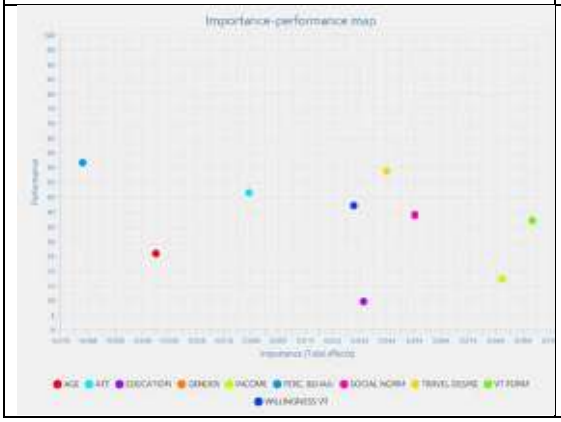
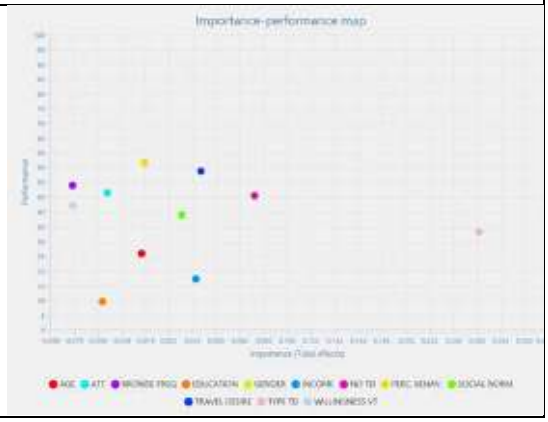
The survey data also analyzed the respondents' attitudes towards virtual tourism, by using two methods; at first, virtual tourism vas considered to be an alternative to on site (traditional) touristic activities. Data shows that the percentage of the respondents that slightly-strongly disagree overpasses the slightly-strongly agree data (46.2% : 33.7%). The second method for measuring the attitudes toward the use of virtual tourism presented its activities under the form of entertainment; results show that respondents 43.2% of the respondents are on the negative side of the scale, while only 36.1% were positive with such a view. Moreover, respondents do not consider virtual touristic activities as a social norm which they could embrace further.

When about the perceived behavioral control as for accessing virtual touristic activities, 47.3% of the respondents adopted less conservative attitudes towards the online tourism. As for the attitudes towards technological touristic tools, results show that virtual activities as live broadcast and 360 degrees tours are equally popular among the respondents, while VR glasses are treated with a more conservative view. Despite the fact that technology allows users to access online even the most restricted touristic sites, the on site travelling experience comes with an array of advantages that are not easy to be replaced, such as shopping, the social function of interaction and multicultural engagements, food or entertainment. Moreover, the use of VR glasses could also create medical temporary issues for some of the users, a possible reason for their lack of popularity.

In regard to the types of touristic destination preferences, data shows natural landscapes and parks and gardens to occupy the top positions, followed by museums and historical sites. As for the number of touristic destinations reached by a traveler, data shows that 31.4% visit at least three destinations, while only 27.2% only travel for a single destination.

Given the novelty of the study, an importance performance map analysis was performed (Hair, et.al., 2018; Rigdon, et.al., 2011) for two of the variables, inbound/outbound tourism and the virtual tourism form.

Table no. 3. IPMA importance performance map analysis

Inbound/outbound IPMA	**VT Form IPMA**
	

Source: own developments

The analysis shows that for the decision of traveling in Romania or over the borders, the tourists mainly take into consideration variables as the form of virtual tourism and the income as being important, while the travel desire scores the highest on the performance axis. As for the virtual tourism form, the single most important factor on both axes is the type of touristic decision, followed by far by the number of touristic destinations.

Table no. 4. Model Path Coefficients

Path Coefficients	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
AGE -> ATT	0.131	0.131	0.052	2.544	0.011
AGE -> BROWSE FREQ	0.141	0.137	0.065	2.174	0.03
AGE -> INCOME	0.32	0.323	0.068	4.696	0
AGE -> TRAVEL DESIRE	0.124	0.121	0.061	2.035	0.042
AGE -> WILLINGNESS VT	0.202	0.2	0.065	3.109	0.002
ATT -> GOOD ATT	0.893	0.892	0.02	44.17	0
ATT -> NEW ATT	0.896	0.896	0.019	46.772	0
BROWSE FREQ -> NO TD	0.155	0.154	0.076	2.047	0.041
EDUCATION -> INCOME	0.217	0.22	0.074	2.934	0.003
IN/OUTBOUND -> VT FORM	0.377	0.378	0.145	2.593	0.01
INCOME -> IN/OUTBOUND	0.079	0.08	0.036	2.17	0.03
PERC. BEHAV. -> ATT	0.371	0.373	0.073	5.053	0
WILLINGNESS VT -> PERC. BEHAV.	0.289	0.289	0.07	4.148	0

Source: own developments

The path coefficients used for the inner model are used as for describing the constructs connections; according to the P values, from the demographical factors age appears to have the most significant impact on a number of virtual tourism related dimensions, such as browsing frequency, attitudes of willingness to use virtual tourism as a leisure activity. It is important to mention that the decision of traveling inside and/or outside of Romania borders is significantly linked to the virtual tourism form (p=0.01).

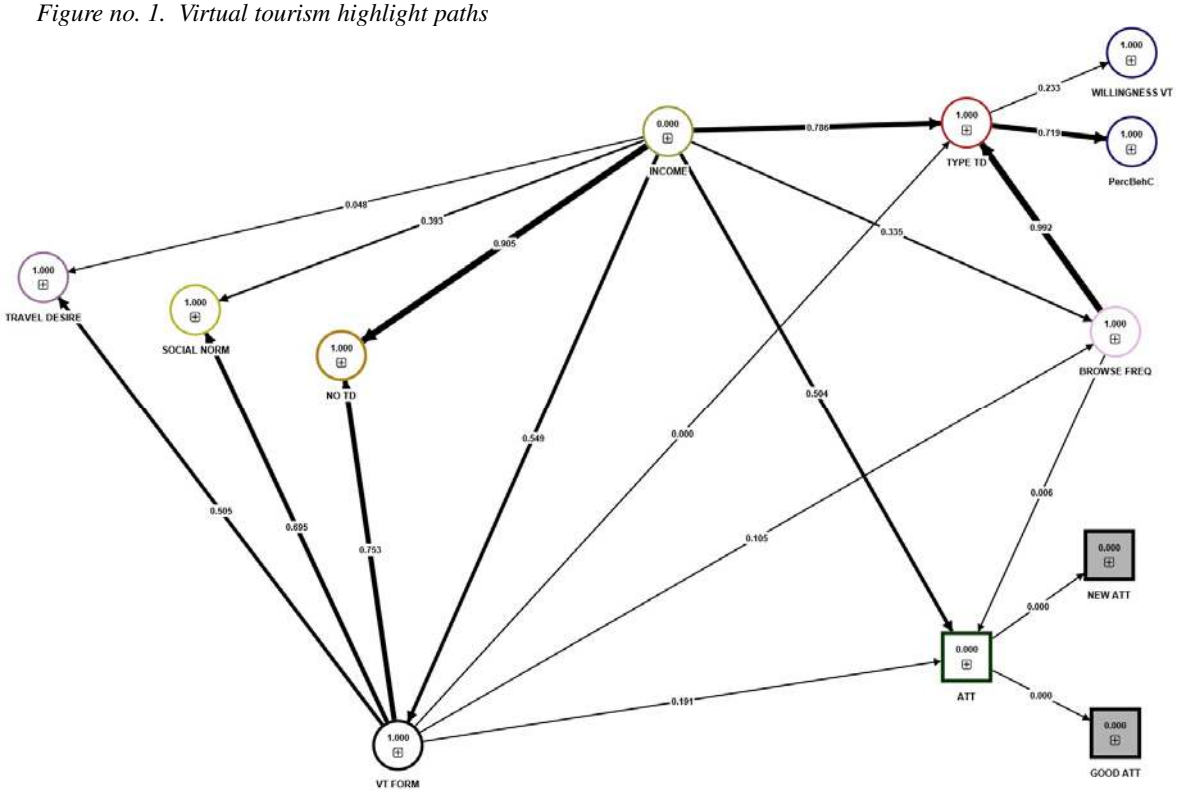
Table no. 5. Total indirect effects

Total indirect effects	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
AGE -> GOOD ATT	0.137	0.137	0.05	2.738	0.006
AGE -> IN/OUTBOUND	0.025	0.025	0.013	2	0.046
AGE -> NEW ATT	0.137	0.137	0.051	2.707	0.007
AGE -> PERC. BEHAV.	0.059	0.058	0.024	2.447	0.014
PERC. BEHAV. -> GOOD ATT	0.332	0.333	0.066	4.991	0
PERC. BEHAV. -> NEW ATT	0.333	0.334	0.067	4.996	0
WILLINGNESS VT -> ATT	0.107	0.111	0.042	2.541	0.011
WILLINGNESS VT -> GOOD ATT	0.096	0.099	0.038	2.535	0.011
WILLINGNESS VT -> NEW ATT	0.096	0.099	0.038	2.528	0.011

Source: own developments

As for the total indirect effects (an analysis that can only be performed for models with reflective factors), according to Gaskin et.al. (2023), for the significant p values (<0.05) the hypothesis is supported, meaning that an indirect effect is to be observed. The most important indirect effects are for Willingness VT-> Perceived Behavior and Perceived Behavior -> Attitude.

Figure no. 1. Virtual tourism highlight paths



Source: own developments

By performing a Bootstrapp analysis, results prove that there is a positive connection between the form of virtual tourism (as video stream, 360 degreed virtual tours, VR glasses) and the travel desire (p=0.505), social norm (p=0.695) and the number of travel destinations (p=0.753). Income has an increased importance for a number of variables such as the number of travel destinations (p=0.905), along with the type of touristic destination (p=0.786), and almost equally (p=0.5) important for the virtual tourism forms and attitudes towards virtual tourism. Moreover, results show that the browsing frequency has a significant effect on the type of touristic destination (p=0.992), while the type of touristic destination has a significant effect on perceived behavior (p=0.719).

5. Discussion and final remarks

The aim of the current study was enabled within a threefold objective, namely to study the influence and constrains of the virtual tourism through the three TPB theory factors: the attitude in regard to the virtual tourism components, the description of social norm and the perceived control towards the virtual tourism activities (Ajzen, 1991). Moreover, tourists which are technology aware, use video streaming from touristic destinations and frequently browse information in regard to touristic sites are more likely to become users of virtual tourism. The one major constraint for the future possible users of the virtual touristic tools is the lack of familiarity in regard to technological advances along with the lack of general knowledge of its touristic potential.

As data reveals, after natural landscapes and parks and gardens, the museums are among the most popular touristic destinations, meaning that virtual tourism tools could be of extensive use for the managerial strategies of these sites. The alleged virtual suitability regards rare/temporary and/or permanent exhibits which with the help of 3D technology and virtual tours, could display highly qualitative results for users, with detailed interpretation and without any potential damage for the art item. Compared to natural landscapes wich are recommendable to be visited on site, the cultural landscape could be much better understood via virtual tourism.

Moreover, virtual tourism could be used for educational purposes, by enhancing learning in regard to museums, art galleries or any heritage sites (Carrozino et.al., 2010; tom Dieck et.al., 2016); in the light of the previous pandemic situation, one must observe the health safety and welfare provided by educational virtual enhancements, compared to on site alternative.

During and after the COVID-19 pandemic, virtual tourism tools express the potential for rescuing and supporting the recovery of the national and/or global tourism industry. According to previous research, virtual reality has the potential of being an effective management and marketing tool, influencing individuals in regard to the destinations and desirability to visit the chosen location. For this reason, agencies, organizations and various national and international bodies encountered a stringent need to promote the possibility of online tourism, research showing that it has greater effects compared to brochures and pamphlets, thus increasing the individual desirability of visiting one site once visited via virtual touristic tools (Yeh et.al., 2017).

Another benefit following the increased usage of virtual touristic instruments could result into improved conditions for climate change, by reducing greenhouse gas emissions from transport, shopping and food provided for tourists (Lenzen et.al., 2018). In this light, one might assume that COVID-19 was a positive environmentally situation, since the reduced travelling due to destination closure led to event cancellations and therefore less greenhouse gas emissions. For this reason, virtual tourism is considered to a friendly alternative for the environment, therefore virtual touristic tools are sustainable tools.

As previous research suggests (Guttentag, 2010; Siriaraya et.al., 2014), the general public could benefit from the enlarged accessibility of touristic destinations, especially for sensible categories of public with certain concerns (based on gender, age, education, economic welfare of medical approaches). Also, distance, accessibility and other barriers that could generally contribute to negative touristic turnovers could be overcome while using the option of virtual tourism.

The individual willingness to use virtual tourism tools after the pandemic is an area to be studied and enhanced by tourism industry sites providers, since tourism industry shows a promising future due to extensive technological advancements and ease of access and travel being reached by increasing touristic flocks. Virtual tourism could be used for informing oneself prior to traveling, reaching tips in regard to cultural, natural, economic, time or accessibility possible constraints. The try-before-you-buy service provided by virtual tourism should be enhanced by tourism providers, despite the services or products they provide. Nonetheless, for the years to come, there is room for virtual tourism to expand and provide larger service array by using tools to be invented.

Final remarks surprise the Romania society as a potential market for tourism providers, data showing that major investments are necessary for generally familiarizing the society with the tools and benefits of virtual tourism, prior to expecting larger user amounts. As for the post-pandemic management implications on the country-level which is still on its course to recovery after the sanitary crisis, virtual tourism could be used as an effective tool, along with strategi enhancements in regard to prevention of future possible pandemic situations. It is important to advocate outdoor scenic tourism destinations managers to adopt and implement virtual tourism strategies as for better presenting their products and services. Moreover, innovative solutions for incorporating within the virtual touristic tools the selling of traditional touristic items such as souvenirs or local items which would ultimately result into an profit increase, need to be adopted. Moreover, virtual tourism is an effective marketing tool that could help even the small touristic players to sell their products and services, thus influencing tourists destination choices. Aside from having a promising future, the current study could promote diversity, social inclusion and sustainability, by enhancing the touristic sites' virtual accessibility and encouraging the greenhouse gas emissions.

6. Limitations and further developments

Despite of the promising future of the virtual tourism promised and encouraged by the developments favored by the COVID-19 Pandemic and further events, when virtual tourism took wings and gained in popularity, once with lifting travel restrictions, people still show a diversity of interest levels towards different aspects of virtual tourism. One of the motivations behind such developments resides within informative purposes as preliminary premises for choosing a given touristic destination. such results are more that sufficient for encouraging touristic destinations

managers to seriously grant attention to various forms of touristic virtual developments and invest accordingly. Such developments could also benefit for various social categories that rely on health, financial, accessibility or time constraints. By aligning the present results with previous studies (Ford, 2001; Siriaraya et.al., 2014) virtual accessibility of the tourism destinations are generally limited by the lack of previous infrastructure, tech insufficient developments and lack of popularity; despite the peculiarity explained by an instant of an instant development during the pandemic. Costs appear to be perceived as a low point for both touristic managers and travelers, since access to the latest developments are not highly accessible, programs to facilitate such processes being a needed further investment. Touristic activities have the potential to reduce greenhouse gas emissions, an aspect that needs to be further considered for legislative bodies that have the power to implement general broad initiatives.

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