Embracing the virtual: a comprehensive strategic foresight analysis of virtual reality's impact on tourism marketing[7]

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Abstract

Virtual Reality (VR) is a technology that immerses users in a virtual world, giving them an entirely new experience. Based on past research, experts discovered that VR has more advantages than disadvantages. However, because VR is still in its early phases, little research has been conducted on it as a tourism marketing tool. The aim of this research is to uncover difficulties and drivers in order to forecast the future of this technology. This study employs both qualitative and quantitative methods, as well as future wheel implications. STEEPV analysis will be utilised to identify key drivers of technology, and SPSS was used to examine the data. The online questionnaire was distributed via Chinese social media, and had a 75.94% response rate, with 60 of 79 feedback recorded. The most important drivers of the technology are the rising number of VR users, increased brand recognition, and the ability to provide emotional value. The environment is one of the least discussed drivers. To establish the future implications of Virtual Reality as a Tourism Marketing tool, future forecasts were produced using Future Wheel analysis. According to the impact-uncertainty analysis, the top two drivers were "Tourism marketing in VR will increase brand recognition due to the unique experience" and "Virtual Reality enables users to explore places and contents without physically being there." The forecasts produced utilising future wheel analysis were market leaders for marketing purposes, increases brand recognition, fosters innovation, and greater immersion based on the two leading drivers. These forecasts have a favourable impact on the future of technology. An increase in the period of data collection was suggested as a way to improve this study. This allows for more accurate responses from customers. VR has a potential impact on tourism marketing in the future, which will boost the current tourism sector.

Keywords: VR, Virtual Reality, VR Tourism, Tourism Marketing, Innovation

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INTRODUCTION

Virtual reality (VR) and artificial intelligence (AI) continue to attract interest due to the accelerated development of information and communication technologies (Baños, 2004). Compared to the traditional text-description-centric method of accessing tourism information, virtual reality could provide unique, immersive, and customised experiences in tourism (Bec et al., 2019).

VR is regarded as a potent tourism marketing tool because it offers immersive virtual environments that allow potential tourists to preview destinations, accommodations, and attractions prior to booking a trip. To clarify, the aforementioned technology offers individuals the opportunity to engage in a trial period prior to committing to a purchase. This immersive experience is not constrained by temporal or spatial limitations while boasting a higher degree of interactivity and diversity. (Tussyadiah et al., 2018). Furthermore, the protracted impact of the pandemic throughout recent years has exerted a noteworthy influence on the expansion of tourism in both the local and global travel sectors within China. Continual policies to combat epidemics have resulted in a significant increase in travel expenses (Pratisto, 2022). Virtual reality technology has re-emerged into the spotlight currently.

Meanwhile, the application of virtual reality technology in tourism can mitigate the impact of force majeure, such as the COVID-19 pandemic, on tourism development, provide new ways for consumers who lack the time to make long-distance trips to meet their travel needs, and save money on travel costs (Godovykh, 2022). Many destination organisations have also taken notice of VR (Blooloop, 2020). This immersive tourism experience enables history to be more than words in a book in an exhibition; it is a living story that unfolds around the visitor, allowing for an immersive experience of the relevant cultural history (Aofeng and Han, 2016).

Moreover, according to Aziz and Zaniol (2011), the potential applications of virtual reality in tourism marketing are extensive and diverse. Hotels and resorts can provide virtual tours of their facilities, whereas tour operators and travel agencies can use VR to demonstrate their offerings. Additionally, VR can help businesses collect valuable consumer behaviour data. By monitoring and analysing the interactions of users within the virtual environment, marketers can gain profound insights into consumer preferences and behaviour, which can inform more targeted and effective marketing strategies (Lin, 2022).

Significance of the Study

There are countless applications for VR technology in numerous industries, including tourism (Chimakurthi, 2018). Despite the transformative potential of VR applications in tourism, little strategic foresight research has been conducted. Our study aims to fulfil this literature gap and enrich the relevant foresight studies.

This research aims to identify the factors that motivate the use of virtual reality in marketing, thereby contributing to an uncharted area (Gao et al., 2022). We want to illuminate this technology-tourism intersection by mapping the forces that drive virtual reality marketing in the tourism industry (Flavián et al., 2019). We will also speculate on the future of VR in tourism marketing. These meticulously researched scenarios will benefit the tourism industry and related industries. We aim to provide these industries with strategic insights that will influence their future operations and decision-making. Additionally, this study intends to inform future research. By adding to the existing body of knowledge, we intend to facilitate future research on the role of virtual reality in tourism marketing.

This study seeks to assist Chinese users in understanding and implementing VR marketing (Gao et al., 2022). This study may help future academics comprehend the uncertainty and organisational performance of virtual reality marketing. These insights can assist researchers and developers in enhancing the administration of VR technology.

In addition, this research seeks to improve VR technology and demonstrate its potential in the tourism and marketing industries. We intend to demonstrate the revolutionary potential of virtual reality, promote its incorporation into tourism promotion, and facilitate the merging of virtual and actuality (Gegung, 2021).

Research Questions

(a) What factors influence the successful adoption of VR technology in tourism marketing?
(b) What optional future implications of VR utilisation may emerge in tourism marketing for Chinese tourists?

Research Objectives

(a) To identify the issues and drivers of employing virtual reality in tourism marketing in China.
(b) To study the future scenarios of virtual reality tourism marketing in China.

1.1.   LITERATURE REVIEW

The Definition of Virtual Reality (VR)

The origin of the term "virtual reality" can be traced back to the mid-1970s, as noted by Williams and Hobson (1995), who used it to refer to the interaction between humans and computers. However, owing to the constraints of technology, it did not receive adequate consideration during that period. In recent decades, the field of computer science has experienced significant growth, leading to widespread interest in the topic of VR.

In view of numerous definitions of Virtual Reality (VR) proposed by several leading scholars, for instance, Pimentel and Teixeira (1993) mentioned that VR is a computer-generated experience that is both immersive and interactive. Bell and Fogler (1995) shared the definition that VR is a computer interface that exhibits a notable degree of immersion, credibility, and interactivity, with the aim of inducing users to perceive themselves as being truly situated within a computer-generated environment. While the commonly adopted VR definition was raised by Burdea and Coiffet (2003), as a computer-generated simulation of the real world or of a physical object within it. Later, they further strengthened their definition as a computer-generated three-dimensional world that the user can move around and interact with, simulating some or all of the user's five senses in real-time (Burdea, G., & Coiffet, P, 2017).

Similarly, Farah et al (2019) indicated that VR is a technique that employs computers to create a simulated environment in which users may interact with 3D environments through the use of their senses of sight, hearing, and smell. New display technology and real-time, induced images make virtual reality a multi-sensory experience. To a higher extent, Yung and Khoo-Lattimore (2019) have summarised the three primary features of VR based on Cruz-Neira et al.'s (1992) work. These characteristics include visualisation, which enables users to observe their surroundings using a head-mounted display; immersion, which allows users to suspend disbelief and perceive objects in a physical manner; and interactivity, which provides users with some level of control over their experience through sensors and input devices such as joysticks or gloves.

VR and its Application in Tourism

Several scholars have conducted research on the topic of VR, particularly in the fields of education (Zhang, 2018; Ruan, 2022; Chimakurthi, 2018), retailing (Wu & Kim, 2022; Xue et al., 2020), medical training (Kale, 2018; Indhumathi et al., 2009), and entertainment (Carroll et al., 2019; Xi, 2020; Muravevskaia & Gardner-McCune, 2022). Virtual reality is a highly intriguing area of study within the field of tourism studies, particularly in light of its rapid expansion and diverse range of potential applications. This is especially relevant during and

after the period of the COVID-19 pandemic (Gegung, 2021; Godovykh et al., 2022).

The assessment conducted by Guttentag (2010) highlights the prospective utilisation of VR technology within the tourism industry. The utilisation of VR in the tourism sector has the potential to enhance tourism planning and management. This is achieved by providing a platform for the dissemination of plans and pertinent information to relevant stakeholders, as well as soliciting their feedback. According to Lin et al. (2020), the use of virtual reality has the capacity to considerably augment the tourism sector by offering immersive environments that facilitate virtual tours of hotels and other establishments before the actual visit.

The emergence of virtual reality technology has resulted in a decrease in the discrepancy between in-person and mediated communications. Importantly, VR is a widely accepted educational methodology that employs a three-dimensional simulated interface to showcase tangible or intangible objects to learners without requiring any physical interaction. Virtual reality serves as a mechanism for delivering virtual product education to consumers. The process of consumer learning involves the acquisition of new information and the adjustment of behavior by individuals, as noted by Kempf and Smith (1998), Li et al. (2003), and Kim and Biocca (2006). As per the findings of Suh and Lee's study conducted in 2005, it is crucial for users to obtain product information via the virtual interface. Despite the lack of physical interaction, the benefits of this approach outweigh its drawbacks.

VR and its Application in Tourism Marketing

Numerous studies have been conducted to explore the potential applications of virtual reality technology in the realm of marketing. The utilisation of virtual reality technology in marketing, particularly in relation to enhancing customer experience, was underscored by Kong et al. (2020). According to Łysik and Łopaciński's (2020) analysis, virtual reality (VR) technology holds significant potential as a solution for various marketing and marketing communication applications. The impact of advertising on consumer behaviour is significant, as it has been found to have a favourable influence on product perception and brand recognition. Lin (2022) suggested that the utilisation of VR technology can enhance the experiential marketing strategy in business operations. This technology can facilitate the integration of online and offline channels, leading to increased customer motivation to make purchases. Additionally, VR technology can provide an immersive online shopping experience and enable closed-loop marketing. Li and Mao (2015) highlighted the common use of VR technologies by professionals to attract customers to explore and encounter marketing stimuli prior to making actual purchase decisions.

Virtual reality has the potential to fulfil objectives beyond the mere promotion of a tourist destination. Huang et al. (2015) employed the Technology Acceptance Model (TAM) to investigate visitor behaviour and utilised virtual reality (VR) technology to construct a virtual marketing platform. Their findings provide additional support for the efficacy of VR as a valuable tool in the tourism sector. The utilisation of virtual reality technology is prevalent in educational contexts for the purposes of instructing individuals about tourist destinations and safeguarding historical landmarks (Bec et al., 2019; Yung & Khoo-Lattimore, 2019).

According to the findings of Gutierrez et al. (2008), the attributes of a VR encounter can be defined by its ability to provide a sense of physical immersion and psychological presence. The concept of "immersion" pertains to the degree of detachment experienced by the user from the external environment. According to Gutierrez et al. (2008), certain virtual environments (VEs) are classified as "totally immersive," wherein the user is fully immersed in the VE and has no external interaction. On the other hand, there are "semi-immersive" or "non-immersive" VEs, such as contemporary 3D video games. The degree to which users feel present in a virtual environment can be influenced by the level of immersion provided by the system, as noted by Baños et al. (2004).

Akin to virtual reality, the notion of "presence" has been delineated in diverse manners, as posited by Lombard and Ditton (1997). Referring to Sanchez-Vives and Slater (2005), it is widely believed that presence refers to the sensation of being present in a virtual environment, rather than the physical location of the participant's body. According to Gutierrez et al. (2008), the term "presence" refers to the extent to which individuals exhibit behaviour in a virtual environment that closely resembles their behaviour in a comparable real-life scenario. The concept of 'presence' is intrinsically subjective as it is closely linked to the user's psychological state. However, it is indisputable that the VR system's ability to provide superior sensory information to the user has a significant impact on this phenomenon (Gutierrez et al., 2008). The enhanced ability of virtual reality systems to offer superior sensory information is a predictable outcome given the evolution of VR technologies since the 1960s, as noted by Burdea and Coiffet (2017) and Gutierrez et al. (2008). Presently, virtual reality systems have attained a significant level of advancement.

VR Tourism Experience

Lee and Kim (2021) provide a comprehensive framework analysis of the existing literature on VR, offering a systematic overview of the most relevant studies in this field. This synopsis provides insight into the evolution of virtual reality technology and its implementation across diverse domains, such as the tourism and marketing industries. As technological advancements persist, scholars and professionals are likely to uncover novel approaches to utilising virtual reality to generate increasingly captivating and absorbing encounters for customers.

1. Table Framework analysis of the existing literature on VR

Framework	VR Experience Dimensions	Outcomes	Context	Reference
TAM	Ease of use, Usefulness, Enjoyment	Enjoyment of VR had a significant effect on the intention to use VR.	Entertainment industry	(Lee et al., 2019)
TAM, Self-determination theory (SDT)	Ease of use, Usefulness, Autonomy, Competence, Relatedness	Usefulness, autonomy, and relatedness affected enjoyment, and behavioral intention.	VR Tourism.	(Huang et al., 2015)
Hedonic motivation system adoption model (HMSAM)	Ease of use, Usefulness, Enjoyment	Enjoyment and usefulness of VR affected flow statement	VR Tourism	(Kim & Hall, 2019)
Telepresence	Vividness, Interactivity	Providing application suggestions to the destination marketing	VR Tourism	(Hyun et al., 2009)
Extended telepresence and flow theory	Vividness, Interactivity, Telepresence, Flow	VR amplified flow via vividness, interactivity, and telepresence.	Virtual Reality Spectatorship	(Kim & Ko, 2019)
Trend Prediction	Visualization components, Immersion into the experience, Interactivity	Highlight the usefulness of VR in tourism	VR Tourisn	(Williams & Hobson, 1995)
Consumer Learning	Media richness, Interactivity, Telepresence	Media richness, interactivity, and telepresence increased consumer learning	E-commerce	(Suh & Lee, 2005)
VR technology analysis	Sensorial stimuli, Interactivity	Providing application suggested in tourism areas	VR Tourism	(Guttentag, 2010)
VR experience	Interaction, Immersion	Interaction increased immersion, and interaction and immersion affected customer satisfaction	VR Tourism	(Hudson et al., 2019)

Source: (Lee & Kim, 2021)

Contemporary research on customer engagement places significant emphasis on psychological and behavioural factors. It is understood that a user's psychological inclination towards focal entities, such as a brand or service provider, influences their behavioural compatibility. Consequently, this can lead to positive interactions beyond transactions, such as spreading positive word-of-mouth and aiding others.

Within the tourism and hospitality sectors, previous scholarly studies have shown the capacity of VR technology to enhance customer engagement. For instance, Willems et al. (2019) explored the correlation between enjoyment, the experiences of flow (a mental state of being fully absorbed in the task at hand), and presence (the sensation of being in the virtual environment) as indicators of attunement. They found that VR generated a higher degree of

attunement compared to laptop-displayed 360-degree videos and static images, with VR users reporting greater attunement.

Flavián et al. (2019) posed that the level of embodiment, or the integration between technology and the human body, is a significant determinant of users' perceived usefulness and rewards. It has an impact on users' interest in the technology's interactivity, their engagement with the content, and their perception of the experience as rewarding and interesting overall. Hence, an enhancement in technological embodiment directly corresponds to an improvement in the user's sense of presence and psychological compatibility with the technology.

According to a study by Ying et al. (2022), it was observed that the application of VR advertising positively influenced users' perceptions of the device's utility, ease of use, educational value, and aesthetic experience. A higher level of psychological fit, resulting from a deeper emotional investment in the viewed material, was seen to positively influence users' subsequent behaviour, such as their likelihood to recommend the content to others.
Similarly, Marasco et al. (2018) investigated the influence of next-generation wearable VR experiences on individuals' inclination to visit various destinations and attractions. Their findings suggested that the perceived visual appeal (PVA) and emotional involvement (EI) experienced by users when interacting with VR positively impact their intention to visit cultural heritage sites in various destinations.

Applying the perceptual load theory (Lavie, 1995) to these findings, it's clear that an individual's attention is fully absorbed in relevant tasks when they engage with high perceptual load tasks, such as immersive VR experiences. This allows them to focus on the content, potentially obscuring their external environment and enabling them to disregard irrelevant distractions. This heightened level of engagement and immersion aids memory recall, especially of destination-related selling points presented in VR advertisements. As found by Ying et al. (2022), the quantity of selling points perceived and remembered by viewers correlates directly with their ability to retain this information, leading to a higher likelihood of forming positive opinions about the destination and an increased desire to visit.

The high degree of immersion afforded by VR technology enables the delivery of dynamic and responsive information, potentially capturing tourists' attention and reducing their perceived risk. As a result, tourists gain a more comprehensive understanding of the destination, including its location and other relevant information, reducing feelings of uncertainty and danger. This, in turn, is expected to heighten their satisfaction and commitment, which can result in favourable behavioural outcomes such as positive word-of-mouth, social media sharing, and repeat visits (Ying et al., 2022; Marasco et al., 2018).

2. Table: VR Tourism Studies Advantages and Opportunities

VR Tourism Studies	Advantage and Opportunity
For customer	Full immersion (Castro et al., 2017)
	Entertainment (Guttentag, 2010; Jung et al., 2018)
	Enhanced experiences (Bonetti et al., 2017; Quinn et al., 2019)
	Engagement (Gibson & O'Rawe, 2017)
	Social interactions (Castro et al., 2017; Jung et al., 2018)
	Accessibility (Guttentag, 2010)
	Image formation (Gibson & O'Rawe, 2017)
For Business and Destination	Marketing and promotion (Huang et al., 2013; Marchiori et al., 2018)
	Sales and distribution (Aziz & Zainol, 2011)
	Planning and management (Guttentag, 2010)
	Heritage preservation (Guttentag, 2010)
	Competitive advantage (Jung & tom Dieck, 2017)
	Gamification (Xu et al., 2015)
	Training (Tracey & Swart, 2020)

Source: (Tussyadiah et al., 2018)

3. Table: VR Tourism Studies Disadvantage and Challenges

VR Tourism Studies	Disadvantage and Challenges
For Both Destination and Tourist	Limited immersion (Pratisto et al., 2022)
	Technical issues (Martín-Gutiérrez, 2016)
	Accessibility and cost (Zhang et al., 2019)
	Security and privacy (Kaspersky, 2021)
	Lack of authenticity (Gao et al., 2022)

Source: Own Compilation

Numerous scholars in the field of VR tourism have conducted studies that provide a comprehensive overview of the primary advantages and disadvantages, as well as the opportunities and challenges, associated with this domain. These factors aid in comprehending the current situation of VR tourism and facilitate the projection of future developments through potential scenario planning.

1.2. METHODOLOGY

Scope

The Fourth Industrial Revolution (IR4.0) includes several technological advances, but this study concentrates on virtual reality (VR) as a crucial technology. While virtual reality has applications in health, gaming, modeling, and marketing, this study focuses on its usage in

tourism promotion. Augmented reality, another developing technology in IR4.0, will not be explored in this study.

The paper embeds horizon scanning, incorporating STEEPV analysis (Proskuryakova et al., 2015) and the future wheel method. The advantages of employing the future wheel method include its simplicity and understanding, as well as the creation of a clear visual map of complex interactions. However, drawbacks include the possibility of inconsistent outcomes, information overload, and the speculative nature of data. The horizon scanning spans a five-year period, from 2023 to 2028. The study uses a variety of sources, including journals, government-related papers, online resources, newspaper stories, non-governmental organisations, and research materials on virtual reality as a tourism marketing tool. The survey includes respondents who are virtual reality creators and users, with an emphasis on VR marketing in China. Questionnaires were issued in order to collect data for analysis.

Research Design

To clarify the data, a mixed-methods approach that included both qualitative and quantitative methodologies was adopted. Engaging in strategic foresight entails a dynamic learning process that exhibits a dual nature, the process encompasses not only the execution of the task at hand but also the concurrent management of its consequences (Gaspar, 2015).
Through the foresight approach, the scenarios, uncertainties, and challenges of VR in tourism marketing will be evaluated in this study. The foresight process focuses on evidence-based future VR tourism marketing ideas. An existing and potential customer who has used VR for tourism as a unit of analysis. This study concentrated on the characteristics that promote VR in tourism marketing.

One of the research methodologies employed in this study was questionnaire analysis, and the survey was conducted online between March 23 and April 1, 2023. We conducted a 5-year process of evaluating the future from 2023-2028. It is employed in futuristic research and technological advancements. The foresight activity is concerned with perceiving the context through horizon scanning; capturing the points of intervention that comprise the content of the change program; and anticipating and developing future-oriented policies and strategies based on this content through a planned process (Saritas & Ozcan, 2013). The external sense in which the foresight operation is embedded and hence affected by the components in it; is formed by STEEPV analysis. The drivers of future elements that influence and change the trend of virtual reality in tourism marketing were evaluated using future wheel analysis. Researchers referenced and studied as many papers, documents, online and offline databases, and international studies as they could before making a brief remark with keywords.

In regard to the questionnaire, it is designed in Chinese, consists of 7 questions categorised into 4 sections, and is distributed as an online link in the famous Chinese social media platform Little Red Book, displayed as a post with a VR tourism picture and 8 key hashtags (VR, VR travel, Live stream travel, VR destination, smart travel, innovation, and smart tourism). The design of the post display is not only in accordance with the platform's big data and AI Smart Recommendation Algorithm, but also aims to reach the target respondents who hold a certain level of knowledge of VR and are interested in innovative travel, with the assistance of the previously mentioned platform's AI Smart Recommendation Algorithm.

The questionnaire is designed in four sections: A, B, C, and D.
- Section A inquiries about respondent demographics such as age, gender, occupation, and VR awareness. This part determines the respondent's personality and can be easily grouped for future study. This component is crucial because demographic data helps the researcher to see the distribution of respondents based on various biographies and to analyse the potential relationship between respondent history and projecting future trends when applying VR in marketing. As a level of measurement, the scale employed

in this section is the nominal scale.

- Section B inquiries about the significance of technology in various industries, such as tourism marketing. Researchers will be able to classify the most important variables or drivers of integrating VR in tourism marketing by ranking critical challenges and drivers. To rank the drivers, a 5-point Likert scale was employed from Section B to Section D.
- Section C assesses the extent of the impact VR has on the user experience. It is significant because it reflects on the magnitude of the repercussions and how this technology will impact future trends in the implementation of VR in tourism marketing.
- Section D assesses the level of uncertainty associated with the use of VR technology in tourism marketing. According to Toma et al. (2012), uncertainty is a circumstance in which the decision-maker is unable to identify all or none of the probable events that are likely to occur, let alone estimate the probability of their occurrence.

Data Collection

STEEPV analysis consists of a system of social, technical, economic, environmental, political, and value. By evaluating these factors, organizations can better understand the external context in which they operate, anticipate challenges, identify opportunities, and make strategic decisions. (Aguilar, 1967). In recent years, the term "horizon scanning" has come to be used interchangeably with strategic foresight (Bishop & Hines, 2012). The horizon scanning procedure has been completed to identify the present emerging concerns, challenges, and threats to VR as a marketing tool (see Table 4).

4. Table: STEEPV analysis

Social	Technological	Economic
1.Increase of smartphone user 2.Increase in VR tourism guiding customers 3.Gaining attentions from early adopters 4. Massive implementation of VR in marketing 5.Increase public awareness of VR technology 6.Increase mobility for injured people 7.Increase customer support 8. Increase destination services management awareness towards customers 9.Increase community support 10. Increase traveler's community 11.Increase in VR users 12. Increase destination visitings 13. Used to treat diseases 14. Variety of use cases 15. Positive implications for limited funding's organizations	1. Expansion of technology 2. Immersion experience 3. Having to feel without physically being there 4. New experience waiting to be unleashed 5. In depth view of product 6. A new platform for tourism destination or branding 7. User friendly technology 8. Easy to build and cheap to use 9. Immersion into a whole new level 10. Increase technology development of VR 11. Low-cost technology 12. Having to see without physically being there 13. More lifelike feel of interaction 14. Creates a virual situation that can't be experienced in real life 15. Creates virual simulations of tourism destinations 16. Customers rely only on visual representation of the product 17. Provides new opportunities for marketeer	1. Free marketing from word of mouth 2. Leader in the industry 3. Increase in revenue 4. Increase in brand awareness 5.Increase brand loyalty 6.Increase in brand awzreness 7. Increase customer relationship 8. Increase tourism economy 9. Increase brand recognition 10. Growth in VR technology 11. Growth im VR industry 12. Increase tourism destination attractiveness 13. Increase sales of souvenirs 14. Increase in global marketing growth rate 15. Increase growth rate of wearable devices 16. Increase tourism marketing development 17. Reduce cost of travelling 18. Growth of VR users 19. Increase VR development

Environment	Political	Value
1. Increase towards environmental awareness 2. Lack of environmental bebaviour change	1. Increase law enforcement injudging crime 2. Tool used for political and cultural empathy 3. First virtual reality political campaign 4. Virtual Reality in election campaign 5. Increase government citizen relationship	1. Brings more immersion into media 2. More interaction with technology 3. Adds more immersion of the experience 4. Adds more choice for customers 5. Increase emotional value for the tourism destinations 6. Give unforgettable experience 7. Offers immersion to consumers about latest technology 8. Understand what it feels like behind bars 9.Give unforgettable experience 10. Creates beautiful memories 11.Understand the historical and cultural background of the destination 12. Increase customer relationship 13. Increase user experience 14. New online travelling experience 15. Creates positive memories 16. Richer experience with products 17. Have users control their experience 18. Develop a dynamic relatonship 19. Have an emotional effect towards 20. Increase positive perception of destinations 21. VR makes travelling fun

Source: Own Compilation

The most prominent drivers were established as a result of the merging process and evaluated on a scale of 1-10 from the least to the most important drivers. The merging ten issues and drivers will be investigated by distributing surveys to VR users in the marketing field (see Table 5).

5. Table: Merged issues and drivers

No.	Merged Issues and Drivers	Value
1	Creates emotional value	10
2	Creates memorable experience	10
3	Growth of VR users	10
4	Having to see without physically being there	10
5	Increase brand recognition	9
6	VR in marketing, medical and tourism	9
7	Immersion into a whole new world	8
8	Positive implications towards a product	8
9	Replicate specific events or environment	7
10	Growth of VR content	7

Source: Own Compilation

A total of 60 responses were received from the optimal sample size, with a response rate of 15.63%. Table 6 provides a summary of the respondents' profiles. The majority of respondents are female, between the ages of 21 to 30, and have a bachelor's degree. According to the same data, 85% of respondents have heard of virtual reality. When asked if they had used VR, 22 out of 36 respondents said "Yes" with a proportion of 36%, 32% said "No," and the remaining 32% said "I may not realize it." The majority of respondents (76.7%) feel that virtual reality (VR) represents the future of tourism. However, the majority of responders may or may not buy this technology for themselves. The majority of respondents are undecided about this technology since they are aware of its high cost.

6. Table: Demographic profiles of respondents

Item	Category	Frequency (N=60)	Percentage (%)
Gender	Male	16	26.7
	Female	44	73.3
Age	20 years and below	2	3.3
	21-30 years	48	80.0
	31-40 years	4	6.7
	41-50 years	-	-
	51 years and above	6	10.0
Education Level	UPSR/PMR/SPM	1	1.7
	STPM/Foundation/ Matriculation/Diploma	14	23.3
	Bachelor's Degree	42	70.0
	Master's	2	3.3
	PhD	1	1.7
Have you ever heard about VR before?	Yes	51	85.0
	No	9	15.0
Do you have any experience using VR?	Yes	22	36.7
	No	19	31.7
	I may not realize it	19	31.7
Do you think VR is the future for tourism marketing?	Yes	46	76.7
	No	1	1.7
	Maybe	13	21.7
Would you consider purchasing this technology?	Yes	19	31.7
	No	6	10.0
	Maybe	35	58.3

Source: Own Compilation

Data analysis and results

The descriptive analysis, reliability analysis, impact-uncertainty analysis, and futures wheel analysis were all part of the foresight study. The Statistical Package for Social Science (SPSS) was used to analyse the questionnaire data. SPSS presented the collected data as a percentage, mean frequency, and standard deviation. Cronbach's Alpha is used to examine how closely a set of items is related to a group by measuring the internal consistency of the variables (Taber, 2018). In most study instances, a reliability coefficient of 0.7 or more is considered reasonable and correct, however, if the Cronbach alpha value is less than 0.07, the questionnaire results are deemed unreasonable and untrustworthy. Impact-uncertainty analysis is a new discipline that extends traditional risk analysis by assigning a level of confidence in the comparison of hazards

in systems, projects, models, or policies (Benke et al., 2007).

To develop an impact-uncertainty analysis, the drivers are selected based on importance, impact, and uncertainty (see Table 5). The amount of effect and level of uncertainty chosen to build the future wheel analysis were guided by a few drivers with the highest level of importance mean score. To generate the top two drivers that will be used to design the futures wheel, the mean scores of impacts and uncertainty will represent a coordinate of (x, y). The futures wheel analysis is a method of organizing structured brainstorming, visualizing, and questioning about the future. Primary impacts or implications are written at the end of each speech. The secondary impacts of each initial impact then form a second ring of the wheel. This ripple effect continues until a clear picture of the event or trend repercussions emerge. The futures wheel can also be used to build forecasts inside alternative scenarios.

Cronbach's Alpha values for Importance are 0.921, Impact is 0.906, and Uncertainty is 0.950. These values are more than 0.7, indicating that the items are dependable and accurately represent the variable. The mean scores of the important variables are shown in Table 7. All of the objects were re-coded with a new code based on the greatest mean importance scores. The SPSS mean values are based on respondents voting in the method of consent by agreeing on the importance drivers that could represent the industry's future. The top six leading drivers were chosen to serve as the basis for the following study, which is descriptive for impact and uncertainty factors.

The most importance items are A1-Tourism marketing in VR will increase brand recognition due to the unique experience; A2-VR provides immersion into a whole new world escaping from reality thus providing a great platform for tourism marketing; A3-VR enables users to explore places and contents without having to physically be there; A4-VR enable developers to replicate specific events or environment thus promoting the product itself in it suited environment; A5-VR has also been used not only in tourism marketing but also in medical fields, gaming and advertisement thus strengthening the reason to develop the usage in VR; and A6-The growth of VR users encourages tourism marketing in VR. These six most important drivers were arranged in descending order as shown in Table 7.

7. Table: Mean of Importance

No.	Issues and Drivers	Mean	New Code
1	VR traveling creates a more emotional value for consumers compared towards traditional marketing	3.8167	A10
2	VR traveling generates a more memorable experience rather than traditional marketing	3.9667	A7
3	The growth of VR users encourages traveling with VR	4.0500	A6
4	VR enables users to explore places and contents without having to physically be there	4.1167	A3
5	Tourism Marketing in VR will increase brand recognition due to the unique experience	4.1500	A1
6	VR has also been used not only in tourism marketing but also in medical fields, gaming, and advertisement thus strengthening the reason to advertise in VR	4.0833	A5
7	VR provides immersion into a whole new world escaping from reality thus providing a great platform for traveling	4.1333	A2
8	VR has been known to give a more positive impact on a destination due to being able to see it virtually before visiting it	3.9333	A8
9	VR enables developers to replicate specific events or environments thus promoting itself in its suited environment.	4.1167	A4
10	With the growth of VR content, it is necessary to brand destinations in VR as well	3.9167	A9

Source: Own Compilation

Table 8 was constructed to illustrate the mean values for both impact and uncertainty before constructing the impact-uncertainty analysis. The data in Table 8 were used to formulate impact-uncertainty analysis to find the top 2 drivers with the highest importance outcome on impact and uncertainty in the future possibility. The result of the analysis was presented in Figure 2.

8. Table: Mean of impact and uncertainty according to 6 most importance.

No.	Issues and Drivers	Mean	
		Impact	Uncertainty
A1	Tourism marketing in VR will increase brand recognition due to the unique experience	4.1667	3.8167
A2	VR provides immersion into a whole new world escaping from reality thus providing a great platform for traveling to see it virtually before visiting it	3.8500	3.6833
A3	VR enables users to explore places and contents without having to physically be there	4.1333	3.8500
A4	VR enables developers to replicate specific events or environments thus promoting itself in its suited environment.	4.0333	3.7333
A5	R has also been used not only in tourism marketing but also in medical fields, gaming, and advertisement thus strengthening the reason to advertise in VR	4.1500	3.7500
A6	The growth of VR users encourages traveling with VR	3.9833	3.6833

Source: Own Compilation

The top two drivers with the highest impact and uncertainty were chosen based on the scattered plot. Coordinates of A1 (3.8167, 4.1667) and A3 (3.8500, 4.1333) were selected as the top two drivers with the highest level of impact-uncertainty mean values. A1 has the highest level of impact while A3 has the highest level of uncertainty. A1 represents "*Tourism marketing in VR will increase brand recognition due to the unique experience*", while A3 represents "*VR enables users to explore places and contents without having to physically be there*". By doing the analysis, A1 and A3 were selected as the top two drivers hence would be used to develop scenarios and further futures wheel analysis.

2. Figure: Impact-Uncertainty Analysis

Source: Own Compilation

1.3. DISCUSSION

The illustration presented in Figure 6 depicts the first future wheel, which was developed through a comprehensive analysis of all potential consequences stemming from the primary driver. The utilisation of virtual reality in tourism marketing has the potential to enhance brand recognition by generating novel experiential opportunities. The central blue core of the forthcoming wheel symbolizes the primary driving force, whereas the green colour signifies the outcome of the first order, the orange colour represents the outcome of the second order, and the maroon colour represents the outcome of the third order.

The initial scenario occurs when the enterprise attains a dominant position in promoting its locale. The corporation is not obligated to engage in the production of virtual reality hardware; alternatively, it may opt to offer online services for virtual reality content. This strategy has the potential to enhance the company's brand recognition and establish it as an innovative organisation capable of delivering a unique and memorable customer journey. The implementation of this strategy is expected to enhance the organisation's reputation and facilitate the cultivation of a proficient workforce. According to Kate (2015), enhancing the reputation of the company is highly likely to influence the preferences of customers. Customers tend to exhibit a preference for established brands as opposed to unfamiliar products. Moreover, through the utilisation of a workforce possessing advanced expertise, the organisation is capable of providing tailored services to external entities, thereby augmenting revenue. According to Bauer et al. (2004), the theoretical and practical knowledge of professional employees has increased, thereby facilitating their ability to identify and address issues and inconsistencies in their market operations. In addition, the organisation has the potential to realize significant cost savings through the utilisation of economies of scale. The concept of economies of scale was

introduced by the Economist (2008), which refers to the phenomenon where the average cost of production decreases as the volume of production increases. Enhancing the brand image of a company can lead to increased sales and subsequent revenue generation.

The second scenario exemplifies the potential for novel experiences through the use of virtual reality. VR technology enables marketers to create emotionally driven campaigns that offer customers an unparalleled experiential encounter. According to Kate (2015), customers are prone to identifying the experience and establishing a feeling of safety in the marketplace. The enhanced sense of security experienced by the customer leads to a higher level of comfort in making a purchase, thereby resulting in an increase in customer loyalty. In addition to this, virtual reality offers novel experiences to consumers through the incorporation of virtual shopping. The advent of virtual shopping has enabled customers to conveniently peruse a vast array of products on the internet from the comfort of their own homes. The ease of accessing online shopping platforms provides a convenient means of purchasing goods from any location. While it may not replicate the in-person shopping experience of traditional brick-and-mortar stores, online shopping does emulate tangible product attributes, including size and intricate features. This presents a compelling incentive for customers to explore the brick-and-mortar store. In the end, this enhances the customer's sense of ease by ensuring that the product is suitable for their intended placement, thereby eliminating any potential doubts.

The third scenario demonstrates the potential for attaining a competitive advantage within the market. Companies that possess a competitive advantage are more likely to attract customers as they offer a greater value proposition in comparison to their competitors. The monopolization of market share leads to increased sales and greater profitability for companies, as they benefit from significant economies of scale. Companies that possess a significant portion of the market share are better positioned to introduce new products to the market, as their cost of entry is reduced owing to their established brand reputation.

The fourth scenario demonstrates the potential for market expansion. The expansion of the market has led to a rise in the need for virtual reality (VR) content, owing to the widespread adoption of VR devices by consumers. The rapid growth of both sectors is expected to result in sustained demand for jobs, thereby augmenting employment prospects. The expansion of the market not only leads to the creation of employment prospects, but it also facilitates the ability of firms to access new customers on a global scale. The expansion of a business can lead to an increase in potential audience reach through the implementation of marketing strategies that enhance the visibility of the company to both current and potential customers (Sampson, 2018), ultimately resulting in an increase in market share. The organisation can augment its market share through market expansion and fortification of customer relations, leading to contented clientele. Contented customers engage in word-of-mouth communication with their acquaintances and family members, thereby attracting new customers through positive experiences. According to Leslie (2019), a business can increase its profits by gaining market share through word of mouth, without the need for simultaneous increases in marketing expenditures. This chain reaction exists throughout social media, thus, VR provides that reaction with a unique experience.

3. Figure: Future wheels of "Increase brand recognition"

Source: Own Compilation

The scenarios and future wheel analysis for the second driver, which pertains to the ability of VR to allow users to explore content remotely, are presented in Figure 3. The initial situation demonstrates a higher level of immersion in the content. Aofeng and Han (2016) posit that virtual reality enhances human interaction by rendering it more personalized and closely aligned with individual experiences. Enhancing the quality of content can lead to improved social media engagement for the company. The presence of robust media attention facilitates the development of a loyal following for the organisation. According to Oliur's (2012) research, 50% of small businesses reported acquiring new customers through social media. In addition to possessing high-quality content, it also enhances the emotional bond between the content and the consumer. Through this approach, the company is able to engender consumer loyalty by capturing their attention and interest.

The second scenario exemplifies the prospective utilisation of virtual reality technology in marketing by fostering innovative practices. The company's productivity is enhanced through the implementation of novel virtual reality technology, which serves to increase its appeal to a wider audience. According to Jacob's (2018) assertion, an organisation can establish itself as a reputable professional entity by utilising innovative marketing strategies, exceptional customer service, and fostering a culture of creativity. Enhancing the product's quality would not only improve its overall performance but also enable it to effectively contend with rival products, thereby augmenting its competitiveness. Innovation enhances both the quality and value of a product. The widespread adaptation of the product results in an increase in market share. According to Sammi's (2020) findings, companies can achieve a higher return on investment

(ROI) by offering higher quality goods, given a specific market share. This illustrates the potential advantages of product innovation within the realm of virtual reality, as the majority of competitors provide comparable value propositions.

The third scenario demonstrates the potential advantages of utilising VR technology in tourism marketing, specifically in terms of enhancing brand recognition. The convenience of utilising virtual reality technology within the confines of one's living space offers a sense of reassurance to consumers, as it ensures that the product, they acquire is compatible with their preferred setting. The aforementioned phenomenon is observable through the utilisation of IKEA AR. Despite being an Augmented Reality (AR) technology, it provides a comparable user experience to Virtual Reality (VR). Ikea has demonstrated the ability to expand its market reach, resulting in a corresponding increase in company sales. According to Lotame's (2019) findings, the act of capturing new market segments can aid companies in focusing their efforts, allowing them to establish a distinct brand identity and specialise in a particular product category. This results in a rise in customer awareness. According to Linda's (2020) assertion, an elevation in customer recognition results in a decrease in the expenses incurred in launching new products into the market. Strong brand recognition leads to cost efficiency, resulting in a boost in the company's revenue.

The fourth scenario exemplifies the potential application of virtual reality technology in the field of tourism. The advantages of virtual reality technology, which allows individuals to experience and interact with remote locations without being physically present, could potentially be leveraged in the realm of virtual tourism. The utilisation of virtual tourism offers novel opportunities for visitors to gain knowledge by examining the interrelationships among various species and closely examining diverse creatures (Blooloop, 2020). The aforementioned instance could serve as a model for other museums seeking to enhance their visitor numbers. It is recommended that tourism companies offer this service, as it has the potential to enhance customer loyalty by engaging them in novel experiences. In addition to virtual tourism, the utilisation of virtual reality technology in classroom settings offers individuals from disadvantaged backgrounds the chance to acquire new knowledge and discover potential prospects. According to Izwan (2016), it was stated that... The technology enables juveniles to investigate captivating sites without the need for physical travel beyond their local community. The aforementioned program is denoted as Chinese Virtual Field Trips. These forms of education enhance the satisfaction of both the learner and the facilitator. These four distinct yet interconnected scenarios demonstrate a significant positive impact on society.

4. Figure: Future wheels of "Explore contents without physically being there"

Source: Own Compilaton

CONCLUSION

In conclusion, the initial wheel demonstrates the prospective direction of the primary driver, namely that "the employment of virtual reality in tourism marketing will enhance brand recognition by virtue of the distinctive experience." The four future scenarios that were predicted include market leadership in tourism, novel experiences, competitive advantage in the market, and market expansion. The exceptional implementation of virtual reality technology in China is expected to result in a rise in the country's GDP, as evidenced by the aforementioned scenarios. This outcome may lead to a boost in the nation's economic development, potentially positioning them as global pioneers in the realm of virtual reality. The second wheel illustrates a potential future trajectory for the second driver, wherein the utilisation of virtual reality technology facilitates the exploration of various locations and content without necessitating physical presence. The four anticipated scenarios are expected to include heightened brand recognition, promotion of virtual tourism, increased immersion, and stimulation of innovation. All the anticipated trends resulted in a favorable outcome with advantages that predominantly favored developers. The utilisation of virtual reality technology in tourism marketing has the potential to yield benefits not only for consumers, but also for underprivileged students. The employment of virtual reality technology can be rationalized by its capacity to provide students

with a highly realistic educational experience, thereby enhancing the quality of their education. The aforementioned advantages are poised to confer a competitive advantage to the educational system of China over other nations. In conclusion, this study has successfully achieved both of its research objectives, and the findings demonstrate significant positive implications for the use of VR as a tourism marketing tool in China.

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