



**Faculty of Applied and Creative Arts**

**Virtual Reality Technology and Tourist Behavior Intention of National  
Museums in Guangdong**

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Virtual Reality Technology and Tourist Behavior Intention of National Museums in  
Guangdong

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## DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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## ABSTRACT

This study investigates the integration of virtual reality (VR) in museum exhibitions, focusing on its current development in museums within China's Guangdong region. It examines museum visitors' behavioural intentions towards VR, considering generational differences, and draws on the UTAUT2 model to formulate a conceptual framework. The research employs a specifically designed questionnaire for quantitative analysis in two phases. Initially, the PLS-SEM method identifies the primary factors influencing visitors' intentions. Subsequently, one-way ANOVA examines generational differences in these factors. The study finds performance expectancy, effort expectancy, social influence, design quality, hedonic motivation, and previous experience positively affect behavioural intentions, while perceived risk negatively influences them. Notably, generational differences are observed in effort expectancy, design quality, hedonic motivation, and perceived risk. Based on these insights, the study proposes targeted measures to improve VR acceptance among museum visitors in Guangdong, offering valuable references for similar research in the museum field.

**Keywords:** Behavioral intention, museum VR, UTAUT2; generational differences

## ***Teknologi Realiti Maya dan Tingkah Laku Pelancongan Niat Muzium Negara di Guangdong***

### ***ABSTRAK***

*Kajian ini menyelidiki integrasi realiti maya (VR) dalam pameran muzium, dengan fokus pada perkembangan semasa di muzium dalam wilayah Guangdong, China. Ia meneliti niat tingkah laku pengunjung muzium terhadap VR, dengan mengambil kira perbezaan generasi, dan menggunakan model UTAUT2 untuk merumuskan rangka kerja konseptual. Penyelidikan ini menggunakan soal selidik yang direka khas untuk analisis kuantitatif dalam dua fasa. Pada mulanya, kaedah PLS-SEM mengenal pasti faktor utama yang mempengaruhi niat pengunjung. Seterusnya, ANOVA sehala meneliti perbezaan generasi dalam faktor-faktor ini. Kajian mendapati jangkaan prestasi, jangkaan usaha, pengaruh sosial, kualiti reka bentuk, motivasi hedonik, dan pengalaman terdahulu memberi kesan positif kepada niat tingkah laku, manakala risiko yang dirasakan memberi kesan negatif. Perbezaan generasi ketara diperhatikan dalam jangkaan usaha, kualiti reka bentuk, motivasi hedonik, dan risiko yang dirasakan. Berdasarkan wawasan ini, kajian mencadangkan langkah-langkah yang disasarkan untuk meningkatkan penerimaan VR dalam kalangan pengunjung muzium di Guangdong, menawarkan rujukan berharga untuk penyelidikan serupa dalam bidang muzium.*

***Kata kunci:*** *Niat tingkah laku, muzium VR, UTAUT2; perbezaan generasi*

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## LIST OF ABBREVIATIONS

BI	Behavioral Intention
DQ	Design Quality
EE	Effort Expectation
Gen	Generations
HM	Hedonic Motivation
IDT	Innovation Diffusion Theory
IQ	Information quality
MM	Motivational Model
PE	Performance Expectation
PE <sub>x</sub>	Past Experience
PR	Perceived Risk
SCT	Social Cognitive Theory
SI	Social Influence
S-O-R	Stimulus-Organism-Response Theory
TAM	Technology Acceptance Model
TAM2	Technology Acceptance Model 2
TAM3	Technology Acceptance Model 3
TPB	Theory of Planned Behaviour

TPA	Rational Action Theory
UB	Usage Behavior
UTAUT	Unified Theory of Acceptance and Use of Technology
UTAUT2	Unified Theory of Acceptance and Use of Technology 2
VR	Virtual Reality

# CHAPTER 1

## INTRODUCTION

### 1.1 Study Background

Museums are the public areas of every country and region, serving as crucial venues for storing and disseminating human history, art, science, and cultural heritage. In August 2022, at its 26th conference in Prague, the International Council of Museums (ICOM) adopted a new definition of museums, affirming them as non-profit permanent institutions serving society. These institutions are responsible for the research, collection, protection, interpretation, and display of tangible and intangible cultural heritage (China Museum Association, 2022). Emphasising accessibility, inclusivity, and promoting diversity and sustainability, museums are open to the public and play a crucial role in preserving our shared human legacy.

Museum origin and historical development are rich and complex, based on five important stages. The first phase traces back to ancient times, with the earliest physical museums dating back to the late Eastern Han dynasty in China and Ancient Egypt and Greece around the 3rd century B.C. (Zhang & Courty, 2021). In Ancient Greece, a museum was initially conceived as a “temple of culture”, aimed at safeguarding and studying culture. Meanwhile, the aristocracy often collected and preserved various artworks and precious items in ancient China as symbols of wealth, power, and cultural achievement (Keightley, 2022). During this era, museums were typically exclusive and not open to the public, resembling what could be described as “private warehouses” in ancient China (Tythacott, 2022).

The second stage was during the Middle Ages and Renaissance, with the Church assuming a central role in protecting artworks and historical artefacts. This reflected the Church's dual role as a religious and political institution, possessing considerable power, land, and wealth. Consequently, churches became repositories of relics and artefacts open to believers (Chen, 2017). The Renaissance era witnessed European nobles collecting various natural and artificial products, establishing "cabinets of curiosities" that left a lasting impact on subsequent science and art (Von, 2021).

The third stage spanned the 18th to 19th centuries, when public education and scientific research gained popularity, leading to the birth of modern public museums (Prottas, 2019). The British Museum officially opened in 1784 and became the world's first permanent public museum. Subsequently, public museums were established in European and American countries, symbolising a crucial stage that granted every citizen access to cultural institutions.

The fourth stage, from the 20th to the 21st century, witnessed a significant increase in the number and types of museums. During this period, museums expanded their functions, adding educational roles to their traditional roles in collection, preservation, and research, evolving into vital spaces for education and community participation (Giannini & Bowen, 2022). Finally, the fifth stage, from the 21st century to the present, saw modern museums increasingly prioritise diversity and inclusiveness, adopting more participatory and interactive approaches (Mitxhell & Yoshida, 2019).

Museums are crucial in social education, driven by substantial public demand and anticipation (Mas & Monfort., 2021). This demand centres on knowledge acquisition and benefits through museum exhibits and educational activities, which has persisted since ancient

times (Alrashid, 2021). The future development of museums is anticipated to evolve alongside technological and economic advancements, focusing on digitalisation and the integration of virtual technologies (Schiele, 2021). Concurrently, museums must engage deeply in social issues and public dialogues. For instance, museums will pay more attention to important issues such as environmental protection and racial discrimination, striving to promote social change through exhibitions and projects guiding the public towards the right values (Bhavnagri & Muhsin., 2023; Wen, 2021; Manikowska, 2020). From a historical perspective on museums' origin and development, the core functions of collection, display, research, and education remain paramount.

The global trend of museums takes various forms, with each country or region museum landscape influenced by factors such as history, culture, social environment, policy, and economy (Harvey & Mahard, 2020). Overall, the number and type of museums are steadily increasing, contributing to enhanced cultural exchange, promoting the tourism industry, and promoting economic development (Qizi, 2021). In 2022, the number of museums in China reached 6565, showing a positive upward trend and reflecting the nation's commitment to planning and constructing museums (Zhang & Yu, 2023). Governments worldwide actively support museums through various policies, including regular operation and development funding. Legislative measures protect museums, and promotional platforms raise their profile and influence. For example, the U.S. National Science Foundation funds annual museum science education projects (Zheng & Lu, 2016), while museums in the U.K. and France are government-funded and tasked with managing and developing museums (Carter, 2023). Canada employs tax incentives and reward policies to encourage public participation in museum

donations and volunteer services (Mason & Sayner, 2019). These examples reflect governments' recognition of the value and role of museums, emphasising their crucial status.

Museums are increasingly recognised for their role in social education, which is vital in promoting individual and social learning and development (Loureiro et al., 2020). Responding to public demand for cultural education (Elisafenko et al., 2020). Museums cater to a broad audience across different age groups (Chynoweth, 2020). For students and young people, museums offer insights into human culture and knowledge, while for adults, they serve as quality social and leisure venues (Serravalle et al., 2019). Given their immense importance, the development and innovation of museums are key concerns for every country or region, garnering policy support and protection (Sandahl, 2019).

China's definition of museums aligns with that of the International Council of Museums, viewing museums as important venues for preserving and inheriting human civilisation (Kong, 2021). The establishment and development of museums are highly valued and supported by the government and the people. By the end of 2022, China had 6,565 museums, ranking among the top in the world. Through the continuous improvement of the policy of free museum admission, over 90% of museums in China are free to the public. The National Cultural Heritage Administration began classifying museums in 2010, evaluating them based on comprehensive management and infrastructure, collection management and scientific research, exhibitions, and social services. Museums are categorised into first, second, and third levels, with national first-level museums considered the highest in museum grading, boasting extensive collections, diverse types of precious cultural relics, and high historical, cultural, scientific, and artistic values (Liu, 2020).

While museums worldwide retain the four core functions of collection, display, research, and education, differences exist between museums in China and those in other countries. This current study notes that the emphasis on public participation is somewhat different, especially compared to Western countries. In Western countries, museums prioritise public participation, encouraging audience interaction and participation, and actively integrating audiences into exhibitions or cultural education activities (Robinson, 2020). Although these trends are gradually gaining ground in China, Chinese museums still predominantly focus on passive observation and learning (Bollo et al., 2017). Recognising the positive development trend of public participation, Chinese museums continue to emphasise this aspect in both academic and practical research (Wang, 2022).

Guangdong Province, China's largest economic province, holds a very important position in the country. Compared with museums in other regions of China, museums in Guangdong Province have a rich historical and cultural heritage, housing many cultural relics and historical materials, and can be divided into Cantonese culture, Hakka culture, and Chaozhou culture. The most unique and important aspect is the prevalence of various local languages in Guangdong Province, with the Cantonese being the mainstream. This is different from museums in other provinces across China. In Guangdong region's , voice prompts and mobile navigation are available in Cantonese, Mandarin, and English. The traditional folk culture displayed by museums in the Guangdong region often needs to be dubbed in Cantonese, allowing tourists to better understand the Guangdong region's local culture and folk rituals. This, to some extent, poses additional curatorial challenges for museum in the Guangdong region.

However, the local government provides great policy protection and financial support, encouraging museums' digital exploration and development in local museums.

There are 377 museums in Guangdong Province, ranking second in China, including 79 national museums and ten national first-class museums (Guang, 2023). Guangdong places significant attention on museum planning and development, offering multi-faceted financial support, policy guidance and attracting top-tier talent. This reflects the positive attitude and policies of the Guangdong provincial government towards museums, highlighting its dedication to cultural heritage protection, commitment to social services and public education, and the increasing importance of museum research.

The continuous development of museums provides staff and researchers with opportunities to explore innovative paths. Beyond prioritising public participation, museums increasingly seek collaborations with advanced digital technology to enhance exhibition forms and participation methods (Fleming, 2019). In the era of rapid digital advancement, national governments and museum professionals are keen on integrating traditional culture with cutting-edge VR technology. For example, the Finnish National Museum in Helsinki uses VR technology to immerse visitors in the virtual world of the 1863 painting "Alexander II Opens the Diet." Visitors can walk through the virtual exhibition hall, interact with the characters in the painting, and experience the traditional cultural customs and living environment of 19th-century Finland (Jim, 2024). The Natural History Museum in London, in collaboration with Sky Broadcasting, developed the "Hold the World" VR experience, allowing visitors to interact face-to-face with Sir David Attenborough, learn about rare specimens, and even virtually handle