Metaverse tourism and Gen-Z and Gen-Y’s motivation: “will you, or won’t you travel virtually?”

Jiale Zhang, Farzana Quoquab and Jihad Mohammad

Abstract

Purpose – Guided by the self-determination theory and theory of planned behaviour, this study aims to examine the determinants of participating in metaverse tourism for Gen Z and Gen Y.

Design/methodology/approach – The cross-sectional method was used to collect data from 248 respondents from Gen Z and Gen Y tourists. The research model was evaluated using the partial least squares-structural equation modelling (PLS-SEM).

Findings – The PLS-SEM results supported the positive effect of attitude and perceived behavioural control on tourists’ intention to participate in the metaverse tourism. In addition, the crucial role of intrinsic motivation in raising individuals’ cognitive beliefs about metaverse tourism was confirmed.

Originality/value – In addition to the theoretical contributions, the findings provide several managerial implications for tourism practitioners, scholars and metaverse developers to help them make insightful decisions and promote the development of metaverse tourism.

Keywords Metaverse tourism, Metaverse, Self-determination theory, Theory of planned behaviour, Generation Z, Generation Y

Paper type Research paper

元宇宙旅游与Z世代和Y世代的动机：“你想不想虚拟旅行？”

摘要
目的: 遵循自我决定理论和计划行为理论的指导，本研究探讨了Z世代和Y世代参与元宇宙旅游的决定因素。

设计方法/方法: 采用横断面法收集了248名Z世代和Y世代游客的数据。采用偏最小二乘结构方程模型 (PLS-SEM) 对模型进行了分析。

结果: PLS-SEM结果支持态度和感知行为控制对游客参与元宇宙旅游意图的积极影响。此外，内在动机在提升个人对元宇宙旅游的知觉信念方面的关键作用也得到了证实。

原创性/价值: 本文为旅游从业者、学者和元宇宙旅游开发商提供了一些管理启示，帮助他们做决策，促进元宇宙旅游的发展。

关键词 元宇宙旅游、元宇宙、自我决定理论、计划行为理论、Z世代、Y世代

文章类型 研究型论文

Turismo en el metaverso y motivación de la generación Z y generación Y: “¿viajarás o no viajarás virtualmente?”

Propósito: Guiado por la teoría de la autodeterminación y la teoría del comportamiento planificado, este estudio examina los determinantes de la participación en el turismo del Metaverso para la Generación Z y la Generación Y.

 Diseño/metodología/enfoque: Se utilizó el método transversal para recopilar datos de 248 turistas encuestados de la Generación Z y la Generación Y. El modelo de investigación se evaluó utilizando la metodología de ecuaciones estructurales de mínimos cuadrados parciales (PLS-SEM).

 Hallazgos: Los resultados del PLS-SEM respaldan el efecto positivo de la actitud y el control percibido del comportamiento en la intención de los turistas de participar en el turismo en el metaverso. Además, se confirma el crucial papel de la motivación intrínseca a la hora de elevar las creencias cognitivas de los individuos sobre el turismo del metaverso.

DOI 10.1108/TR-06-2023-0393 © Emerald Publishing Limited, ISSN 1660-5373 TOURISM REVIEW

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1. Introduction

The global pandemic has resulted in a significant economic downturn, affecting various sectors worldwide (Gursoy et al., 2022; Zhang et al., 2023). The tourism sector has been particularly hard-hit due to the implementation of travel restrictions (Lee, 2022; Zhang and Quoquab, 2022). This situation has motivated this industry to explore innovative methods to survive like metaverse tourism. Metaverse is a term that refers to the merging of the physical and digital realms, allowing people to seamlessly navigate between them for a multitude of purposes, including work, education, exploration of personal interests and social interactions with others (Dwivedi et al., 2023). Metaverse is enabled by immersive technologies, such as mixed reality, augmented reality and virtual reality, as well as advanced networking infrastructure, enabling devices and empowering platforms (Buhalis and Karatay, 2022; Yang and Wang, 2023) and offering participants an immersive experience (Ye et al., 2022).

Metaverse is still largely conceptual but has drawn much attention from different industries and sectors, including tourism (Buhalis et al., 2023b; World Economic Forum, 2022). The global metaverse market exhibited a valuation of US$47.48bn in 2022, with projections indicating a remarkable compound annual growth rate of 47.2%, leading to an anticipated value of US$426.9bn by the year 2027 (Mourtzis et al., 2022). Tourism stands out as a critical domain that can reap substantial benefits from integrating the metaverse (Buhalis et al., 2023a; Koohang et al., 2023; Volchek and Brysch, 2023; Zhang and Quoquab, 2023). It presents unique prospects for enriching tourism experiences and revolutionizing the landscape of tourism management and marketing (Gursoy et al., 2022). Metaverse can support tourists in their trip planning, interaction and engagement by providing them with immersive previews, virtual tours, augmented content and digital twins of destinations and services (Buhalis and Karatay, 2022). It can also motivate tourists to visit physically after experiencing destinations and activities virtually or to revisit virtually after travelling physically (Dwivedi et al., 2023; Go and Kang, 2023). Furthermore, the metaverse possesses the capability to enable collaborative value creation among tourists, tourism suppliers and other participants within the virtual realm (Nannelli et al., 2023). The metaverse can be described as a realm where individuals have the freedom to travel at their own discretion, unrestricted by time and location (Gursoy et al., 2022). It represents a vast universe where limitless experiences are made feasible and easily accessible (Jafar et al., 2023).

The young generation tends to be more tech-savvy, making them inclined to explore new digital experiences such as metaverse technologies (Koohang et al., 2023). Park and Kim (2022) indicated that the “metaverse is based on the social value of Generation Z that online and offline selves are not different” (p. 4209). Gen Y (born between 1980 and 1994) and Gen Z (born between 1995 and 2010) will be the primary consumers of the metaverse (Dwivedi et al., 2023). Generation Z and Y, having been exposed to a blend of virtual and real encounters, have become accustomed to various metaverse environments (Buhalis and Karatay, 2022). However, whether they are interested in participating in metaverse tourism requires further investigation. In China, metaverse tourism has started to gain tourists’ attention; nevertheless, there is still a long way to go to receive wider acceptance among all levels of tourists (Xie, 2022). As such, it would be good for the marketers/tourism players to understand how to motivate them to participate in metaverse tourism so that they can play the role of “early adopters”. Based on the diffusion of innovation theory, the early adopters play a significant role in accepting any new technology/innovation by influencing...
the early majority group (Rogers, 2004). This study argued that Generation Z and Y are more likely to adopt this technology before other generations. This argument is consistent with the opinions of de La Mora (2019) and Barkley (2011), i.e. new technology is typically first adopted by the youngest generation and then is gradually adopted by the older generations. Therefore, investigating Generation Y and Z metaverse tourism intention/behaviour becomes more significant compared to other tourist groups. It allows them to escape the physical world and immerse themselves in virtual environments and experiences (Buhalis and Karatay, 2022). In addition, it is highly appealing to young tourists seeking entertainment such as virtual events, concerts, gaming and creative outlets (Jafar et al., 2023). Moreover, metaverse tourism is more accessible and affordable for young people compared to traditional travel.

Although scholars have explored metaverse tourism from various angles, such as its application in food and wine tourism (Monaco and Sacchi, 2023), cultural heritage tourism (Buhalis and Karatay, 2022) and smart tourism (Buhalis et al., 2023b), there is a dearth of research explicitly examining tourists’ intentions to participate in metaverse tourism, particularly from an empirical standpoint. There exists a gap in our understanding regarding the factors that influence tourists’ inclination to embrace metaverse tourism. Thus, the current study aims to develop a theoretical model to investigate the factors that encourage young individuals (Generation Z and Y) to adopt and use metaverse tourism. The theoretical framework of this study is based on the integration of two widely known theories, i.e. the self-determination theory (SDT) and theory of planned behaviour (TPB). This study also provides insights into Buhalis et al.’s (2023a) query on “What motivates and demotivates consumers to embrace Metaverse in trip planning?” In addition, this research also addresses the call made by Yang and Wang (2023) for more in-depth segmentation analyses based on demographic characteristics in metaverse tourism.

2. Literature review and hypotheses development

2.1 Metaverse tourism

The advent of the metaverse and its implications for the tourism industry has introduced a novel concept referred to as “metaverse tourism”. According to Koo et al. (2022), metaverse tourism can be understood as “a combination of articulate objects, humans, avatars, interfaces, and networking capabilities” within the tourism industry. In essence, metaverse tourism embodies a new type of travel that involves immersive experiences in virtual and physical environments. It allows users to effortlessly transition between these realms using avatars and gadgets (Buhalis et al., 2023a). It is anticipated that this innovation will bring about a paradigm shift in the realm of tourism, fundamentally altering the way tourism is managed and marketed (Buhalis et al., 2023a).

Metaverse offers a unique opportunity for the tourism industry to improve travellers’ experiences and offer a higher level of personalisation and involvement in the value co-creation process (Buhalis et al., 2023a). However, despite the buzz surrounding the metaverse as a concept, its practical applications remain largely at the conceptual stage. The mechanism underlying tourists’ intention to participate in metaverse tourism (IPMT) still needs further development, and there is also a lack of sufficient theoretical underpinning in this regards. Accordingly, this study aims to study travel IPMT based on the SDT and TPB in an emerging and promising market, i.e. China.

According to social science research, combining TPB and SDT helps to understand and predict human behaviour in a complete way by taking both cognitive and motivational factors into account. This aligns with the meta-analysis studies by Hagger and Chatzisarantis (2009), suggesting that motivational orientations can be integrated with the TPB to get complementary explanations of intention and behaviour more than each theory on its own. Besides, the SDT motivational orientations have been effectively incorporated with the TPB to predict intention in various behavioural domains (e.g. education, health
Nevertheless, this integration has yet to be undertaken in the context of the tourism metaverse, which is likely to provide a valuable framework for research, developing interventions and practical applications in this field. Thus, the present study addresses this deficiency and evaluates the usefulness of integrating SDT motivations with well-established TPB predictors.

2.2 Self-determination theory

SDT is a psychological framework that focuses on the intrinsic motivation (IM) behind human behaviour. According to Deci and Ryan (1985), SDT revolves around three fundamental psychological needs: autonomy, relatedness and competence. Autonomy pertains to an individual's need for volitional control and the desire to independently organize their experiences and behaviours in alignment with their sense of self. Relatedness pertains to the inherent requirement of individuals for social connections, experiencing a sense of being cared for, and reciprocating care towards others (Deci and Ryan, 2000). Competence entails an individual's need to feel capable and effective in achieving desired outcomes while interacting with their environment (Deci and Ryan, 2000).

In contrast to technology acceptance models, technology–organization–environment, and task–technology fit, which primarily focus on extrinsic motivations of individuals' behaviour, SDT examines the IMs that influence individuals' adoption of new technologies or innovations (Hew and Syed Abdul Kadir, 2016). According to SDT, when the three basic psychological needs are fulfilled, it generates IM within an individual, increasing their likelihood of engaging in a particular activity (Deci and Ryan, 2012). Researchers have increasingly focused on and applied the SDT to comprehend tourists' behaviour in diverse contexts in recent years, including their revisit intention (Japutra and Keni, 2020), peer-to-peer tourism experience (Garau-Vadell et al., 2023) and virtual tourism (Huang et al., 2016).

Therefore, SDT can provide strong theory support in explaining tourists' intrinsic IPMT. Firstly, in terms of autonomy, metaverse tourism allows individuals to have control over their experiences in the virtual world (Yang and Wang, 2023). They can choose where to go, what to do and how to interact with others. This sense of autonomy satisfies their need for self-determination, which can lead to greater motivation to participate in this activity (Ryan et al., 2009). Secondly, metaverse tourism provides an opportunity for individuals to develop and showcase their skills and abilities in metaverse (Gursoy et al., 2022). This can include creating their avatars, designing virtual environments and mastering the use of virtual reality technology. By participating in metaverse tourism, individuals can satisfy their need for competence, which can lead to greater engagement and motivation. Thirdly, metaverse tourism offers space for tourists to engage with like-minded tourists who possess similar interests and hobbies, enabling social connections and fostering shared experiences. It allows them to build relationships and interact with like-minded people from around the world. This sense of relatedness satisfies their need for social connection and belongingness, which can lead to greater engagement and motivation. Thus, this study hypothesizes as follows:

\[ H1. \] Perceived relatedness will positively influence intrinsic motivation.

\[ H2. \] Perceived competence will positively influence intrinsic motivation.

\[ H3. \] Perceived autonomy will positively influence intrinsic motivation.

2.3 Theory of planned behaviour

TPB, an extension of the theory of reasoned action, postulates that behavioural intention, a key determinant of behaviour, is shaped by attitude, perceived behavioural control (PBC) and subjective norm (SN) (Ajzen, 1991). TPB introduces PBC as a supplementary determinant of both intention and behaviour. This aspect pertains to individuals' beliefs
regarding the level of control they possess over their own actions (Ajzen, 1991). It has been comprehensively used in tourists’ behaviour research, such as the virtual reality behavioural intention (Elkhwesky et al., 2023; Huang, 2023).

In the context of metaverse tourism, SN refers to the perceived social pressure to participate in this new form of tourism. If a person’s social network approves of and participates in metaverse tourism, they may feel pressure to do the same and be more likely to intend to participate themselves. In addition, attitudes towards metaverse tourism indicates a tourist’s positive or negative evaluation of metaverse tourism can influence their intention to participate in it. For example, if a tourist perceives metaverse tourism as exciting and innovative, they may have a positive attitude towards it and be more likely to intend to participate. Last but not the least, PBC means a tourist’s perception of their ability to participate in metaverse tourism can also influence their intention to do so. For instance, if a tourist perceives that they have the necessary technological skills and resources to participate, they may be more likely to intend to participate. Taken together, these factors form a person’s IPMT. To the best of our knowledge, TPB has not been used in metaverse tourism research. Consequently, the following model and research hypotheses were formulated:

H4. Subjective norm will positively influence intention to participate in the metaverse tourism.

H5. Attitude towards participating in the metaverse tourism will positively influence intention to participate in the metaverse tourism.

H6. Perceived behavioural control in the metaverse tourism will positively influence intention to participate in the metaverse tourism.

2.4 Intrinsic motivation and TPB

As aforementioned, IM is a part of SDT. IM indicates “the doing of an activity for its inherent satisfactions rather than for some separable consequence” (Ryan and Deci, 2000, p. 56). It means tourists’ inclination to engage in an activity driven by the enjoyment or challenge it offers rather than being influenced by external prompts, pressures or rewards. Deci and Ryan (1985) stated that motivational theories can explain the origins of social cognitive beliefs outlined in intention models like the TPB, providing integration between SDT and TPB. Similarly, Hagger and Chatzisarantis (2009) argued that integrating the constructs and hypotheses of SDT and TPB in one motivational model can explain individual intentions and health-related behaviour. In addition, Miao et al. (2020) revealed that IM works as the key driver of an individual’s beliefs.

The relationship between IM and variables of TPB has been identified in many research topics, such as online knowledge sharing (Nguyen et al., 2021) and mobile advertising (Feng et al., 2016). However, in the metaverse tourism research, there is hardly any research on the relationships among IM, attitudes, PBC and SN of tourists. This study argued that individuals with IM – driven by the fun, pleasure and happiness they get through metaverse engagement – are more likely to develop positive attitude towards this platform. In addition, the presence of IM encourages a sense of confidence in individuals’ skills and capabilities to control and engage in the metaverse, which can enhance their engagement and experiences in the virtual world. In addition, the SDT research indicates that individuals are more likely to conform to the desires of significant others, even if those desires appear to be controlling (Hagger and Chatzisarantis, 2007). This is due to the fact that individuals frequently internalize the demands of significant others as being conducive to their own self-motivation. Building upon the preceding discussion, this study aims to offer additional insights into the underlying processes that drive individuals’ motivated behaviour in metaverse tourism. Thus, the following hypotheses have been formulated:

H7. Intrinsic motivation will positively influence subjective norm in the metaverse tourism.
H8. Intrinsic motivation will positively influence attitude towards participating in the metaverse tourism.

H9. Intrinsic motivation will positively influence perceived behavioural control.

Summing up the above, the proposed relationships are shown in Figure 1.

3. Methodology

3.1 Population, sample and research instrument

The objective of this research is to explore individuals’ inclination to engage in metaverse tourism, focusing on Generation Z and Y, as they represent a significant portion of metaverse tourism travellers. Data from the target respondents was gathered using non-probability judgemental sampling. This approach is considered acceptable when theoretical generalizability takes precedence over population generalizability (Calder et al., 1981). In addition, due to the absence of a readily accessible sampling frame containing information on Gen Z and Gen Y tourists with an intention to participate in metaverse, tourism judgemental sampling was used to accomplish the objective of this study.

The determination of the sample size in this study was guided by recommendations from existing literature as well as the specific requirements of the statistical analyses used. Hair et al. (2014) recommended that for conducting confirmatory factor analysis and structural equation modelling, the sample size should follow a ratio of 10:1, with 10 cases per study variable. Considering Hair et al.’s (2014) method, the minimum sample size required was 240 (24 x 10). The descriptive analysis and common method bias were conducted using the SPSS 27. To examine the proposed conceptual framework, the partial least squares-structural equation modelling (PLS-SEM) technique was used through SmartPLS 3.

3.2 Measures

The measurement items were adapted from previous research studies (Table 1). IPMT was measured using three items from Shankar and Rishi (2020), attitude towards participating in metaverse tourism (APMT) and PBC were measured using three items respectively adapted from Taylor and Todd (1995). SN was measured using three items from Ng et al. (2020). IM was measured using three items from Sun et al. (2019). Perceived relatedness (PR) was measured using three items from Gupta (2019) and perceived competence (PC) and perceived autonomy...
were measured using three items, respectively, from Ke and Zhang (2010). Respondents were requested to express their agreement level with each statement using a five-point Likert scale, with 1 representing “strongly disagree” and 5 indicating “strongly agree”.

To assess the questionnaire’s content validity, feedback was obtained from three academicians from a reputable public university in China (Cavana et al., 2001). After that, the questionnaire was distributed to 15 postgraduate students from the same university to obtain input on the clarity, readability and understandability of issues that undermined the questionnaire’s face validity (Cavana et al., 2001). Both the content and face validity findings were taken into account, leading to minor modifications being implemented in the questionnaire.

### 3.3 Data collection and profile of the respondents

For data collection, this study used the Wenjuanxing platform, which is widely recognized as an online questionnaire survey platform in China (Ning et al., 2020). In total, 400 questionnaires were distributed, 287 were returned and 248 were found usable for further analysis. Around 46.3% are male and 53.7% are female. Most of the respondents (51.7%) fall in the range of 16–23 and 37.5% respondents fall in the range of 24–35. In total, 69.7% of respondents are single and 81.4% are Han Chinese. The bulk of respondents (43.9%) have obtained a bachelor degree and 25.8% of respondents are in senior high school. In total, 49.1% are students. The majority of the respondents belong to the income bracket below RMB 2,000.

### 4. Analysis and findings

To test common method variance, this study used Harman’s single factor test, as recommended by Podsakoff et al. (2003). The results showed four factors accounted for 64.62% of the variance. Importantly, the first factor explained only 40.02% of the total variance,

<table>
<thead>
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<th>Table 1</th>
<th>Items to measure the study constructs</th>
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<td><strong>Construct</strong></td>
<td><strong>Revised Items</strong></td>
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<tr>
<td>Intention to participate in the metaverse tourism (IPMT)</td>
<td>1. I intend to participate metaverse tourism in the future 2. I expect that I would participate in metaverse tourism in the future 3. I plan to experience metaverse tourism applications in the future</td>
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<tr>
<td>Attitude towards participating in the metaverse tourism (APMT)</td>
<td>1. Participating in the metaverse tourism is a good idea 2. Participating in the metaverse tourism is a wise idea 3. Participating in the metaverse tourism would be pleasant</td>
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<tr>
<td>Subjective norm (SN)</td>
<td>1. Most people who are important to me think I should participate in metaverse tourism 2. Most people who are important to me would want me to participate in metaverse tourism 3. People whose opinions I value would prefer that I participate in metaverse tourism</td>
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<tr>
<td>Perceived behavioural control (PBC)</td>
<td>1. I am confident that I would be able to participate in metaverse tourism 2. Participating in metaverse tourism is entirely within my control 3. I have the resource and the ability to participate in metaverse tourism</td>
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<tr>
<td>Intrinsic motivation (IM)</td>
<td>1. I think participating in metaverse tourism would be enjoyable 2. I feel the actual process of participating in metaverse tourism is pleasant 3. I think it would be fun participating in metaverse tourism</td>
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<tr>
<td>Perceived relatedness (PR)</td>
<td>1. I feel people in metaverse tourism will be pretty friendly towards me 2. I think I will like the people participating in metaverse tourism 3. I think I will be able to get along with people in metaverse tourism</td>
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<tr>
<td>Perceived competence (PC)</td>
<td>1. I feel I will be very competent when I am traveling in metaverse tourism 2. In metaverse tourism, I think I will get many chances to show my capability 3. During traveling in metaverse tourism, I think I will feel very capable</td>
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<tr>
<td>Perceived autonomy (PA)</td>
<td>1. I think I will make a lot of inputs to deciding how I contribute to metaverse tourism 2. I feel I will pretty much be myself when traveling in metaverse tourism 3. I feel there are many opportunities for me to decide for myself what and how I participate in metaverse tourism</td>
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Source: Created by authors
which is significantly below the 50% threshold commonly associated with method bias. Therefore, common method variance is not a significant concern in this study. Next, to assess the structural relationships among the constructs in the model (Figure 1), SmartPLS 3.0 was used (Ringle et al., 2015). Considering the complexity of the model, which has many constructs and relationships, PLS-SEM analysis was chosen as the analytical approach.

4.1 Assessment of measurement model

This study focused on evaluating the validity and reliability of the reflective latent constructs. To assess reliability, factor loadings and composite reliability were used, following the guidelines provided by Hair et al. (2014). In this study, they all exceeded the threshold of 0.70 (Nunnaly and Berstein, 1994), indicating satisfactory reliability at both the item and construct levels (Table 2).

To assess the validity of the measurement model, both convergent validity and discriminant validity were examined in accordance with the approach described by Hair et al. (2014). Convergent validity was evaluated using the average variance extracted (AVE) (Fornell and Larcker, 1981), which quantifies the shared variance between the construct and its associated items. The findings presented in Table 2 demonstrate that all AVE values surpass the recommended threshold of 0.5, indicating satisfactory convergent validity. In addition, as depicted in Table 3, discriminant validity was established, as the diagonal values (AVE) surpass the corresponding values in the columns and rows. Furthermore, the heterotrait-monotrait (HTMT) method (Henseler et al., 2015) was also used to provide additional confirmation of discriminant validity. Four items were removed to reduce between construct correlation, i.e. APMT1, IM1, PR1, PC and PA2, and eventually reduce the HTMT values to less than 0.90, as Henseler et al. (2015) suggested. In this study, all HTMT values were below 0.90, supporting the discriminant validity of all constructs (Table 4).

4.2 Structural model assessment

The assessment of structural model was based on the size, sign and direction of path coefficients, coefficient of determination ($R^2$), effect size ($f^2$) and predictive relevance ($Q^2$).

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<td>Constructs</td>
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Notes: APMT1; IM1; PR1; PC and PA2 were removed for increasing discriminant validity
Source: Created by authors
The significance level of the path coefficient was determined using the bootstrapping procedure with 5,000 resamples, as recommended by previous research (Henseler et al., 2015).

Table 5 shows that PR ($\beta = 0.324$, $p < 0.001$) positively and significantly affect tourists’ IM, thus supporting $H1$. PC ($\beta = 0.341$, $p < 0.001$) positively and significantly affect tourists’ IM, thus supporting $H2$. Perceived autonomy ($\beta = 0.148$, $p < 0.05$) positively and significantly affect tourists’ IM, thus supporting $H3$. In addition, this study found variables from TPB, attitude towards participating in the metaverse tourism ($\beta = 0.532$, $p < 0.001$) and perceived behavioural control ($\beta = 0.244$, $p < 0.01$), positively affect intention to participate in the metaverse tourism, thus supporting $H5$ and $H6$. However, SN ($\beta = 0.028$, $p = 0.36$) has no effect on intention to participate in the metaverse tourism, thus not supporting $H4$. Furthermore, the findings of this study indicate a positive relationship between IM and SN ($\beta = 0.488$, $p < 0.001$), attitude towards participating in the metaverse tourism ($\beta = 0.682$, $p < 0.001$), and perceived behavioural control ($\beta = 0.593$, $p < 0.001$), thus supporting $H7$, $H8$ and $H9$.

Effect size ($f^2$) quantifies the magnitude of the influence that exogenous variables have on explaining the variance in the endogenous construct (Hair et al., 2014). In this study, PR ($f^2 = 0.102$), PC ($f^2 = 0.106$) and perceived autonomy ($f^2 = 0.020$) have weak effect in explaining the variance in IM. Attitude towards participating in the metaverse tourism ($f^2 = 0.377$) has stronger effect in explaining the variance in intention to participate in the metaverse tourism than perceived behavioural control ($f^2 = 0.056$), whereas SN ($f^2 = 0.001$) has no effect. In addition, IM has a strong effect on attitude and PBC but moderate effect on SN.

The model’s explanatory power was tested based on coefficient of determination ($R^2$) as suggested by Henseler et al. (2009). As depicted in Table 5, the findings indicate that the combined influence of the independent variables (SN, APMT, PBC) accounts for a substantial amount of variance in the IPMT ($R^2 = 0.517$). Thus, the model demonstrates a robust capacity
to explain the variation in participants’ intention to engage in metaverse tourism. The $R^2$ of IM was 0.53, which means PR, PC and perceived autonomy explained 53% of the variance in the IM. Furthermore, the predictive power of the structural model was assessed using Stone–Geisser’s $Q^2$ value, calculated through the blindfolding procedure (Geisser, 1974; Stone, 1974). As indicated in Table 5, all $Q^2$ values ($IM = 0.426$, $IPMT = 0.370$, $SN = 0.180$, $APMT = 0.382$, $PBC = 0.228$) are greater than zero, affirming the model’s predictive capacity. This suggests that the structural model successfully predicts the relevant constructs and their relationships within the context of metaverse tourism.

5. Discussion, implications and conclusion

The main objective of this study is to predict the determinants of tourists’ intentions to participate in metaverse tourism, especially Gen Z and Gen Y. Based on SDT and TPB, a theoretical framework was developed and tested using the PLS-SEM. According to the analysis results, PR, PC and PA significantly and positively impacted IM in the metaverse tourism context ($H1–H3$). These results are in line with previous studies (Hofverberg et al., 2022; Lazarides et al., 2016), which suggested the importance of fostering a supportive social environment, nurturing Gen Y and Gen Z’s confidence in their abilities and providing opportunities for autonomy. In addition, these findings are in line with the SDT, which contends that relatedness, autonomy and competence are the three core psychological needs that have an impact on IM (Ryan and Deci, 2000). The results indicate that creating environments that foster these psychological needs of relatedness, competence and autonomy might be a useful strategy for encouraging tourists to engage more deeply with metaverse tourism.

The results of this study confirmed the positive effect of Gen Z and Gen Y’s attitude and PBC on their intention to participate in tourism metaverse ($H5$ and $H6$), which is in line with past research (Esfandiar et al., 2020; Fazili et al., 2023) that established a positive relationship between individuals’ beliefs and their intention. More clearly, when individuals form a favourable attitude towards the metaverse, they tend to take part in it. In addition, when individuals are confident that they possess the skills and abilities needed to engage in the tourism metaverse, they become more inclined to engage in this platform. These results indicated that Gen Z and Gen Y have huge potential to participate in metaverse tourism, which aligns with research by Elkhwesky et al. (2023) on Gen Y and Gen Z’s intention to use virtual reality (VR) in tourism. Besides, these results also respond to the call of Yang and Wang (2023) for more segmentation analyses of demographic characteristics in metaverse tourism and Buhalil et al.’s (2023a) question on “What motivates and demotivates consumers to embrace metaverse in trip planning?”

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Relationships</th>
<th>$\beta$</th>
<th>SE</th>
<th>t-values</th>
<th>$R^2$</th>
<th>$f^2$</th>
<th>$Q^2$</th>
<th>p-values</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H1$</td>
<td>PR $\rightarrow$ IM</td>
<td>0.324***</td>
<td>0.087</td>
<td>3.724</td>
<td>0.530</td>
<td>0.102</td>
<td>0.426</td>
<td>0.000</td>
<td>S</td>
</tr>
<tr>
<td>$H2$</td>
<td>PC $\rightarrow$ IM</td>
<td>0.341***</td>
<td>0.08</td>
<td>4.262</td>
<td>0.106</td>
<td>0.000</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H3$</td>
<td>PA $\rightarrow$ IM</td>
<td>0.148*</td>
<td>0.086</td>
<td>1.731</td>
<td>0.020</td>
<td>0.037</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H4$</td>
<td>SN $\rightarrow$ IPMT</td>
<td>0.028</td>
<td>0.079</td>
<td>0.355</td>
<td>0.517</td>
<td>0.001</td>
<td>0.370</td>
<td>0.360</td>
<td>NS</td>
</tr>
<tr>
<td>$H5$</td>
<td>APMT $\rightarrow$ PMT</td>
<td>0.532***</td>
<td>0.077</td>
<td>6.87</td>
<td>0.377</td>
<td>0.000</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H6$</td>
<td>PBC $\rightarrow$ IPMT</td>
<td>0.244**</td>
<td>0.09</td>
<td>2.706</td>
<td>0.056</td>
<td>0.003</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H7$</td>
<td>IM $\rightarrow$ SN</td>
<td>0.488***</td>
<td>0.056</td>
<td>8.783</td>
<td>0.238</td>
<td>0.313</td>
<td>0.180</td>
<td>0.000</td>
<td>S</td>
</tr>
<tr>
<td>$H8$</td>
<td>IM $\rightarrow$ APMT</td>
<td>0.682***</td>
<td>0.041</td>
<td>16.574</td>
<td>0.465</td>
<td>0.870</td>
<td>0.382</td>
<td>0.000</td>
<td>S</td>
</tr>
<tr>
<td>$H9$</td>
<td>IM $\rightarrow$ PBC</td>
<td>0.593***</td>
<td>0.041</td>
<td>14.3</td>
<td>0.352</td>
<td>0.543</td>
<td>0.228</td>
<td>0.000</td>
<td>S</td>
</tr>
</tbody>
</table>

Notes: *p-value < 0.05; **p-value < 0.01; ***p-value < 0.001
Source: Created by authors

Table 5 Results of the structural model
This study examined the relationship between IM, SN, attitude and PBC in the metaverse (H7–H9). The results support all the hypotheses, which align with previous studies combining SDT and TPB (Khan et al., 2022). Particularly, these authors proposed that motivational theories such as SDT can offer explanations for the origins of constructs in social cognitive theories such as TPB. In this study, intrinsically motivated individuals to engage with the tourism metaverse are more inclined to develop positive beliefs (attitudinal, normative and control beliefs) about this platform. More clearly, intrinsically motivated individuals are more likely to adopt favourable attitudes towards the tourist metaverse if they find it a fun and immersive platform. They may also form favourable normative attitudes if they believe that people in their social circles appreciate using the tourist metaverse. In addition, they might feel more in control of their interactions and experiences in the tourist metaverse, which might contribute to positive control beliefs. The relationship between SN and IPMT was not supported by the results of PLS-SEM (H4). It may mean the existence of heterogeneity in respondents. Some groups of Gen Z and Gen Y are more open to embracing new technologies and exploring digital experiences (Szymkowiak et al., 2021). Thus, they may not easily be influenced by their social networks.

5.1 Theoretical and management implications

The current study extends the literature on metaverse tourism in various ways. Firstly, most past studies used the qualitative method to understand and explore metaverse tourism (Buhalis et al., 2023a; Buhalis et al., 2023b; Dwivedi et al., 2023; Go and Kang, 2023; Koohang et al., 2023; Yang and Wang, 2023). Therefore, due to the need for quantitative research to enhance our comprehension of metaverse tourism as a novel phenomenon, this study plays a crucial role in offering valuable insights into key aspects concerning tourists’ intention to engage in metaverse tourism. As a result, this research contributes significantly to expanding and deepening our understanding of this emerging field. Secondly, this study confirmed the crucial role of the TPB in predicting human intention towards an emerging phenomenon known as metaverse tourism. This result indicates the applicability of the socio-psychological model, i.e. TPB, to the domain of customers’ metaverse tourism decision-making. That is, the findings provide a solid theoretical basis for studying metaverse tourism intention in developing context like China. Thirdly, this study confirmed that motivational theories such as SDT provided explanations for the origins of constructs in social cognitive theories such as TPB. The study’s finding that IM explained moderate to high variances in tourist beliefs about metaverse tourism suggests that individuals’ inherent motivation plays a significant role in shaping their attitudes, SN and PBC related to engaging in metaverse tourism. Last but not the least, this study combines SDT and TPB to examine the relationship between PR, PC, PA, SN, attitude, PBC, IM and IPMT, presenting novel and advanced findings for metaverse tourism. The integration of TPB and SDT established a thorough theoretical framework for analysing and forecasting metaverse visitor intention. It helps uncover crucial aspects, motives and psychological needs that affect visitors’ involvement and intentions.

The results of this study carry significant implications for practitioners and policymakers aiming to promote metaverse tourism. The results highlight several key determinants that influence tourists’ IPMT and shed light on effective strategies for encouraging deeper engagement with this emerging form of tourism. Particularly, this study emphasizes the substantial potential for developing the metaverse tourism industry from economic and practical standpoints. The research findings indicate a significant interest in metaverse tourism among Generation Z and Generation Y tourists, offering a promising opportunity for revenue generation and industry growth. The global metaverse industry is projected to reach US$426.9bn by 2027, highlighting its vast market potential. As the metaverse industry flourishes, the metaverse tourism sector is expected to experience significant growth, benefiting from the overall industry development.
Drawing from SDT, the study identifies PR, competence and autonomy as significant factors positively impacting IM in metaverse tourism. These findings suggest that creating environments and experiences that foster these perceptions can be instrumental in stimulating tourists’ interest and involvement in metaverse tourism. Practitioners and policymakers should prioritize the design and provision of metaverse tourism offerings that promote a sense of connection, enable users to feel competent and offer opportunities for personal autonomy within the virtual environment. This can include enabling tourists to generate and share their own content, fostering community engagement, promoting collaborative activities and facilitating connections between participants. Creating a sense of belonging and social connectedness will positively influence IM. In addition, practitioners and policymakers should pay attention to high-tech technologies and their potential applications in metaverse tourism. For example, they can use artificial intelligence and natural language processing technology, such as ChatGPT, to decrease the language barrier among tourists worldwide and facilitate their connections (Carvalho and Ivanov, 2023). Moreover, policymakers can also collaborate with industry stakeholders to facilitate the integration of metaverse tourism into existing tourism frameworks.

Furthermore, this study emphasizes the role of SN, attitude towards participation in metaverse tourism and PBC in influencing visitors’ intention to engage in the metaverse, all of which are in line with the TPB. To leverage these determinants, stakeholders should consider strategies that cultivate positive social norms and encourage favourable attitudes towards metaverse tourism. In more detail, the results of this study revealed that customers’ attitudes have a big impact on whether they plan to engage in metaverse tourism. Consumer attitudes may be improved by raising public knowledge, which could help Generation Z and Y develop a positive perception of metaverse travel. This is consistent with Schiffman and Kanuk’s (2010) contention that a person’s attitude may be altered by projecting a positive picture. In addition, marketers and decision makers may foster favourable views towards metaverse tourism through focused marketing efforts highlighting the advantages, distinctive experiences and possibilities the metaverse offers. Promoting the ease, involvement and adaptability of metaverse tourist experiences can influence positive customer perceptions. In addition, the results of this study indicated that PBC has a major influence on an individual’s IPMT. As a result, it is crucial to eliminate perceived obstacles and give the required support. This may be accomplished by providing platforms that are easy to use, interfaces that are intuitive, instructions that are easy to understand and technical assistance so that visitors will feel confident in their ability to interact with the metaverse. In general, undertaking educational campaigns to raise knowledge and improve comprehension of metaverse tourism can positively influence the attitudes, SN and PBC of consumers. In addition, fostering collaboration between stakeholders, such as suppliers of metaverse platforms, tourist firms and technology developers, may assist and contribute to creating holistic strategies that consider visitor attitudes, PBC and SN.

5.2 Limitations and future research directions

Although this study possesses its merits, it does exhibit certain limitations that can serve as a compass for future research endeavours. Firstly, it focused on Generation Z and Generation Y tourists, limiting generalizability. Different age groups may have distinct behaviours and motivations in metaverse tourism. Therefore, future studies may consider older generations, such as Generation X and baby boomers, to gain a clearer and more in-depth knowledge of what aspects of metaverse tourism appeal to people of varying ages and generations. Secondly, this study focused on intrinsic factors that motivate individuals to participate in metaverse tourism. However, future studies can also consider extrinsic factors like ease of use, technology readiness and willingness to pay for AR, VR and MR experiences across cultures to get a complete picture of what drives individuals to participate in metaverse tourism. Thirdly, this study used SDT and TPB as theoretical
frameworks, which may only capture some factors influencing intention in the metaverse. Alternative theories that provide more insights can be considered in future studies. Examples include the TAM, TAM2, values-attitude-intention model, diffusion innovation theory, information systems success model and behavioural reasoning theory. These theories/models can shed more light on the various factors that may influence a person’s intention to engage in metaverse tourism, including technological, social, quality, contextual/situational and emotional factors. Researchers can select the most applicable theories or even combine multiple frameworks to develop models that accurately reflect the complexity of metaverse tourism motivation. Finally, other methods, such as using a control group or multi-group analysis, can be considered for future studies.

References


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