Traveling to the Hangang River via Metaverse: Interaction Effects between Avatar Self-Congruence and Digital Age Type

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Abstract

The aim of this study is to investigate how travelers' destination visit intentions are influenced by avatar self-congruence in the metaverse platform. We extended the impression management theory by considering both perceived enjoyment and social engagement, and illustrated the interaction effect based on users' digital age. To achieve this, we conducted an online survey with 302 users. The survey results revealed that avatar self-congruence significantly influenced users in terms of perceived enjoyment and social engagement, thereby affecting their destination visit intentions. This study also revealed a significant interaction effect between digital age type and avatar self-congruence on users' perceived enjoyment. The results of this study are expected to provide not only a theoretical reference for metaverse research and travel research but also managerial implications for destination management and metaverse applications.

Keywords: Avatar Self-Congruence, Enjoyment, Social Engagement, Destination Visit Intention, Digital Age

1. INTRODUCTION

The global tourism system has undergone a transformation into open tourism following the outbreak of the worldwide COVID-19 pandemic [1]. COVID-19, characterized by a longer incubation period, fewer symptoms, and faster, more widespread transmission, has posed a significant challenge to on-site travel for tourists, significantly impacting destination development [2, 3]. To address the substantial disruption caused to on-site tourism, destinations have been striving to create a new virtual tourism market [4]. Virtual tourism, based on real tourism landscapes, presents, simulates, and even surpasses the attractions of traditional on-site tourism through the internet or virtual technology. It creates an online environment that allows participants to experience immersive tourism without leaving their homes [2]. In the era of limited physical contact, there has

been a surge in interest in and demand for metaverses that facilitate virtual communication [5].

The metaverse, as an interconnected and persistent network of shared virtual environments, fosters a sense of holistic presence through not only avatar embodiment but also psychological immersion [6, 7]. On the metaverse platform, connections similar to those formed in physical destinations are enabled [8]. Currently, ZEPETO is recognized as the most representative metaverse platform [9]. It enables users to create avatars with human appearances and customize them using facial recognition and augmented reality functions [9]. By 2021, it had garnered 20,000 cumulative global subscribers [10]. Therefore, gaining deeper insights into virtual tourism development requires an understanding of how users interact with others on the metaverse platform.

The studies on metaverse travel predominantly focus on illustrating the impact of being present in the virtual world on users' attitudes and behaviors [7]. Some attempts have been made to investigate how users' immersive experiences affect their online and offline behaviors [8]. In other studies, a comprehensive metaverse tourism ecosystem has been established to understand the benefits of using the metaverse platform in tourism [8]. However, users have the ability to manage their impressions by creating avatars. Drawing from the impression management theory, individuals try to create and reinforce a specific image of their appearance, thereby influencing their responses [11]. So far, there has been little attention given to exploring how users manage their appearance through avatars to enhance their experience on the metaverse platform and their actual visiting behavior [11]. For this reason, this study aims to focus on revealing the impact of avatars in the metaverse platform on users' experiences and behaviors.

In this study, we have identified several research gaps in previous research. Firstly, the application of the impression management theory in the metaverse is still in its early stages, despite this theory being explored in online environments to illustrate how users manage their self-image, self-enhancement, and self-esteem [12, 13]. Additionally, there is a lack of research on how users' experiences are influenced by avatar self-congruence in the metaverse world. Secondly, research gaps also exist in the field of online travel. Most studies on online travel primarily focus on the virtual travel experience to demonstrate how it influences users' attitudes and visit intention behaviors [14]. Some studies delve into the effect of travel content quality on user attachment and behavior [15]. Others investigate how users' flow experience and behavior are influenced by the sense and information quality in virtual travel [16]. Meanwhile, there is a positive relationship between the authenticity of destinations in the virtual world and users' social engagement [17]. Nevertheless, there are few studies that illustrate how avatar self-congruence influences enjoyment and engagement behavior in the metaverse world [11]. In the realm of travel research, little consideration has been given to the effect of avatar self-congruence on both enjoyment and social engagement. Thirdly, previous studies have argued that consumers behave differently online depending on their digital age type [18]. However, there has been limited exploration of how users' experiences in the metaverse world vary depending on their digital age type.

The primary objective of this study is to address the gaps identified in previous research by constructing an integrated model that elucidates the metaverse experience and behaviors of users. We investigate how avatar self-congruence influences users' perceived enjoyment and social engagement, ultimately impacting their actual destination visit intentions. Additionally, we explore the interaction effect between avatar self-congruence and users' digital age type on their perceived enjoyment, social engagement, and destination visit intentions. The findings of this study offer valuable theoretical insights into understanding the metaverse travel experiences and behaviors of users. Furthermore, we present managerial implications for individuals working in the fields of metaverse marketing and technical development.

2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1 Theoretical Background: Impression Management Theory

Impression management theory is designed to illustrate how individuals attempt to gain control over the way others perceive them [19]. Individuals can influence others' responses to themselves by attempting to create and reinforce a particular impression of their appearance, abilities, attitudes, emotional reactions, and other attributes [11]. Prior studies have argued that impression management plays a crucial role in

communication with others, and there is a specific impact on the formation of online impressions through impression management on social media [20]. Previous research has shown that self-image can influence an individual's behavior by enhancing their sense of belonging and social interaction [21, 22, 23]. Currently, impression management theory has been applied in various research areas, including organizational management and online behavior [20, 24]. Furthermore, it has been applied in metaverse research to illustrate users' behavior [11]. In this study, we also adopt impression management theory to illustrate users' behavior.

2.2 Hypotheses Development

2.2.1 Avatar Self-Congruence and Perceived Enjoyment

Self-congruence is defined as the extent to which individuals are exposed to images of a product, service, or brand that are similar to their self-image [25]. From the consumer's perspective, they continuously build and reinforce their self-image through the consumption of various products or services [26]. An avatar is a digital representation of the user that facilitates their interaction with others in the online environment [27]. Ko and Park (2020) [28] explored the impact of self-congruence with avatars on consumer preferences and behavior, defining avatar self-congruence as the similarity between the avatar and the user in a video game context. According to self-congruence theory, self-congruence positively affects consumers in terms of pre-purchase evaluation, attitudes, emotions, loyalty, and behavior [29]. Additionally, previous studies have revealed a strong connection between consumers' self-congruence and their hedonic value [30]. Drawing from the impression management theory, users tend to interact more positively with avatars that exhibit a higher level of self-congruence, which in turn influences their enjoyment and positive emotions [31]. Therefore, we hypothesize that avatar self-congruence has a positive impact on users' perceived enjoyment in the metaverse environment.

Hypothesis 1: Avatar self-congruence has a positive influence on perceived enjoyment

2.2.2 Avatar Self-Congruence and Social Engagement

According to the impression expression theory, consumers aim to describe themselves for social interaction with others [19]. As revealed in this study, social engagement is attained through the establishment of relationships via informal interactions within virtual settings [32]. Self-congruence has shown a positive relationship with social engagement, as explored in some studies. In research on travel vlogs, it has been found that destination self-congruence positively influences travelers' social engagement behavior [15]. In livestreaming research, it has been also demonstrated that viewers' interaction and engagement behavior can be enhanced by their self-congruence with the livestream hosts [33]. A previous study has argued that users who exhibit a higher level of avatar self-congruence in the metaverse are more active in social interactions [11]. Therefore, we assume that avatar self-congruence is positively associated with social engagement.

Hypothesis 2: Avatar self-congruence has a positive influence on social engagement

2.2.3 Perceived Enjoyment and Destination Visit Intention

Destination visit intention refers to individuals' intention to visit a particular destination [34]. It has been demonstrated that travelers' online experiences are positively related to their destination visit intentions. In destination vlog research, it was found that the perceived enjoyment of travelers has a positive influence on their visit intentions [35]. Similarly, in research on VR travel, the perceived enjoyment derived from the VR travel experience positively influences destination visit intentions [36]. Therefore, it is reasonable to argue that the perceived enjoyment of users in the metaverse environment may also have a positive influence on their destination visit intentions.

Hypothesis 3: Perceived Enjoyment has a positive influence on destination visit intention

2.2.4 Social Engagement and Destination Visit Intention

Consumer social engagement exhibits a positive relationship with destination visit intention. In a previous study on destination vlogs, it was demonstrated that consumer engagement behavior can strengthen their travel intentions [15]. Based on travelers' engagement behaviors such as liking, tagging, and sharing, other research in the field of travel has also illustrated a positive relationship between social engagement and destination visit intention [37]. In research on travel information social networks, it was discovered that consumers' social engagement has a positive influence on travelers' destination visit intentions [38]. Given these studies, it can be argued that social engagement in the metaverse environment may also reinforce their destination visit intentions. Thus, the following hypothesis is proposed:

Hypothesis 4: Social engagement has a positive influence on destination visit intention

2.2.5 Digital Age Type and Avatar Self-Congruence Interaction Effect

According to previous studies, the digital age can be divided into digital natives and digital immigrants based on their birth year. Specifically, digital natives are those born after the 1980s, while digital immigrants are those born before the 1980s [39]. Digital natives have been exposed to the new digital age from a very early stage in life, while digital immigrants started to be exposed to it in the middle stage of their lives. As argued in previous studies, digital natives are more receptive to digital technology compared to digital immigrants [40]. Meanwhile, prior studies have found differences between digital natives and digital immigrants in preferences, experiences, and online behavior [41]. In travel-related studies, differences between digital immigrants and natives have been observed in personal experiences and behaviors [18]. Some studies have also revealed that self-congruence moderates their experiences based on their digital age type [42]. Therefore, in this study, we propose that there are interactive effects between their digital age type and avatar self-congruence on their perceived enjoyment and social engagement. Thus, we present the following hypothesis:

Hypothesis 5: Digital age type and avatar self-congruence have an interaction effect on the path
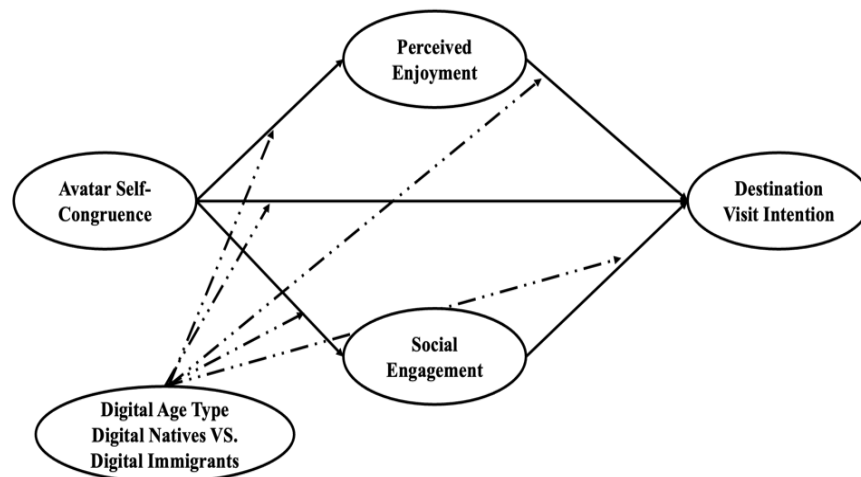

Figure 1. Research Mode

3. METHOD

3.1 Measurement Development

The scale for avatar self-congruence was derived from the study by Hooi and Cho (2013) [27] and that of

Jahn et al. (2021) [43], with some modifications, resulting in a total of 4 items. The scale for perceived enjoyment was adapted from the studies by Kim and Hall (2019) [44] and Iswahyudi et al. (2021) [45], also including 4 items. The measurement for social engagement, comprising 4 items, was developed based on the studies by Lai et al. (2021) [46] and Rahimizhian et al. (2020) [47]. Additionally, the measurement for destination visit intention consisted of 4 items, in line with the study by Rahimizhian et al. (2020) [47]. All items were assessed on a Five-point Likert scale (1-very disagree~5-very agree).

3.2 Data Collection and Sample Characteristics

A questionnaire was developed and used to collect data for this study. Before the survey, participants were informed of the study's objectives. They were then asked whether they were users of the ZEPETO metaverse communities, which represent one of the most popular travel metaverse communities. Based on the "ZEPETO world like survey," Hangang ranked as the fifth most popular city out of 15 ZEPETO meta travel cities and was the top-ranked Korean city. Within the Hangang ZEPETO meta communities, users can engage in various activities in this virtual city, such as enjoying noodles and having night market picnics. Users can also take photos or shoot videos during this virtual travel and share their experiences on other social media platforms. According to the Korea Travel Survey, approximately 32,000,000 people have used ZEPETO meta communities for travel. As a result, ZEPETO users were chosen as the participants in this research. The survey was conducted using Google Forms, and 405 responses were collected. However, data analysis was performed with only 302 participants who had used the ZEPETO meta communities for travel to the Hangang River. In terms of demographic data, 12.8% of the participants were male, while 87.2% were female. The largest age group was 10-19 years old, making up 51.1% of the participants. The majority of the participants were from Taiwan, accounting for 32.5% of the total.

4. RESULTS

4.1 Measurement Model

Firstly, the exploratory factor analysis (EFA) was conducted in this study. In the view of Stevens (1992) [48], all the factor loading value should be higher than 0.6 and the eigenvalues should exceed 1. According to our EFA results, all the measurement items of factor loading value are satisfactory. Then, the confirmatory factor analysis (CFA) was carried out. Table 1 lists the result of CFA, with the goodness-of-fit indicating a good fit of the research model. Meanwhile, the AVE value and CR value are mostly higher than the recommended level of 0.5 and 0.7, indicating a satisfactory performance in reliability and convergent validity. The AVE value of social engagement and destination visit intention is higher than 0.4. However, according to Fornell and Larcker (1981) [49], the measured CR is higher than 0.6, the convergent validity of the construct is adequate, and the AVE value higher than 0.4 remains acceptable for the social engagement and destination visit intention. To sum up, all of the construct satisfactory the consistency reliability and convergent validity.

Then, the discriminant validity analysis was performed. According to the previous studies, the square roots of the AVE are supposed to be higher than the correlation coefficients between the constructs. As shown in Tables 1, all the diagonal values are higher than the correlation coefficients, indicating the acceptable discriminant validity.

Table 1. Reliability, Convergent Validity and Discriminant Validity

	ASC	EN	SE	DVI	Alpha	CR	AVE
ASC	**.790**				.865	.868	.624
EN	.381	**.784**			.815	.864	.616
SE	.519	.654	**.693**		.786	.786	.480
DVI	.370	.566	.618	**.688**	.842	.843	.473

Note1: ASC=Avatar Self-Congruence; EN=Enjoyment; SE=Social Engagement; DVI=Destination Visit Intention
Goodness-of-Fit: x2= 45.388; df=129; x2/df=3.515; GFI=.853; CFI= .871; RMSEA= .091

4.2 Structural Model

Structural equation modeling was performed to test the above hypotheses. The model fit value is shown in Table 2, demonstrating the good fitness of this research model. According to the results in Table 2, avatar self-congruence exerts a significant influence on the users in terms of perceived enjoyment and social engagement. Despite a positive influence of the users' perceived enjoyment and social engagement on their destination visit intention, avatar self-congruence shows no significant influence on the destination visit intention of users.

Table 2. Direct path for structural model

Hypothesis	Paths	Standard coefficients	P-value	Results
H1	ASC→EN	.426***	6.154	Accepted
H2	ASC→SE	.582***	8.189	Accepted
H3	EN→DVI	.383***	5.180	Accepted
H4	SE→DVI	.340***	3.982	Accepted
H5	ASC→DVI	.044	.526	Rejected

Notes: ***$p<0.001$;**$p<0.01$;*$p<0.05$
ASC=Avatar Self-Congruence; EN=Enjoyment; SE=Social Engagement; DVI=Destination Visit Intention
Model Fit: $\chi 2$=514.325; $\chi 2$/df=3.956; GFI=.833; IFI=.860; CFI=.847; RMSEA=.099

4.3 Interaction Effect

Two-way ANOVA was conducted by using SPSS 26 to test the interaction effect of digital type and avatar self-congruence on the users in terms of perceived enjoyment, social engagement and destination visit intention. In line with the previous studies, the people were divided into two categories: the digital native who were born after 1980 and the digital immigration who were born before 1980. Also, the avatar self-congruence was divided into high self-congruence and low self-congruence according to the average of avatar self-congruence. A significant interaction effect of digital age type and avatar self-congruence on users' perceived enjoyment was revealed (F= 2.313, $p<0.05$). As shown in Figure 2, digital immigrants (M= 4.55; SD= 0.569) derive greater perceived enjoyment in the meta travel communities than digital natives (M= 4.34; SD= 0.845), when they show a higher level of avatar self-congruence. However, digital natives (M= 4.30; SD= 0.586) derive greater perceived enjoyment in the context of low avatar self-congruence than digital immigrant (M= 3.97; SD= 0.776). No other significant interactions were found in this study.
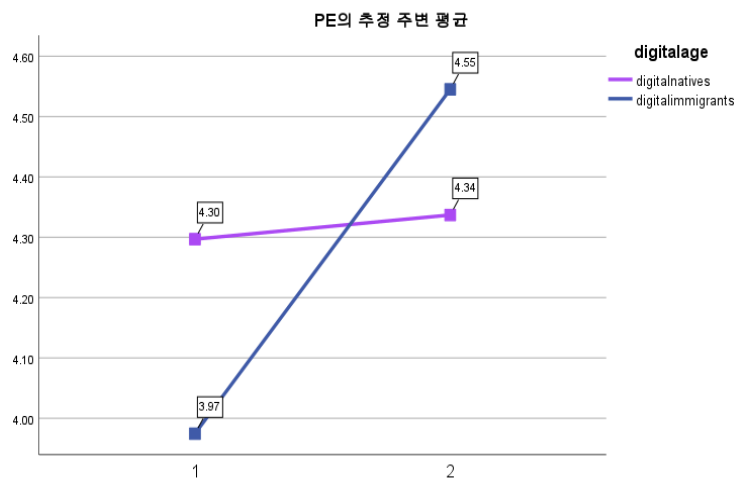

Figure 2. Interaction Effect between Avatar Self-Congruence and Digital Age type

5. DISCUSSION

Since the outbreak of the COVID-19 pandemic worldwide, there has been a significant shift away from physical contact and traditional travel. Consequently, travel via the metaverse has emerged as a new mode of travel. ZEPETO has become one of the most popular metaverse platforms. However, previous studies have paid little attention to illustrating how users' destination visit intentions can be enhanced through the metaverse travel experience. Meanwhile, most studies on online travel focus on the quality of travel content and the effect of destination authority on users' online behaviors and behavioral intentions. In contrast, few studies have explored the impact of avatar self-congruence in the metaverse environment on users' hedonic experiences and online behaviors, and how this influences their behavioral intentions. Lastly, there is almost no research exploring the interaction effect between digital age type and avatar self-congruence on users' online experiences and behaviors. To address these research gaps, this study illustrates how avatar self-congruence influences users' perceived enjoyment and social engagement, subsequently affecting their behavioral intentions. This is expected to enhance our understanding of metaverse travel.

The data used in this study were collected from individuals who have used ZEPETO to travel to the Hangang River. The results indicate that avatar self-congruence positively influences users' perceived enjoyment and social engagement, which aligns with previous studies. Perceived enjoyment and social engagement are closely related to users' destination visit intentions, consistent with previous research. Lastly, only the significant interaction effect between avatar self-congruence and digital age type on users' perceived enjoyment was investigated. The findings of this study not only provide theoretical references for research in travel and the metaverse but also offer implications for formulating destination management strategies.

6. CONCLUSION

Due to the global COVID-19 pandemic, virtual tourism has been significantly impacted, and one form of virtual tourism is the metaverse platform. The metaverse platform provides users with the opportunity to create avatars in virtual destination worlds, offering non-contact services. This study aims to provide theoretical and managerial insights for metaverse travel platforms, focusing on the effect of avatar self-congruence on user experiences and behaviors. Previous studies have suggested that individuals strive to create and reinforce their appearance, which, according to the impression management theory, influences how others respond to them. In this study, we have developed an integrated model to investigate how avatar self-congruence affects users' perceived enjoyment and social engagement, subsequently influencing their destination visit intentions. Additionally, we have analyzed the interaction effects between digital age types and avatar self-congruence on enjoyment, social engagement, and behavioral intentions. For theoretical implications, we have expanded the application of the impression management theory to avatar self-congruence and extended research in the field of virtual tourism by focusing on users' experiences. Moreover, we have provided managerial implications for the travel industry. Metaverse platforms should offer users more freedom to create their avatars and provide a wider range of avatar images for users to choose from, which can enhance their enjoyment and social engagement, subsequently impacting their actual travel intentions. However, this study has some limitations. Firstly, data were collected only from Hangang River users, and future research should gather more diverse data. Secondly, this study did not consider certain technological factors that may also affect users' experiences and behaviors. Future studies should include these technological factors to gain a comprehensive understanding of user behavior.

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