The utilitarian and hedonic value of immersive experiences on WeChat: examining a dual mediation path leading to users' stickiness and the role of social norms

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Abstract

Purpose – An integrative model that predicts users' stickiness to WeChat is built. In the proposed model, perceived value plays a dual mediating role in the causal pathway from users' immersive experiences of presence and flow to their engagement and stickiness. Furthermore, presence is treated as a bi-dimensional construct made up of spatial feelings and the sense of being in company, and users' engagement is conceived as cognitive, affective and behavioural contributions to WeChat's marketing functions.

Design/methodology/approach – The authors develop a measurement instrument and analyse data from a survey of 917 WeChat users. They use a hybrid partial least squares-structural equation modelling (PLS-SEM) and neural network approach to confirm the reliability and validity of the measurement items and all the relationships between the constructs.

Findings – The paper provides robust evidence about the mediating influences of both utilitarian and hedonic value on users' engagement with the immersive experiences of presence and flow. An additional finding highlights the role of social norms in engagement and stickiness.

Originality/value – Rather than studying the effects of the immersive experiences of presence and flow from either a hedonic or a utilitarian perspective, the authors consider how immersive experiences shape both utilitarian and hedonic value, as well as their joint impact (along with that of social norms) on users' engagement and stickiness.

Keywords Value, Hedonic, Utilitarian, Social norms, Flow, Presence

Paper type Research paper

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1. Introduction

Stickiness in the realm of social media is an increasing area of study in the literature, which has identified stickiness drivers from a variety of behavioural views, including the value that the individual user attributes to the social media platform (Rodríguez-Ardura and Meseguer-Artola, 2020a; Yoshida *et al.*, 2018) and the social processes and imperatives that influence the user (Hung *et al.*, 2016; Ifinedo, 2016). Interestingly, however, no previous research has considered both the utilitarian and hedonic significance of people's immersive experiences online and explored the role that utilitarian and hedonic value together play in triggering people's online stickiness.

The present study examines the potential dual utilitarian-hedonic value of immersive experiences on the social media platform WeChat – which belongs to a selective set of prevailing social networking sites (SNSs) and instant messaging platforms. More particularly, we investigate how utilitarian and hedonic values complement each other and trigger concomitant emotional and cognitive reactions, and in so doing display parallel mediating mechanisms that potentially influence users' engagement and stickiness to WeChat.

However, recognising that social pressure can have an equally important role in leading people to engage and stay engaged with WeChat, we combine two relevant theoretical frameworks that underscore individual perceived value and social imperatives (i.e. theoretical accounts of the perceived values of individuals' experiences and theoretical underpinnings of normative social influence). By considering experience values together with social imperatives, we believe that we are better theoretically equipped to explain people's stickiness to WeChat.

In addition to filling the aforementioned gaps, this paper also contributes to two other themes in the literature, each of them separately studying the critical role of a relevant individual immersive experience: the state of consciousness of being virtually present in an online environment (Hartmann *et al.*, 2015), often simply known as *presence*; and peak pleasant experiences of online *flow* (Bölen *et al.*, 2021). Despite prior research advancing our comprehension of presence and flow in online environments, there is no systematic assessment of the connection between presence and flow (Faiola *et al.*, 2013; Weibel and Wissmath, 2011), and the utilitarian and hedonic values of presence and flow (Ozkara *et al.*, 2017; Sénécal *et al.*, 2002). Put another way, this paper is a first systematic attempt to examine the relationships between presence and flow, and their dual utilitarian-hedonic significance.

2. Theoretical framework

2.1 Immersive experiences under study – presence and flow theories

Immersive experiences have been understood as subjective episodes that people are drawn into when interacting with online value propositions (Rodríguez-Ardura and Meseguer-Artola, 2019; Shin and Biocca, 2018). A stream of research has sought to gain deeper insight into immersive experiences characterised by a sense of presence (e.g. Khenak *et al.*, 2020; Steed *et al.*, 2018). These studies define presence as a user's "subjective feeling of immersion" (Weibel *et al.*, 2008, p. 2275) in a virtual environment afforded by digital technologies. Expressed differently, in a state of presence, people do not psychologically perceive that digital technologies are mediating communication, but rather feel that their body *is really in* a virtual environment, often with other users or avatars that appear to be realistically human.

Despite the term presence being broadly employed in this body of literature, what is largely absent is a unified enumeration and definition of the forms or layers of presence (Breves, 2021). The most common form of presence considered in the literature is *spatial presence* (also labelled *telepresence*), which corresponds to the user's environmental

perception of being in a virtual or remote setting portrayed by the technology ecosystem (e.g. Hartmann *et al.*, 2015; Lombard and Jones, 2015). This subjective episode stems from users' need to understand the external world and physically map themselves in it, i.e. positioning themselves according to spatial dimensions. Thus, in order to comprehend the virtual environment, users form cognitive spaces in their minds and place themselves in them (Wirth *et al.*, 2007). When a person feels an intense sense of presence, they are sucked into the virtual world (where they feel placed) and dissociate from their physical surroundings. Social presence (also called *co-presence* and *community presence*) is another well-accepted form of presence (Felton and Jackson, 2021). It refers to the feeling of being in the company of one or more people in a virtual or remote environment and of knowing these people, despite possibly encountering them only online (Schultze and Brooks, 2019).

Flow is another immersive online experience that people find relevant. Defined by positive psychologist Csikszentmihalyi (1990) as a psychological mind state of immense pleasure, flow has been considered as the optimum experience from the user's viewpoint, an experience that energises and motivates (Rheinberg and Engeser, 2018). Online flow comes about when a person faces an online task that has clear goals, provides instant feedback and is challenging to the extent that they need to utilise and maximise all of their capacities (Nakamura and Csikszentmihalyi, 2009). When in flow, users dive into the online task so intensely that they have no sense of time and self-awareness (Kaur *et al.*, 2016).

2.2 Immersive experiences as a source of dual perceived value

The literature has built on the notion that users' experiences are rooted in their interactions with value propositions, identifying perceived value as the key outcome of such experiences (Babin and Krey, 2020; Ramaswamy and Ozcan, 2018). This is in line with theoretical accounts under the service domain logic, which argue that value is not embedded in a product or service, but rather emerges through the customer's experience (Vargo and Lusch, 2017). Furthermore, studies have suggested that users' experiences can give rise to two main forms of value: hedonic and utilitarian (Babin *et al.*, 2019; Babin and Krey, 2020). This mirrors the difference between the value found in IS (information system) services that are provided effectively and rationally, which can be interpreted as a more task-related, instrumental, cognitive and non-emotional outcome of users' experiences, and the hedonic value generated by high-arousal stimuli, entertainment and affective facets of the user's experience, regardless of how well a particular task is completed (Chiu *et al.*, 2014; Picot-Coupey *et al.*, 2021).

However, no association has been established between the immersive online experiences of presence and flow and their potential dual utilitarian-hedonic value outcomes. This is because research on the topic, despite progressing and adopting different paths and perspectives, has not addressed this particular detail. Firstly, previous inquiries within human–computer interaction and IS have adopted either a utilitarian or a hedonic view with regard to usage experiences (see Wu and Lu, 2013). Inquiries taking a utilitarian view have questioned whether usage leads to instrumental benefits or whether it is thanks to usage that tasks are completed efficiently (Jourdan, 2006; Maneuvrier *et al.*, 2020), largely without considering the immersive experiences that emerge from users' interactions. Meanwhile, inquiries taking a hedonic view have examined the playfulness and enjoyment that users derive from their experiences of either presence or flow while consuming online content, sharing stories with people or playing games (Richard and Chebat, 2016; Rodríguez-Ardura and Meseguer-Artola, 2019). Secondly, the literature that has examined utilitarian and hedonic experience values together has focussed on customer encounters in shopping contexts (Ozkara *et al.*, 2017; Vieira *et al.*, 2018) and largely ignored the fact that users' experiences are continually shaped by the technological context in which interactions take

place (Picot-Coupey *et al.*, 2021). Thus, critical constructs and theoretical accounts for IS contexts, such as presence, have not been brought into the perceived value equation.

As a result of this fragmented research, the interplay between immersive experiences and utilitarian and hedonic value is still not well understood, and questions regarding how utilitarian and hedonic value complement each other remain unanswered (Vieira *et al.*, 2018). Due to the unbridged gaps between these research domains, our general understanding of the association between the utilitarian and hedonic forms of value is limited. We suggest that these two constructs are complementary and users can perceive them simultaneously.

2.3 Engagement as conducive to stickiness

Engagement is regarded as a key element of users' value contribution to a firm (Pansari and Kumar, 2017), channelling the impact that valuable user experiences (Grewal *et al.*, 2017) have on key consumer-based outcomes, including stickiness to the brand (de Oliveira Santini *et al.*, 2020). It is generally agreed that user engagement online (henceforward, engagement) is a user's voluntary connection to and support for the marketing functions of a brand, a company or an IS service provider (via referrals, feedback to brand, brand-related conversations on social media, etc.), which transcends online service encounters and purchases (Kumar and Pansari, 2016; Vivek *et al.*, 2014).

Engagement research was scarce and hindered by conceptual shortcomings before 2012 and, although intensive, has only drawn scholarly interest recently (Rosado-Pinto and Loureiro, 2020). Specifically, engagement has been understood to be either a psychological state with cognitive and emotional dimensions (Brodie *et al.*, 2011; Mollen and Wilson, 2010) or a behavioural manifestation (Eigenraam *et al.*, 2018; Harmeling *et al.*, 2017). Interestingly, some researchers supporting the psychological angle suggest that users, in order to be engaged, devote personal resources "into brand interactions" (Hollebeek *et al.*, 2019, p. 171), and so a behavioural component is inferred (Harmeling *et al.*, 2017). Furthermore, the latest studies on engagement dimensionality (see Ferreira *et al.*, 2020) argue for a unifying view of engagement acknowledging its cognitive (users' interest and thought processes surrounding a brand, firm or IS service), affective (users' emotional connection to and feeling of pride towards a brand) and behavioural (the energy users put into interacting with or contributing to the brand) facets. Accordingly, we regard engagement as users' cognitive involvement in, emotional relationship to and participation in the value proposition of a brand, firm or IS service and the social media activities carried out to support the brand, firm or IS service.

2.4 The role of social norms

Normative social influence has the potential to shape people's thoughts, emotions and actions, leading them to follow and conform to the values, beliefs and behaviour of those around them (Bicchieri and Mercier, 2014). Perceived social norms (usually operationalised as subjective norms) can be particularly potent and influential on social media (Ruiz-Mafé *et al.*, 2016), even when there is no direct communication with prominent peers, i.e. by way of simply witnessing their actions (Mattke *et al.*, 2020). Drawing on theoretical tenets of social psychology (Crano, 2000), prior research has claimed that social norms are particularly cogent on social media when users aim to share meaningful, self-defining relationships with others or they believe that others' conventions, values or behaviours are congruent with their own value systems (Bagozzi and Dholakia, 2002; Dholakia *et al.*, 2004), so their induced behaviour is intrinsically rewarding. Normative social influence might put social pressure on people to engage with and continue to use IS services simply because they wish to fit the norm or because they might otherwise be regarded as someone who is old-fashioned, who swims against the tide or who is disconnected from their personal social networks (Zhu and Chen, 2016).

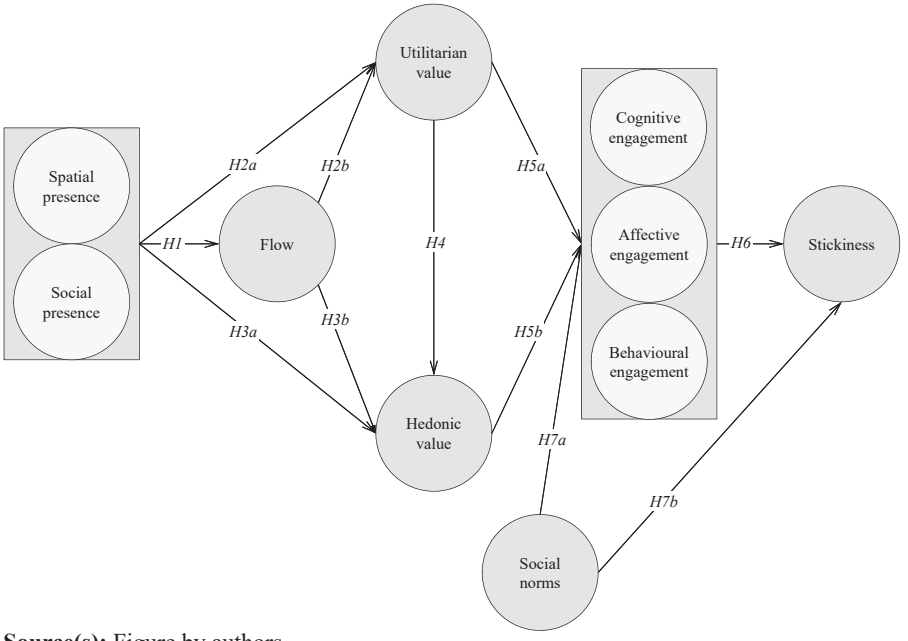
3. Research model and hypotheses

We propose a model of WeChat stickiness (Figure 1) and seek to provide a better understanding of the interplay between the immersive experiences of presence (spatial, social) and flow and their dual perceived value. Moreover, we aim to shed light on how utilitarian and hedonic value, together with perceived social norms, contribute to users' stickiness to WeChat.

Explanations offered about the linkages between the immersive experiences of presence and flow are inconclusive. A host of researchers have looked into presence as a precursor of flow (Bachen *et al.*, 2016; Pelet *et al.*, 2017) or considered presence and flow to be correlated (Faiola *et al.*, 2013; Weibel and Wissmath, 2011), even though some were unable to find proof of this relationship (e.g. Davis and Wong, 2007). Meanwhile, other researchers have regarded presence as a dimension of flow (Kwak *et al.*, 2014; Shim *et al.*, 2015) or have claimed that presence and flow are unrelated (e.g. Shin, 2019).

An important limitation of this previous research is that it has largely relied on a conceptualisation of presence that only accounts for one of its most common forms (Felton and Jackson, 2021); that is, spatial presence, or a user's perceptual illusion of being in a remote or imaginary place. However, we argue that a more integrative view of presence should be adopted, one that regards the sense of presence as a superordinate construct composed of spatial presence and social presence.

Overall, we expect a state of presence to activate immersive episodes of flow, as users embrace a subjective illusion in which they are oblivious to the fact that their experience online is mediated by technology, so they feel and act as if the technology ecosystem does not exist (Lombard and Ditton, 1997). This feeling that an online experience is genuine is accompanied by users' disengagement from their immediate physical surroundings (Rodríguez-Ardura and Martínez-López, 2014). For this reason, the spatial and social cues elicited by the technology take users to a virtual space or to a social setting where they are



Source(s): Figure by authors

Figure 1.
Multi-theoretical model of stickiness to WeChat

aware of the opportunity to communicate with others to navigate through tasks or take an active part in events (Uz-Bilgin and Thompson, 2022). Since presence transports WeChat users to virtual or remote environments where activities can actually take place, they are more willing to immerse themselves deeply in such events or tasks and thus reach a state of flow.

H1. Presence has a positive impact on flow.

Spatial presence is associated with an enhanced awareness of the virtual environment, so users in a state of presence are not easily distracted by events happening in their physical surroundings (Sundar *et al.*, 2017). This, in turn, is expected to lead users to devote more attention and effort to the interactions happening online, as well as to learn more effectively and accomplish the tasks they set out to perform (Maneuvrier *et al.*, 2020). Furthermore, learning and task performance can be enhanced when feelings of social presence are activated by way of the additional and unique information and social cues offered by social interaction and communication with peers (Jourdan, 2006).

Similarly, flow may lead to more efficient utilitarian results. This is because users in a state of flow focus intensely on online tasks and feel a sense of control over these tasks (Nakamura and Csikszentmihalyi, 2009). As users' awareness is narrowed when they are in flow, they could be more responsive to activities online and thus achieve higher levels of performance. Studies on flow in e-learning environments (Rodríguez-Ardura and Meseguer-Artola, 2016, 2017) and advertising websites (Sicilia and Ruiz, 2007) have found that people in flow are more likely to process information thoroughly, which drives cognition and consequent higher performance.

This suggests that the immersive experiences of presence and flow may lead users to have a positive cognitive assessment of the utility of WeChat services with regard to problem-solving and task completion (e.g. finding a desirable product at a reasonable price easily, reliably and quickly), thus deriving utilitarian value from them (Pengnate *et al.*, 2020).

H2a. Presence has a positive impact on utilitarian value.

H2b. Flow has a positive impact on utilitarian value.

Findings on the direct impact of presence on hedonic results are scarce and do not fully encompass the two-fold dimensionality of this immersive experience (Pengnate *et al.*, 2020). However, spatial presence is documented as being closely associated with positive emotions (Riva *et al.*, 2007) and is found to be enjoyable (Tussyadiah *et al.*, 2018). Furthermore, it is reasonable to assume that social presence encourages positive emotions, which in turn boost hedonic outcomes. Meanwhile, flow theory is now accepted as a way of explaining the pleasure derived from digital media use (see Bölen *et al.*, 2021), and there is strong evidence for the positive effect of flow on hedonic values, including sensory imagery (Rodríguez-Ardura and Meseguer-Artola, 2019), playfulness (Hsu *et al.*, 2012), entertainment (Richard and Chebat, 2016) and intrinsic enjoyment (Sherry, 2004). Pursuant to the above, we suggest that WeChat users experiencing enhanced presence and flow feel that this platform is emotionally worth it and more enjoyable to use, leading to an increase in the hedonic value they perceive.

H3a. Presence has a positive impact on hedonic value.

H3b. Flow has a positive impact on hedonic value.

When users make cognitive judgements resulting in utilitarian value, we suggest that they are also prompted to appraise their online experiences in terms of how emotionally or hedonically pleasing they are. For example, positive affect and sensory imagery might be elicited by judgements that, thanks to WeChat, one has found an affordable and effective product and thus imagines oneself using and sharing it. This is in line with theories of appraisal, which claim that people's emotions are activated by their cognitive assessments and the appraisal values they

assign to internal or external contexts (see Moors, 2014, 2017). As documented by Chang (2015), when cognitive appraisals of a service provider are strong, they lay a foundation for the individual's affective disposition towards that provider's value proposition.

H4. Utilitarian value has a positive impact on hedonic value.

While causal links between value and users' key behavioural outcomes (e.g. satisfaction, purchase intention) have been established (Ozturk *et al.*, 2016; Sirakaya-Turk *et al.*, 2015), very little is known about the potential effect of value on engagement. To propose that value has an instrumental role in engagement, we draw on Fishbach's (2009) functional perspective, which argues that appraisal values influence people's willingness to act or contribute, particularly in contexts where they feel at ease when performing behaviours of interest, as is the case in a digital ecosystem like WeChat (Chen *et al.*, 2018). Furthermore, we consider both utilitarian and hedonic value as drivers of engagement (Park and Ha, 2016). That is to say, the more users believe that their immersive experience with a brand or IS provider is useful or efficient and intrinsically pleasing, the higher the cognitive importance of the brand or IS service, their emotional connection with it and their disposition to support it will be.

H5a. Utilitarian value has a positive effect on engagement.

H5b. Hedonic value has a positive effect on engagement.

The engagement-stickiness path in the model (H6) is underpinned by the dedication-constraint framework (Bendapudi and Berry, 1997). According to this theoretical account, users wish to continue with their current IS service provider because they genuinely want to (i.e. they are encouraged by dedication-based mechanisms) or they think the cost of changing to another provider will be too high (constraint-based mechanisms). These mechanisms are determined by the amount of personal time and effort the user invests in the IS value proposition and have been noted as crucial sources of stickiness to the IS offering (Kim, 2017). Accordingly, in the WeChat context we expect engagement to operate not only as a favourable response in and of itself from the user's standpoint but also as a cognitive, affective and behavioural investment that will fizzle out when the user leaves WeChat.

H6. Engagement has a positive impact on stickiness.

We regard social norms as the perceived normative social influence exerted by prominent peers with regard to beliefs, emotions or actions on WeChat (Kim, 2017). Empirical studies on social norms offer evidence of their impact on decisions in the adoption of social media, yet provide limited insights into users' thoughts, emotions and behaviours with respect to their continued use of these media (see, e.g. Li, 2013). Nevertheless, if social norms endorsing WeChat exist, we can expect them to boost engagement. This is because users who conform to social expectations feel social approval and harmony with their personal values, which in turn triggers positive thoughts and perceptions about the IS service (Oliveira *et al.*, 2020). Furthermore, social norms can unleash constraint-based mechanisms in cases where users do not mimic what people are doing in their personal social network (Bilgihan *et al.*, 2016), which leads to stickiness (Kim and Min, 2015).

H7a. Social norms have a positive impact on engagement.

H7b. Social norms have a positive impact on stickiness.

4. Methodology

4.1 Measures

We slightly adapted the original English version of the measurement scales, all of which had been previously validated in relevant research, to the WeChat context (see Appendix 1).

Furthermore, we implemented the strategies suggested by Podsakoff *et al.* (2003) to prevent the potential effects of common method variance.

To obtain a Chinese version of the measures that was comparable to the English scales to a high degree of accuracy, we had two qualified professionals carry out a parallel back-translation. A bilingual co-author then reconciled and improved the Chinese version, and finally three bilingual scholars (all familiar with the research context and the measures) performed a final assessment of face and content validity. We also ran a pilot test with 45 students who were WeChat users. All Cronbach's α values were higher than 0.70, which indicated that the level of internal reliability of the scales was very satisfactory.

4.2 Data collection and participants

We recruited an initial sample of 1,234 Chinese adult WeChat users from WenJuan, a professional survey company. After screening, we eliminated 317 answers showing careless response patterns and incomplete responses. On average, participants were 30.1 years old and had been using WeChat for 5.52 years; 43.0% were women and a 51.9% had reached an undergraduate education level (the key user demographic characteristics measured in the survey are shown in Appendix 2).

We discarded under-coverage and non-response problems after ensuring that the composition of the sample reflected the target population in terms of gender and age structure (see Appendix 2). The *t*-test (p-value = 0.838) and the correlation (0.949) yielded no significant differences for gender and age structure, respectively.

4.3 Common method biases

Since we used self-report measures and collected data cross-sectionally and from a single sample, we controlled for common method biases that could compromise our analyses (Rodríguez-Ardura and Meseguer-Artola, 2020b). When applying Harman's single-factor test, the unrotated factor analysis showed that the first factor accounted for visibly less than 50% of the variance. Likewise, the pairwise correlations between constructs were all below the recommended maximum value of 0.90 (Appendix 4). Hence, common method issues were highly improbable.

5. Results

We used partial least squares-structural equation modelling (PLS-SEM) techniques to estimate the relationships between the measurement scale items and the constructs in our model and the linear causal paths among the constructs. These techniques do not require the data to have a multivariate normal distribution and are particularly appropriate for testing models with higher-order latent constructs and multi-item scales. Furthermore, we integrated neural network analysis into the PLS methodological framework to test for non-linear paths and conduct a sensitivity analysis (Ahani *et al.*, 2017; Al-Sharafi *et al.*, 2022a). We used R software to compute all analyses.

5.1 Measurement model

We assessed, and confirmed, the internal consistency reliability, the individual item reliability, the convergent validity and the discriminant validity of all the measures. We deemed the internal consistency reliability to be satisfactory because all Cronbach's α values and Dillon-Goldstein's ρ values exceeded the minimum threshold of 0.70, the first eigenvalues were all higher than 1, and all second eigenvalues were lower than 1 (Table 1).

Table 1.
Internal consistency reliability, individual item reliability and convergent validity

	Cronbach's α	Dillon-Goldstein's ρ	First eigenvalue	Second eigenvalue	AVE	Weight	Loading	Communality
Spatial presence (SP)	0.940	0.953	4.620	0.404	0.770			
SP1						0.175	0.819	0.671
SP2						0.189	0.883	0.780
SP3						0.195	0.908	0.824
SP4						0.197	0.914	0.836
SP5						0.199	0.891	0.795
SP6						0.185	0.846	0.715
Social presence (SOP)	0.895	0.935	2.480	0.306	0.826			
SOP1						0.364	0.892	0.795
SOP2						0.371	0.921	0.848
SOP3						0.365	0.914	0.836
Flow (F)	0.905	0.941	2.520	0.251	0.841			
F1						0.366	0.922	0.850
F2						0.352	0.912	0.831
F3						0.373	0.917	0.841
Utilitarian value (UV)	0.925	0.938	5.660	0.704	0.628			
UV1						0.151	0.704	0.496
UV2						0.148	0.828	0.685
UV3						0.144	0.815	0.665
UV4						0.140	0.830	0.689
UV5						0.147	0.865	0.748
UV6						0.136	0.734	0.538
UV7						0.124	0.732	0.536
UV8						0.132	0.789	0.623
UV9						0.140	0.821	0.673
Hedonic value (HV)	0.878	0.918	2.950	0.634	0.737			
HV1						0.290	0.887	0.786
HV2						0.300	0.903	0.815
HV3						0.302	0.904	0.817
HV4						0.273	0.728	0.530
Cognitive engagement (CE)	0.940	0.955	4.040	0.324	0.808			
CE1						0.211	0.898	0.806

(*continued*)

Table 1.

	Cronbach's α	Dillon-Goldstein's ρ	First eigenvalue	Second eigenvalue	AVE	Weight	Loading	Communality
CE2						0.216	0.876	0.768
CE3						0.228	0.899	0.807
CE4						0.227	0.916	0.839
CE5						0.231	0.905	0.819
Affective engagement (AE)	0.940	0.957	3.390	0.266	0.848			
AE1						0.274	0.925	0.856
AE2						0.273	0.933	0.870
AE3						0.275	0.930	0.865
AE4						0.265	0.895	0.801
Behavioural engagement (BE)	0.927	0.943	4.400	0.530	0.734			
BE1						0.186	0.834	0.696
BE2						0.197	0.876	0.767
BE3						0.201	0.883	0.780
BE4						0.193	0.869	0.755
BE5						0.197	0.812	0.659
BE6						0.195	0.863	0.745
Social norms (SN)	0.936	0.954	3.360	0.342	0.840			
SN1						0.253	0.855	0.732
SN2						0.279	0.934	0.872
SN3						0.274	0.933	0.871
SN4						0.285	0.940	0.884
Stickiness (S)	0.825	0.896	2.220	0.426	0.740			
S1						0.358	0.849	0.722
S2						0.367	0.863	0.745
S3						0.437	0.868	0.753

Source(s): Table by authors

All the loadings of the scale items on their constructs were above the recommended 0.70 cut-off (Table 1), so the communalities were all greater than 0.50. Also, the average variance extracted (AVE) values substantially surpassed the minimum level of 0.50, so the scales achieved convergent validity.

Every item's loading on its corresponding first-order factor was greater than its loadings on all other factors (Appendix 3), and the AVE square root value of each construct was larger than its correlations with the rest of the latent variables (Appendix 4), thus the discriminant validity of the measures was deemed adequate.

All values of the heterotrait–monotrait ratio (HTMT) were lower than the maximum threshold of 0.85, so the discriminant validity of the measures was supported (Appendix 4).

5.2 Structural model

We employed the repeated-indicators approach to introduce the second-order molar constructs of presence (which reflectively captured spatial presence and social presence) and engagement (which depicted cognitive, affective and behavioural engagement) into the PLS model estimation. We used mode A to measure these second-order constructs (Becker *et al.*, 2012) and, by way of an inner centroid approach, we combined and optimally weighted their dimensions in the PLS algorithm.

The value of every coefficient of determination, or R^2 (Table 2), indicated that the amount of variance in each endogenous latent variable explained by its independent latent variables was acceptable for flow and utilitarian value and moderate for hedonic value, engagement and stickiness. The f^2 effect sizes of the exogenous constructs on the endogenous ones showed that presence had a high impact on flow; flow had a larger effect on utilitarian value than presence; utilitarian value had a greater influence on hedonic value than presence and flow; social norms, utilitarian value and hedonic value had a medium influence on engagement; and, compared to social norms, engagement had a very relevant effect on stickiness. Stone-Geiser's Q^2 values were all above the cut-off value of 0.50 and revealed that the predictive relevance of the path model for the endogenous latent variable was good for stickiness and high for flow, utilitarian value, hedonic value and engagement.

After conducting a bootstrapping with 500 resamples (Table 2), we found that all the p-values of the path coefficients were lower than 0.05 and the Benjamini–Hochberg α correction, so all causal paths in the model were supported (Figure 2).

A mediation analysis was performed to test the mediating role of flow in the causal paths from presence to utilitarian value, and from presence to hedonic value. Firstly, we used the causal steps procedure, taking into consideration the significance analysis of the constituent paths of the abovementioned causal relationships (Preacher and Hayes, 2008). As the bootstrapping results in Table 2 show, all the paths are statistically different from zero, allowing us to confirm the indirect effects of presence on utilitarian value, and presence on hedonic value, through flow. Secondly, we performed two Sobel tests, one for each causal path. The tests yielded a statistically significant indirect effect of presence on utilitarian value through flow ($\beta = 12.028$, p-value $= 0.000$), and a significant indirect effect of presence on hedonic value via flow ($\beta = 5.203$, p-value $= 0.000$). Considering these indirect effects, together with the significant direct effects from presence to utilitarian value and from presence to hedonic value, we can assert that flow plays a partial mediating role in both relationships.

5.3 Non-linear path analysis

Our neural network model had stickiness as the output variable, plus the six first-order and second-order constructs of the PLS model as input variables. To uncover potential non-linear relationships between the constructs in the model, we first applied the min-max scale method, which scaled the data factors yielded by the PLS analysis between 0 and 1. Second, we ran a neural network

	Estimate	Std. error	*t*-value	*p*-value	f^2	R^2	Q^2
Regression 1						0.307	0.622
Intercept	0.000	0.028	0.000	1.000			
Presence → Flow	0.554	0.028	20.100	0.000	0.443		
Regression 2						0.331	0.521
Intercept	0.000	0.027	0.000	1.000			
Presence → Utilitarian value	0.127	0.033	3.910	0.000	0.018		
Flow → Utilitarian value	0.496	0.033	15.300	0.000	0.254		
Regression 3						0.589	0.540
Intercept	0.000	0.027	0.000	1.000			
Presence → Hedonic value	0.071	0.026	2.760	0.003	0.014		
Flow → Hedonic value	0.190	0.029	6.660	0.000	0.048		
Utilitarian value → Hedonic value	0.606	0.026	23.400	0.000	0.594		
Regression 4						0.727	0.558
Intercept	0.000	0.017	0.000	1.000			
Social norms → Engagement	0.272	0.023	11.700	0.000	0.141		
Utilitarian value → Engagement	0.292	0.027	10.800	0.000	0.133		
Hedonic value → Engagement	0.400	0.027	14.700	0.000	0.243		
Regression 5						0.615	0.453
Intercept	0.000	0.021	0.000	1.000			
Social norms → Stickiness	0.109	0.029	3.780	0.000	0.020		
Engagement → Stickiness	0.703	0.029	24.300	0.000	0.637		
Auxiliary regression 1 (exogenous 2nd order construct)						1.000	
Intercept	0.000	0.000	0.000	1.000			
Spatial presence → Presence	0.698	0.000	4050.000	0.000			
Social presence → Presence	0.415	0.000	2410.000	0.000			
Auxiliary regression 2 (endogenous 2nd order construct)						1.000	
Intercept	0.000	0.000	0.000	1.000			
Cognitive engagement → Engagement	0.358	0.000	4110.000	0.000			
Affective engagement → Engagement	0.339	0.000	2500.000	0.000			
Behavioural engagement → Engagement	0.432	0.000	3310.000	0.000			
Goodness of fit = 0.6423							

	Path coefficients (original)	Path coefficients β (boot-strapping)	Std. error	*p*-value	Benjamini-Hochberg α correction
Presence → Flow	0.554	0.554	0.026	0.000	0.005
Presence → Utilitarian value	0.127	0.126	0.033	0.000	0.041
Presence → Hedonic value	0.071	0.073	0.026	0.009	0.050
Flow → Utilitarian value	0.496	0.496	0.034	0.000	0.018
Flow → Hedonic value	0.190	0.188	0.035	0.000	0.036
Utilitarian value → Hedonic value	0.606	0.607	0.031	0.000	0.014
Utilitarian value → Engagement	0.292	0.291	0.037	0.000	0.032

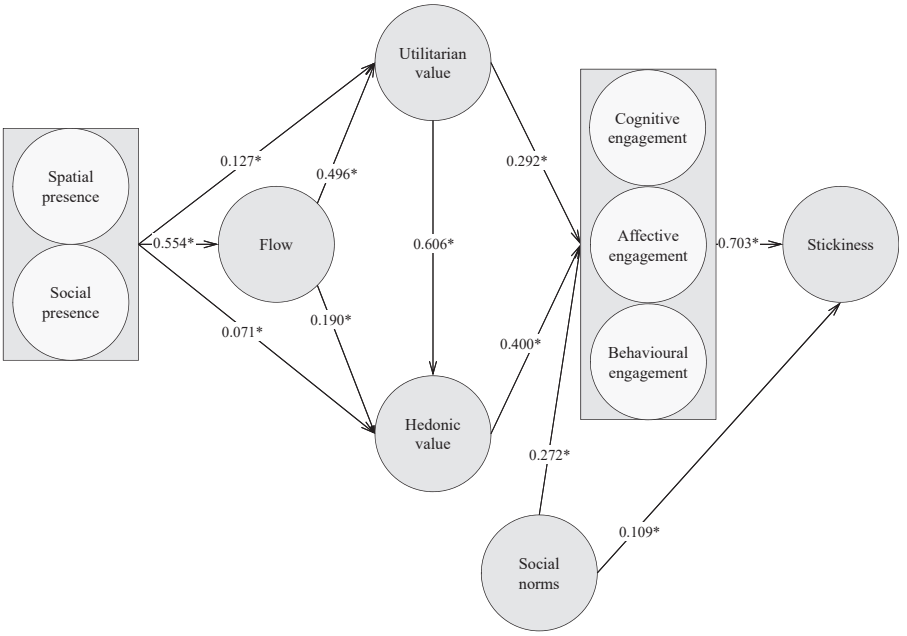
Table 2.
Path coefficients and bootstrapping results (500 replacements)

(*continued*)

	Path coefficients (original)	Path coefficients β (boot-strapping)	Std. error	*p*-value	Benjamini-Hochberg α correction
Hedonic value → Engagement	0.400	0.401	0.038	0.000	0.023
Engagement → Stickiness	0.703	0.704	0.033	0.000	0.009
Social norms → Engagement	0.272	0.272	0.030	0.000	0.027
Social norms → Stickiness	0.109	0.108	0.037	0.003	0.045

Source(s): Table by authors

Table 2.



Note(s): *p-value < 0.05

Source(s): Figure by authors

Figure 2.
PLS model with path coefficients

multi-layer perceptron training algorithm, with a single hidden layer. Based on Blum's (1992) proposition and the trial-and-error method (Sharma *et al.*, 2015), we found that the best results were achieved with four hidden nodes. Third, to avoid overfitting problems, we performed a 10-fold cross-validation by using the traditional backpropagation algorithm with the logistic activation function with a data set ratio of 90:10 for training and testing (Arpaci *et al.*, 2022).

The root-mean-square error values obtained with the ten cross-validations for both the training data and the testing data were acceptable (Table 3). Thus, we can assert that the neural network is efficient and all input factors are appropriate for obtaining high prediction accuracy on stickiness (Al-Sharafi *et al.*, 2022b).

Cross-validation	Prediction accuracy RMSE training	RMSE testing	Sensitivity analysis Presence	Flow	Utilitarian value	Hedonic value	Social norms	Engagement
1	0.128	0.133	0.259	0.061	0.100	0.126	0.160	0.293
2	0.130	0.118	0.104	0.152	0.256	0.077	0.102	0.310
3	0.130	0.115	0.152	0.149	0.127	0.124	0.115	0.333
4	0.131	0.110	0.118	0.119	0.160	0.116	0.141	0.346
5	0.130	0.125	0.165	0.115	0.157	0.123	0.143	0.296
6	0.128	0.138	0.075	0.168	0.159	0.133	0.113	0.353
7	0.127	0.149	0.094	0.133	0.209	0.166	0.181	0.217
8	0.130	0.117	0.108	0.082	0.055	0.207	0.195	0.353
9	0.125	0.166	0.065	0.224	0.098	0.183	0.104	0.326
10	0.131	0.113	0.159	0.166	0.070	0.101	0.151	0.353
Mean	0.129	0.128						
s.d	0.002	0.017						
Average importance			0.130	0.137	0.139	0.136	0.140	0.318
Normalised importance (%)			40.850	43.028	43.763	42.680	44.170	100.000
PLS analysis								
Total effects			0.200	0.240	0.376	0.281	0.301	0.703
Normalised importance (%)			28.450	34.139	53.485	39.972	42.817	100.000

Source(s): Table by authors

Table 3. Neural network prediction accuracy, neural network sensitivity analysis and PLS total effects on stickiness

5.4 Sensitivity analysis

A Garson's (1991) sensitivity analysis for the ten optimisations (Table 3) brought in the normalised importance of every input factor in predicting stickiness (gauged as the proportion of their relative importance with respect to the maximum relative importance of the factors). This analysis pointed towards engagement as the most important input factor, followed by social norms, utilitarian value, flow and hedonic value, which all displayed very similar percentages of normalised importance. The least important factor was presence. These results were quite similar to those yielded by the PLS estimation, except for the fact that social norms and utilitarian value, and flow and hedonic value, respectively swapped their positions.

6. Concluding statements

To date, examinations of users' immersive experiences on social media platforms have mainly centred on their hedonic outcomes. This paper complements this viewpoint and suggests that immersive experiences on the social media available today can potentially provide hedonic as well as utilitarian value to users. In addition, it presents a theoretical and empirical model in which immersive experiences – mediated by the perceived utilitarian and hedonic value of these experiences – act as drivers of engagement. Ultimately, engagement, jointly with normative social expectations, prompt users' persistent interaction on and with social media.

6.1 Theoretical contributions

The main theoretical contributions of this paper are five-fold. Firstly, this paper theoretically combines two separate research streams about immersive online experiences (presence

research and flow theory) with the theoretical underpinnings of the dual hedonic-utilitarian nature of perceived value in marketing contexts. It also tests the suitability of the resulting integrative model in terms of its explanatory power for social media stickiness. In recent years, studies attempting to explain why people stick to social media in the long run have considered either the effect of presence states or the influence of flow episodes; and the very few that have explored the impact of both immersive experiences, such as Pelet *et al.* (2017), did not take into account the dual nature of the value that these experiences can offer users, nor did they consider the mediating role of this value in users' stickiness-related decisions.

Secondly, this paper corroborates Picot-Coupey *et al.*'s (2021) frame of reference for dual perceived value in pure shopping experiences online (within online stores and shopping apps), and it extends this framework to social media settings, where users perform a larger range of consumption practices (geocaching, sharing brand selfies, etc.), which are not always directly or immediately related to purchase decisions.

Thirdly, our results substantiate that presence has two constituent constructs: spatial and social. To the best of our knowledge, this characterisation of presence had not been incorporated into a complex empirical model until now. Specifically, the findings support the nomological validity of our bi-dimensional conception of presence by showing that our operationalisation of presence as a higher-order construct fits into the network of causal pathways delineated in the model. Added to this, we offer evidence that presence states (triggered by WeChat in our study) not only enhance the utilitarian value perceived in the IS service's value proposition – as suggested by Pengnate *et al.* (2020) for 3D virtual reality contexts – but also the hedonic value of the service.

Our fourth contribution is in the area of flow research and lays the foundation for associating users' flow episodes not only with hedonic or recreational feelings of enjoyment and pleasure – as the literature about flow on social media has often suggested – but also with utilitarian types of perceived value. Indeed, we report considerable evidence that users simultaneously derive both hedonic and utilitarian value from the profound immersion in an online activity that is typical of flow.

The fifth and final contribution is related to our view of engagement as a driving force that *arises from* valuable immersive experiences on social media (and prompts users' persistent interaction) as opposed to being a *source* of value. It is reassuring to see that our empirical study in the WeChat context has identified a similar experience-value-engagement path to that tentatively suggested by Abdul-Ghani *et al.* (2019) in an exploratory inquiry into consumer-to-consumer online shopping settings. However, unlike this previous study, our model captures the complexity and dynamics of subjective experiences online as well as the dual value that users can derive from them.

6.2 Managerial implications

One of the primary takeaways from this research is that the strategic and operational effort that managers and marketing specialists allocate to social media – to enhance the features of a brand or organisation's value proposition – become optimal business decisions when they activate presence and flow feelings amongst the brand's target groups. It could be argued that is hard to control for highly individualistic constructions such as the immersive experiences of presence and flow. However, understanding these experiences and designing social media value propositions accordingly will certainly provide consumers with both hedonic and utilitarian value. These values, although different, are complementary and together let consumers fulfil their needs and engage with the brand.

Consistent with this, practitioners are advised to consider immersive experiences as dynamic, holistic and individualistic phenomena, as they are viewed by consumers, rather than mere points of brand-consumer interaction. In particular, they are encouraged to focus

on the immersive experiences of presence and flow – as these experiences produce all-encompassing value for consumers – and to explore and design ways in which the brand's value proposition can trigger immersive experiences at all points in the consumer journey on social media.

6.3 Limitations and further research

Although the overall results strongly support our model in its own right, additional research needs to be conducted. Assessing users' online immersive experiences beyond the distinctive context of WeChat would provide evidence as to whether the validity of our measures and our findings hold in other social media contexts.

In our model, we considered the relationships between constructs at the consumer level and in the generic use of WeChat. However, future research could further delve into these relationships by performing analyses at the brand level and for specific social media applications. For example, research could investigate a potential moderating role of brand-related features on users' stickiness to focal social media marketing initiatives.

We have adopted a holistic approach to examine the immersive experience of flow on social media and, accordingly, we operationalised flow as a unidimensional construct. This offers an additional advantage: in sharp contrast to multidimensional operationalisations of flow, which are inconsistent in the literature (Valinatajbahnamiri and Siahtiri, 2021), unidimensional operationalisations of flow facilitate comparisons between studies. Nevertheless, further research could be enriched by measuring each of the constituent constructs of flow and defining flow as a higher-order factor. In this way, we would be able to offer a detailed picture of the role of each flow sub-dimension in the dual mediation path leading to users' stickiness.

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Appendix 1

Construct	Original scale	Adapted measures
Spatial presence	Novak *et al.* (2000)	(SP1) Using WeChat often makes me forget where I am (SP2) After using WeChat, I feel like I come back to the "real world" after a journey (SP3) Using WeChat creates a new world for me, and this world suddenly disappears when I stop browsing (SP4) When I use WeChat, I feel like I'm in a world created by WeChat pages and resources (SP5) When I use WeChat, my body is in the room, but my mind is inside the world created by the pages and resources I explore (SP6) When I use WeChat, the world generated by the pages and resources I explore is more real to me than the "real world"
Social presence	Qiu and Benbasat (2005)	(SOP1) When I use WeChat, I feel like I'm talking with my friends (SOP2) When I use WeChat, I feel like I'm with my friends in the same place (SOP3) When I use WeChat, I feel like I'm looking at or listening to my friends
Flow	Novak *et al.* (2000)	(F1) I have (at some time) experienced flow on WeChat (F2) Most of the time I use WeChat I feel like I'm in flow (F3) In general, how frequently would you say you have experienced "flow" when you use WeChat?
Utilitarian value	Chaudhuri and Holbrook (2001) Dholakia *et al.* (2004)	(UV1) WeChat is a necessity for me (UV2) I use WeChat to get information (UV3) I use WeChat to learn how to do things (UV4) I use WeChat to provide others with information (UV5) I use WeChat to contribute to a pool of information (UV6) I use WeChat to generate ideas (UV7) I use WeChat to negotiate or bargain (UV8) I use WeChat to get people to do things for me (UV9) I use WeChat to solve problems
Hedonic value	Chaudhuri and Holbrook (2001) Babin *et al.* (1994)	(HV1) I love WeChat (HV2) I feel good when I use WeChat (HV3) Browsing WeChat is truly a joy (HV4) While browsing WeChat, I'm able to forget my problems
Cognitive engagement	Novak *et al.* (2000)	(CE1) WeChat is important (CE2) WeChat is relevant (CE3) WeChat means a lot to me (CE4) WeChat matters to me (CE5) WeChat is of concern to me
Affective engagement	Hollebeek *et al.* (2014)	(AE1) I feel very positive when I use WeChat (AE2) Using WeChat makes me happy (AE3) I feel good when I use WeChat (AE4) I'm proud to use WeChat
Behavioural engagement	Koh and Kim (2004)	(BE1) I take an active part in my friends' talk group on WeChat (BE2) I do my best to stimulate my friends' circle on WeChat (BE3) I often provide information/contents for my WeChat friends (BE4) I eagerly reply to posts by WeChat friends (BE5) I take care of my WeChat friends (BE6) I often answer calls from WeChat friends who are seeking support

(*continued*)

Table A1. Measurement instruments

Construct	Original scale	Adapted measures
Social norms	Bosnjak *et al.* (2005)	(SN1) Most people who are important to me think I should be on WeChat
		(SN2) Most people whose recommendations I like to follow think I should be on WeChat
	Chieh-Peng and Ding (2003)	(SN3) Most people who are important to me would encourage me to be on WeChat
		(SN4) Most people whose recommendations I like to follow would encourage me to be on WeChat
Stickiness	Moon and Kim (2001)	(S1) I will use WeChat on a regular basis in the future
		(S2) I will frequently use WeChat in the future
		(S3) I will strongly recommend others to use WeChat

Table A1.

Source(s): Table by authors

Appendix 2

Variables		Target population* (%)	Sample (%)
Gender	Female	42.8	43.0
	Male	57.2	57.0
Age	18–30	48.4	57.2
	31–40	36.5	29.3
	>40	15.1	13.5
Education level	Primary (elementary/middle school)	n.a.	5.8
	Secondary (high school)	n.a.	3.9
	Upper and post-secondary education	n.a.	15.3
	Bachelor's (undergraduate)	n.a.	51.9
	Master's and/or doctorate	n.a.	23.1
WeChat usage	Less than 3 years	n.a.	8.3
	3–4 years	n.a.	23.1
	5–6 years	n.a.	34.1
	More than 6 years	n.a.	34.5

Table A2.
Demographic information on the population and sample

Note(s): *WalktheChat (2020)

Source(s): Table by authors

Appendix 3

Table A3. Cross-loadings of items

	Spatial presence	Social presence	Flow	Utilitarian value	Hedonic value	Cognitive engagement	Affective engagement	Behavioural engagement	Social norms	Stickiness
SP1	*0.819*	0.455	0.400	0.281	0.284	0.227	0.300	0.299	0.303	0.254
SP2	*0.883*	0.493	0.399	0.271	0.271	0.216	0.345	0.337	0.306	0.245
SP3	*0.908*	0.515	0.419	0.270	0.254	0.198	0.318	0.324	0.293	0.249
SP4	*0.914*	0.531	0.444	0.280	0.296	0.215	0.356	0.353	0.294	0.272
SP5	*0.891*	0.582	0.458	0.328	0.348	0.275	0.389	0.389	0.334	0.311
SP6	*0.846*	0.514	0.373	0.256	0.293	0.179	0.316	0.327	0.281	0.217
SOP1	0.536	*0.892*	0.492	0.381	0.415	0.369	0.394	0.395	0.363	0.342
SOP2	0.541	*0.921*	0.503	0.382	0.403	0.378	0.401	0.426	0.376	0.350
SOP3	0.527	*0.914*	0.471	0.398	0.408	0.362	0.387	0.398	0.380	0.355
F1	0.410	0.482	*0.922*	0.539	0.535	0.505	0.509	0.485	0.448	0.440
F2	0.423	0.489	*0.912*	0.500	0.501	0.447	0.486	0.484	0.447	0.452
F3	0.470	0.507	*0.917*	0.516	0.536	0.482	0.505	0.501	0.471	0.430
UV1	0.359	0.413	0.475	*0.704*	0.630	0.608	0.522	0.496	0.545	0.511
UV2	0.263	0.367	0.464	*0.828*	0.626	0.605	0.572	0.504	0.505	0.548
UV3	0.270	0.343	0.441	*0.815*	0.620	0.585	0.544	0.515	0.508	0.482
UV4	0.226	0.327	0.465	*0.830*	0.587	0.595	0.495	0.492	0.460	0.519
UV5	0.255	0.343	0.480	*0.865*	0.622	0.599	0.547	0.521	0.498	0.521
UV6	0.294	0.331	0.442	*0.734*	0.568	0.462	0.519	0.511	0.524	0.421
UV7	0.227	0.283	0.397	*0.732*	0.496	0.498	0.454	0.451	0.432	0.453
UV8	0.184	0.276	0.423	*0.789*	0.535	0.548	0.496	0.500	0.454	0.488
UV9	0.191	0.331	0.430	*0.821*	0.579	0.608	0.525	0.512	0.517	0.508
HV1	0.208	0.364	0.465	0.648	*0.887*	0.719	0.583	0.561	0.541	0.595
HV2	0.227	0.390	0.487	0.670	*0.903*	0.712	0.613	0.585	0.559	0.600
HV3	0.293	0.394	0.527	0.677	*0.904*	0.658	0.606	0.573	0.563	0.567
HV4	0.422	0.395	0.483	0.542	*0.728*	0.428	0.571	0.532	0.477	0.403
CE1	0.218	0.334	0.465	0.614	0.640	*0.898*	0.494	0.472	0.482	0.578
CE2	0.166	0.351	0.450	0.635	0.635	*0.876*	0.533	0.489	0.507	0.574
CE3	0.257	0.391	0.467	0.637	0.671	*0.899*	0.576	0.531	0.561	0.555
CE4	0.243	0.373	0.464	0.655	0.677	*0.916*	0.564	0.523	0.530	0.576
CE5	0.232	0.378	0.497	0.689	0.689	*0.905*	0.561	0.520	0.532	0.594
AE1	0.356	0.403	0.506	0.607	0.643	0.572	*0.925*	0.783	0.607	0.682

(*continued*)

Table A3.

	Spatial presence	Social presence	Flow	Utilitarian value	Hedonic value	Cognitive engagement	Affective engagement	Behavioural engagement	Social norms	Stickiness
AE2	0.351	0.416	0.510	0.624	0.650	0.575	*0.933*	0.770	0.579	0.685
AE3	0.344	0.397	0.509	0.616	0.645	0.570	*0.930*	0.775	0.605	0.654
AE4	0.368	0.381	0.485	0.577	0.610	0.520	*0.895*	0.796	0.601	0.616
BE1	0.369	0.345	0.442	0.487	0.548	0.438	0.707	*0.834*	0.537	0.521
BE2	0.367	0.385	0.463	0.530	0.572	0.458	0.750	*0.876*	0.564	0.595
BE3	0.323	0.418	0.476	0.580	0.563	0.492	0.735	*0.883*	0.568	0.658
BE4	0.325	0.365	0.437	0.530	0.551	0.469	0.717	*0.869*	0.546	0.587
BE5	0.282	0.408	0.462	0.570	0.570	0.552	0.701	*0.812*	0.544	0.669
BE6	0.321	0.374	0.465	0.551	0.568	0.489	0.746	*0.863*	0.519	0.622
SN1	0.316	0.337	0.449	0.554	0.518	0.494	0.546	0.549	*0.855*	0.510
SN2	0.307	0.378	0.481	0.582	0.579	0.546	0.597	0.599	*0.934*	0.574
SN3	0.306	0.391	0.441	0.577	0.590	0.545	0.603	0.579	*0.933*	0.553
SN4	0.333	0.397	0.451	0.580	0.599	0.546	0.631	0.611	*0.940*	0.577
S1	0.241	0.310	0.386	0.496	0.479	0.529	0.562	0.575	0.464	*0.849*
S2	0.196	0.307	0.390	0.537	0.546	0.593	0.568	0.564	0.470	*0.863*
S3	0.312	0.367	0.456	0.576	0.600	0.533	0.702	0.685	0.608	*0.868*

Source(s): Table by authors

Appendix 4

	Spatial presence	Social presence	Flow	Utilitarian value	Hedonic value	Cognitive engagement	Affective engagement	Behavioural engagement	Social norms	Stickiness
Spatial presence	*0.877*	*0.641*	*0.513*	*0.342*	*0.370*	*0.264*	*0.409*	*0.414*	*0.367*	*0.329*
Social presence	0.588	*0.909*	*0.597*	*0.465*	*0.509*	*0.443*	*0.473*	*0.490*	*0.448*	*0.443*
Flow	0.474	0.537	*0.917*	*0.616*	*0.643*	*0.565*	*0.591*	*0.583*	*0.540*	*0.552*
Utilitarian value	0.321	0.425	0.565	*0.792*	*0.820*	*0.768*	*0.704*	*0.682*	*0.671*	*0.712*
Hedonic value	0.332	0.449	0.572	0.742	*0.858*	*0.809*	*0.763*	*0.729*	*0.689*	*0.738*
Cognitive engagement	0.249	0.407	0.522	0.719	0.738	*0.899*	*0.645*	*0.604*	*0.619*	*0.728*
Affective engagement	0.385	0.433	0.546	0.658	0.692	0.608	*0.921*	*0.801*	*0.692*	*0.805*
Behavioural engagement	0.386	0.447	0.534	0.633	0.656	0.565	0.848	*0.857*	*0.685*	*0.806*
Social norms	0.344	0.410	0.497	0.625	0.625	0.582	0.649	0.638	*0.917*	*0.680*
Stickiness	0.294	0.384	0.480	0.626	0.634	0.640	0.716	0.712	0.605	*0.860*

Note(s): *In italic underlined, HTMT values; in italics, square root of the AVEs; below the matrix diagonal, correlations between the dimensions
Source(s): Table by authors

Table A4. Discriminant validity analysis*

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