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The Brand-Consumer Metaverse Exchange Framework.

A dynamic understanding of the metaverse experience through self-concept, experience and engagement.

Abstract

Understanding the intricacies of brand-consumer interactions within virtual spaces becomes crucial as the metaverse evolves. Despite their significance in consumer behaviour, the literature on these virtual relationships still needs comprehensive examination. Through an in-field experiment, we surveyed 378 participants engaging with a branded virtual environment. Grounded in Self-Concept, Brand Experience and Consumer Engagement theories, we identify and validate five novel metaverse constructs of brand-consumer virtual interactions via Exploratory Factor Analysis (EFA) on SPSS, 29. We then develop the Brand-Consumer Metaverse Exchange (BCME) model, implementing the resulting scales. Model verification involved Confirmatory Factor Analysis (CFA) and testing eighteen hypotheses through Structural Equation Modelling (SEM) and Mediation/Moderation analysis on AMOS, 23. Findings indicate significant impacts of Passive Brand Experience (MPBE), Consumer Individualism and Self (MIS) and Ideal Self-Concept (ISELF) on Metaverse Brand Experience (MBE), with Consumer Innovativeness (MCIN) acting as a critical mediator in the model.

Keywords

Metaverse, Brand Experience, Self, Consumer Individualism, Consumer Innovativeness, Brand-Consumer Exchange Model.

1. Introduction

The metaverse represents a collectively owned and shared realm encompassing augmented physical and virtual realities. It consists of immersive, three-dimensional environments where individuals engage with each other through avatars (Davis et al., 2009; Ning et al., 2023). This digital landscape facilitates interactions, enabling users to navigate virtual worlds and express

their identities, forging social bonds with distinct meanings (Haidi et al., 2024; Dwivedi et al., 2023).

Coined by Neal Stephenson in 1992, the metaverse transcends geographical and temporal constraints, evolving into a phenomenon increasingly popular across various demographics and industries (Kim, 2021; Ball, 2022; Google Trends, n.d.). Rapid technological and changing societal norms are expected to transform brand management by enabling corporations to craft personalised experiences that enhance consumer interactions and engagement (Kulkarni et al., 2023). This novel channel is revolutionising virtual business models by generating consumer value through immersive connections and tailored interactions (Dwivedi et al., 2022). By leveraging the metaverse, brands create personalised, immersive events, forging meaningful relationships (Periyasami & Periyasamy, 2022). Virtual places are essential for enhancing consumer engagement and satisfaction, enabling brands to create tailored experiences and stronger connections (Bousba & Arya, 2022; Yoo et al., 2023). This shift empowers brands to engage with consumers on more experiential, identity-driven levels, for highly resonant encounters (El Kamel, 2014).

However, as metaverse users progressively face inconsistencies in their brand interactions, addressing these challenges becomes important for enduring strategic success of new technology adoption (Vidal-Tomás, 2023; Gupta et al., 2024). **To overcome these issues, it is essential for brands to embrace the complexities of identity expression, self-misrepresentation, and interaction, finding a balance between users' real and aspirational identities to ensure authentic representation (Dwivedi et al., 2023; Pyae et al., 2023).**

Traditional brand-consumer interactions have typically been analysed through physical, two-dimensional lenses, but virtual realms have blurred these boundaries (Kulkarni et al., 2023; Choi, 2022). As the immersive experiential value of consumer behaviour gains relevance, brands must adjust their strategies to create experiences that resonate with consumer values (Wongkitrungrueng & Suprawan, 2023). Despite the increasing role of brand management in the metaverse, existing literature predominantly focus on conventional interactions (Alvarez et al., 2023), often overlooking the unique mechanisms introduced by these new spaces. Prior research points out metaverse potential to enhance consumer experiences and brand relationships (Delgado, 2022; Pyae et al., 2023), while recognizing its transformative impact on consumer behaviour (Han et al., 2022; Shen et

al., 2021). Nevertheless, much of the focus remains on specific elements such as technological infrastructures (Bilgihan et al., 2024), social presence (Agnihotri et al., 2024), and stages of consumer interaction (Kaur et al., 2024). These contributions often underperform in fully exploring the broader psychological dimensions of Engagement, Experience, and Self, to understand the full spectrum of metaverse interactions (Alvarez et al., 2023). We address this gap by pursuing two main objectives: (1) identify the critical drivers influencing virtual brand-consumer interactions, operationalised through Self, Experience and Engagement; (2) develop a comprehensive model that integrates these domains.

The study is structured in two phases: In Phase One, we operationalise brand-consumer interactions, through an experiment in Decentraland with 378 participants engaging with a virtual branch on JPMorgan Onyx and define measurable constructs through an EFA. Phase Two involves conceptualising an integrated model based on factors from Phase One. Eighteen hypotheses are tested and validated through CFA, with further assessments conducted using SEM and Moderation-Mediation via IBM SPSS, 29 and Amos, 23. This two-phased approach provides a robust theoretical foundation for understanding metaverse brand-consumer interactions. The study develops the BCME model based on the idea of "emotional amplifier places," where interactive cues enhance emotional responses. This model extends research beyond traditional digital or physical places, posing the metaverse as a facilitator in deepening psychological connections where innovativeness is a key mediator.

2. Theoretical background

2.1. Metaverse as a distinct brand-consumer environment

The metaverse has evolved as a unique and innovative space in consumer behaviour, offering immersive, real-time interactions that transcend traditional boundaries (Voinea et al., 2022). It enables individuals to connect, socialise, engage with brands, and experience vibrant environments, overcoming physical and temporal constraints (Lyu, 2023). Dissimilar from traditional digital platforms, the metaverse represents a paradigm shift in brand-consumer exchanges, allowing companies to create unique experiences

where consumers actively explore virtual worlds (Koohang et al., 2023). Scholars view the metaverse as a key tool for investigating consumer behaviour, driven by the immersive possibilities for virtual settings (Parise et al., 2016). Its potential for diversification enables businesses to expand their customer journey into new domains and touchpoints (Barnes et al., 2015), especially in areas like services, virtual real estate, and entertainment (Goel & Prokopec, 2009).

Virtual environments have been instrumental in implementing brand strategies targeting cognitive processes, such as brand recall, recognition, and attitudes (Dardis et al., 2015). They facilitate brand-consumer interactions offering highly engaging experiences (Jin & Lee, 2010) through vivid, sensory-rich events (Dobrowolski et al., 2014). Researchers have also highlighted the metaverse impact on users' interactions, attitudes, and behaviours (Jin, 2010; Singh et al., 2015), in addition to the emerging role of brands in enhancing consumer experiences and virtual connections (Delgado, 2022). However, several critical areas of the metaverse remain underexplored, particularly the influence of consumer psychology on brand-consumer interactions (Alvarez et al., 2023). Given the metaverse unique nature, research into its brand-consumer processes is pivotal to improve our comprehension of these interactions. Our exploratory model focuses on three main dimensions: (1) Self, (2) Experience, and (3) Engagement (Figure 1), identifying relevant subdomains and testing constructs from existing literature within the novel metaverse environment.

2.2. Self-concept theory

We investigate metaverse brand-consumer interactions through the lens of self-concept theory as our first dimension for operationalisation. Self-concept comprises the overall ideas and feelings individuals have about themselves (Rosenberg, 1979), often influenced by key elements of their perceived surroundings (Reed, 2002). One of the pioneers in "Self" philosophy, James (1890), introduced a crucial contrast between the "Self" as a knower (I) and as known (me), delineating the coexistence of two distinct aspects of the personality and expanding the notion of "Self". This distinction highlights individuals' emotional attachment to external factors (e.g., notoriety, reputation, physical products) embedding the "Self" in consumer behaviour via product symbolism (Levy, 1959). It defines consumers' interactions

with the environment and their overall sense of “Self”. Within self-concept theory, consumers are seen as capable of creating their identities through product choices, brand selections or consumption patterns. Levy and Gardner (1955) discuss the link between self-theory and behaviour, arguing that people use brands to express and define their personality.

The behaviourist orientation suggest that self-concept depends on external factors and experiences, influencing consumers' actions toward brands, in specific situations (Mittal, 2015). The concept of situational self-image, introduced by Schenk and Holman (1980), argues that one's definition of Self includes attitudes and perceptions defined by desired circumstances. In this context, “Self” affects consumers’ perceptions and feelings toward a specific brand in specific situations (Graeff, 1996). These findings align with the self-congruity idea, which explains how consumers evaluate a product by comparing its depiction to their idea of “Self” (Sirgy, 1982). Consumers' self-concepts, like those of companies, can help infer brand preferences (De Chernatonyi & De Mello, 1995). **The stronger the personal self-connection to the brand, the more it symbolises an integral part of self-identity rather than merely a good or service (Aaker et al., 2004).** Meaningful insights can be gained by investigating self-concept in the context of customer decisions within symbolic meanings frameworks across different brands (Jamal & Goode, 2001). **Therefore, the self-concept domain is essential for comprehending how users validate their perceptions of themselves when engaging with a brand in the metaverse unique setting.**

2.2.1. Actual Self-Concept vs Ideal Self-Concept

Scholars distinguish **two types of self-concept: actual and ideal**. The former is based on an individual's realistic appraisal of themselves, whereas the latter reflects how they would prefer to be perceived by others (Malär et al., 2011). Consumer behaviour has been extensively examined in relation to self-concept across various research scenarios, including brand choice, loyalty, and product evaluations. Graeff (1996) suggests that **the alignment between** brand image and self-image influences product assessments, with congruence being essential for brand preference. When a consumer’s self-concept aligns with brand personality in social contexts, **it intensifies** the overall emotional attachment (Malär et al., 2011). This connection fosters customer loyalty toward authentic products (Kaufmann et al., 2016).

Specifically, **ideal self-congruity predicts repurchase intentions effectively** (Vigolo & Ugolini, 2016), acting as a significant mediator for behavioural intentions, especially in the service sector (Usakli & Baloglu, 2011). Since digital platforms **increasingly** facilitate brand-consumer interactions, self-concept assumes a key role, with brands often functioning as identity signals (Hollenbeck & Kaikati, 2012), defining the quality of consumer relationships (Kim & Kim, 2016). For instance, **bloggers with self-congruity exert more significant** influence over specific audiences (Wang et al., 2015), elucidating the intricate nature of identity in the metaverse (Saker & Frith, 2022).

In digital settings, avatars **allow** ideal self-expression, **directly affecting** purchasing behaviours (Holtzworth et al., 2023). Additionally, self-congruence **links strongly** to purchase intentions and brand attachment, emerging as a critical driver for consumer behaviour in virtual spaces (Park & Kim, 2023; Kim & Bae, 2023). **The amplification of digitalisation increases the importance of self-concept in market relationships** (Bartoli, 2022). Thus, understanding self-concept becomes critical for brands seeking to engage consumers meaningfully in physical and virtual environments. In this landscape, brands must prioritise authentic self-expressions and **deliver** personalised, value-driven experiences that resonate with consumers' identities.

2.2.2. Consumer Individualism

Individualism-collectivism is a cultural dimension reflecting how individuals **integrate** into social groups, **where identity stems from social structures rather than personality traits** (Hofstede, 1986; Hofstede et al., 2005). Membership in groups and emotional reliance are highly valued in this identity formation. A person's identity is generated within social structures where the emotional reliance on organisations **becomes** crucial (Hui, 1988). Individualistic people see themselves as unique and different, while collectivists **merge** their identity with group **membership** (Hampton & Varnum, 2020). **In virtual communities, participation patterns suggest how emotional connections to digital spaces define behaviours, such as acquiring virtual goods and services to enhance virtual personas (Geser (2007; Kalyvaki et al., 2023).** According to this approach, consumers' intentions to purchase metaverse content **are notably influenced by individualistic traits of Self** (Sung et al., 2023).

2.2.3. Consumer Innovativeness

Consumer innovativeness refers to the propensity to adopt new items faster than others (Midgley & Dowling, 1978), **while technological innovativeness indicates a likelihood to use technology-based systems** (Mathwick et al., 2010). Technological innovators perceive potential advantages, underestimate costs, and **trust** technical performances (Moore, 1999). **This trait influences consumer behaviour toward new products, brand extensions** (Klink & Athaide, 2010; Henry, 2008) **and high-tech products** (Truong et al., 2017). In virtual reality, **high technological innovativeness increases branded self-connection mediated by virtual reality technology** (Bogicevic et al., 2021). **In the metaverse, consumer innovativeness is an external factor influencing virtual world usage and purchase decisions** (Domina et al., 2012).

2.3. Experience

Metaverse platforms hold great potential for nurturing innovative experiences. When users encounter a variety of sensory-appealing stimuli, **they navigate virtual environments and enjoy engaging sensory events** (Xi et al., 2023). The core components of experiential settings enable exploration, interaction, and co-creation within this expansive virtual realm (Dwivedi et al., 2022). Advancements in virtual reality and augmented reality technologies **have enhanced** the depth and realism of these experiences, **allowing** users to transcend physical boundaries and participate in meaningful, innovative interactions (Dhar et al., 2021). As the metaverse evolves, it provides new channels for brands to deeply engage with customers, delivering a unique space for social and personal connections (Krishnamurthy & Trivedi, 2023). Consequently, we incorporate the experiential domain to investigate users' perceptions while attending a metaverse-branded event.

2.3.1. Brand Experience and Attitude

Brand experience is strategic for a deeper understanding of consumers' intentions and attitudes, framing their relationship with a brand as **a distinctive emotional and creative event** (Brakus et al., 2009; Ramaseshan & Stein, 2014). When consumers invest in experiences, they participate in unique events pre-designed by a company **to leave lasting impressions** (Pine & Gilmore, 1999). Brakus et al. (2009) highlight the rising importance of brand experiences **in**

creating pleasurable, meaningful, and memorable scenarios that lead to positive psychological outcomes. Scholars explored brand impressions across various experiential scenarios, revealing their potential to **elicit diverse feelings and attitudes** (Schmitt et al., 2015). Such connections enable brands to design unique events that enhance the relationship with consumers (Khan & Rahman, 2015). Promoting memorable experiences provides several rewards, including long-term competitive advantage and differentiation, favourable brand perceptions through customer value co-creation and an effective consumer journey (Kharat & Kharat, 2017; Yu & Yuan, 2019). **From a consumer viewpoint, experiences in the metaverse include benefits such as telepresence, immersion, and escapism, improving the favorability toward brands while enhancing connections and exchanges** (Melancon, 2011; Nah et al., 2011). In contrast, as individuals explore the metaverse, the attitude toward experience gains prominence. Attitudes **considered learned tendencies** to respond positively or adversely to certain items, persons, or events (Ajzen, 2018) **provide pivotal insights into virtual cognitive brand evaluations** (Alyahya & McLean, 2022).

2.4. Engagement

2.4.1. Brand image and attachment

Brand image and attachment **are essential for exploring the** consumer involvement with a business. Levy and Gardner (1955) consider brand image **a pivotal element** for brand identity, serving as a motivational driver for consumers. **Building on this, Park et al. (2010; 2013) conceptualise brand attachment as the strength of the connection between a brand and a consumer's self-perception. The alignment** between self-concept and brand personality delivers a stronger emotional bond, especially when the brand's promise is congruent with the consumer's ideal Self (Bartoli, 2022; Malär et al., 2011). **Indeed, positive perceptions of a brand improve the levels of satisfaction, trust, and perceived quality** (Diputra & Yasa, 2021; Hapsoro & Hafidh, 2018). **This synergy between brand engagement and attachment evokes better involvement in virtual contexts, enabling impactful consumer experiences** (Barreda et al., 2020).

2.4.2. Word-Of-Mouth and Engagement

New social participation patterns emerge in virtual settings, with consumers connecting in sharing brand recommendations and experiences (Dawson, 2022). Word-of-mouth marketing, **considered as the process of individuals disseminating** information, opinions, and experiences about a product, service, or company (Sweeney et al., 2012), **is among the most influential** forms of marketing due to its perceived credibility (Chevalier & Mayzlin, 2006). In addition, consumer engagement is key in improving active connections with brands, shifting consumers from passive recipients to active members of marketing communications (Brodie et al., 2013). Engagement boosts the sense of community and belonging, **leading to improved levels of perceived experience and connections between businesses and consumers** (Yoon et al., 2014). In the metaverse, it becomes even more essential since immersive settings enable an active user participation and create brand narratives, expanding the emotional facets of experience (Cheung et al., 2024). **Incorporating** engagement as the third layer of our study **allows for a closer examination of brand-user metaverse interactions, thereby enhancing our understanding of customer motivations in leading metaverse** advocacy.

2.5. Integrating consumer dimensions for a novel brand-consumer interaction model

To effectively capture brand-consumer interactions in the metaverse, we operationalise the dynamic under three interconnected domains: Self, Experience and Engagement.

The “Self” dimension explores a consumer’s internal identity formation, critical for understanding behavioural interactions (Rosenberg, 1979; Singh, 2016). In virtual environments, this dimension embeds identity manifestation through personalised avatars, acting as visual depictions of self-perception. These avatars have an essential role in enabling brand connections in immersive, symbolic spaces (Dwivedi et al., 2022). Brands that align with a user's idealised self and avatar customisation choices (i.e., garments or expression gadgets) forge deeper emotional ties, eventually encouraging enduring relationships (Taylor et al., 2024; Kim et al., 2024).

The “Experience” dimension builds on this foundation since it explores how immersive branded features provide unique interaction opportunities (Chen et al., 2024). By leveraging identity expression and emotional engagement within these virtual spaces, brands cultivate stronger consumer relationships (Chen et al., 2024; Kulkarni et al., 2023).

“Engagement” emerges as the third key dimension since it entails the active user participation and emotional devotion in the virtual experience. This interplay between “Self”, “Experience” and “Engagement” becomes evident when self-expression via avatars, enhances immersive experience within branded spaces. The continuous interaction with these spaces, sustain long-term involvement and builds advocacy, showcasing the co-participatory nature of metaverse interactions (Bilgihan et al., 2024; Mogaji et al., 2023).

Integrating these dimensions allows for the development of the BCME model, highlighting how identity expression via active engagement, forms enduring connections. This approach underscores the transformative prospective of virtual settings in re-defining traditional brand relationships (Han et al., 2022; Shen et al., 2021). Therefore, we aim to investigate the key drivers of virtual interactions by utilizing a two-phase sequential empirical study approach. Phase One identifies the main factors of metaverse experience, with the resulting variables implemented to validate the final integrated model in Phase Two.

3.1. Phase 1

3.1.1 The experiment

A metaverse experiment was conducted on Decentraland (from November 2022 to September 2023), a virtual world based on the Ethereum blockchain, owned through NFTs and experienced through a community-created environment (Goanta, 2020). JPMorgan Onyx, developed in the Metajuku Decentraland shopping district (everyreal.com), one of the first global brands to establish a metaverse branch (Onyx from J.P. Morgan, 2022). First, the experiment involved researchers exploring a situational setting in J.P. Morgan branch by using avatars. Subsequently, they produced individual reports implemented to design the final experiment by creating a video tutorial to support participants during navigation (Figure 2, 3). Participants were provided with instructions on accessing the metaverse, including J.P. Morgan Onyx lounge and navigation modalities. After spending approximately 20 minutes visiting the branch, participants completed a questionnaire to measure their perceptions.

3.1.2. The questionnaire

A web-based survey was conducted involving a sample on Amazon Mechanical Turk (MTurk) with participants from the U.S. and Italy (Keith et al., 2017). **This approach was suitable as the experiment required participants from different countries who could easily follow instructions and access Decentraland.** The U.S. and Italy were purposefully chosen for their distinct market characteristics. The U.S. represents a technologically advanced and highly digitalised market, delivering leading trends in metaverse adoption (Dolata & Schwabe, 2023; Guo et al., 2024). Italy was selected due to its creativity-driven context in digital adoption (Venturini & Columbano, 2024; Matarazzo et al., 2021). This cross-country sample supports the need for a deeper exploration of virtual interactions and a nuanced understanding of diverse virtual experiences (Dwivedi et al., 2023). We employed a purposive sampling to ensure that participants met specific criteria, including (a) access to Decentraland, (b) follow instructions, (c) residence in Italy or U.S., and (d) **age range: 18-60 years.** This sample enabled a cross-country sample for gathering insights on behavioral patterns (Tongco, 2007; Nayeem, 2012). To mitigate social desirability biases, we reassured participants on anonymity and confidentiality, and utilized force-choice items in the self-administered survey (Nederhof, 1985). Several protocols for data quality were adopted such as attention checks, exclusion of inattentive responses, completion time monitoring (average time: 20 minutes). Additionally, MTurk ID verification was employed to track participants and prevent duplicate submissions, ensuring data integrity. We collected 382 responses, of which 378 were deemed valid.

The survey comprised ten latent variables with 46 items adapted from existing scales. The constructs were organised according to three operational dimensions. The “Self” including *actual self-congruence* (ASELF) and *ideal-self congruence* (ISELF), respectively, with two items (Malär et al., 2011b); *individualism-collectivism* (INDIV) with six items from Chan et al. (2010) and *consumer innovativeness* (CINN) with seven items (Mathwick et al., 2010; Parasuraman, 2000). The “Experience” involved *brand experience* (BEXP) with twelve items across four domains: *sensory*, *affective*, *behavioural*, and *intellectual* (Brakus et al., 2009) and *attitude toward experience* (ATTEXP) with four items (Chun et al., 2017). For “Engagement”, we employed: *brand image* (BIM) with three items (Kim & Chao, 2019), *brand attachment* (BATT) with three items (Malär et al. (2011a); *consumer engagement* (CEN) with four items (Kumar & Pansari, 2016) and *word-of-mouth* (WOM) with three items (Zeithaml et al., 1996). We used a five-point Likert format, for distributional balance and self-generated validity, and

adapted items to the study context. Lastly, we gathered data on *metaverse awareness*, *experience evaluation*, *encounters with other avatars*, and *demographics* to understand the sample comprehensively.

3.1.3. The sample

The sample consisted of 378 responses (Table 1), with 48% males and 52% females. Age groups were categorised into three cohorts: 18-27 years (88%), 27-42 (11%), and 42-58 (1%), predominantly representing Gen Z. Education levels included Middle School (1%), High School (21.5%), Graduate (73.5%) and Master's/PhD (4%) indicating high educational attainment. The sample was uniformly distributed between U.S. (56%) and Italy (44%). Finally, 90% of the sample was aware of the metaverse, with 64% reporting a positive experience, 27% neutral and 9% negative, reflecting a generally positive attitude.

3.1.4. Exploratory Factor Analysis

Before developing the theoretical model, we conducted an Exploratory Factor analysis (EFA) on IBM SPSS, 29 (Fabrigar & Wegener, 2012), essential to evaluate the constructs' validity, confirm their structure, and examine the correlations between items to avoid collinearity, thus test hypotheses. This was necessary as our study context differs significantly from the original settings in which the scales were developed (Tabachnick et al., 2013). The Principal Components with Varimax rotation choice was implemented, and sampling adequacy was confirmed from the KMO (.956 > .60) and Barlett's test of sphericity ($p = .000$) (Taherdoost et al., 2022; Netemeyer et al., 2003) (Table 2a). We excluded items with commonalities or factor loadings below .50, as well as those with cross-loadings (Table 2b) (Comrey & Lee, 1992). Based on five factors, the solution was structured on thirty final items explaining 68.399% of the total model variance, indicating strong factor validity. The emerging factors were labelled and tested for reliability, with Cronbach's alpha values exceeding 0.7, confirming internal consistency (Pallant, 2011) (Table 3).

3.1.5. Discussion

Factor one, *Metaverse Brand Exchange (MBE)*, comprises nineteen items across six parcels, implemented to enhance model convergence and internal consistency (Plummer, 2000).

MBE reflects the vibrant spectrum of brand-consumer interactions during the user virtual exposure. It highlights emotional engagement, enjoyment, and perceived brand quality as key assets for understanding brand-consumer exchange in the metaverse. MBE aligns with previous studies on sensory and emotional bonds in affecting brand attachment (Heinonen, 2018; Van der Westhuizen, 2018). In contrast to traditional research that focuses on online involvement, we argue that the metaverse offers a unique setting for empowering interactions. In this virtual arena, users' sensory impressions and emotional connections are amplified through stronger emotional ties, supporting findings from Haumer et al. (2020) and Tan et al. (2022). This factor suggests the role of social connections in building advocacy and disseminating branded experiences driven by passion, and attractiveness, essential for virtual interactions (Fournier et al., 2008). This factor supports the understanding of brand image through consumer feedback as it reflects a user's tendency to share virtual experiences building social influence. This aligns with Wong (2023), who highlights the importance of shared experiences in nurturing brand communities.

Factor two, *Metaverse Passive Brand Experience (MPBE)*, includes four items mirroring a disengaged and uninvolved interaction with the brand, characterised by minimal emotion, sensory stimulation, action, or reflection. Respondents scoring high with MPBE emphasise an absence of emotional connection, sensory stimuli, and cognitive engagement. **This supports previous research (Nadeem et al., 2021), in highlighting the pivotal role of sensory and emotional factors for building functional connections. Additionally, Oh et al. (2023) consider self-expression as a major factor in metaverse user satisfaction. Building on this, we suggest that a lack of engaging interaction tends to amplify in virtual settings the degradation of satisfaction and connection, eventually rendering the experience more passive.**

Factor three, *metaverse individualism and Self (MIS)* includes nine items and explores how a brand self-concept influences users' identities, showing their distinct values and beliefs. **It also examines how consumers define virtual individuality through brand personality and self-expressions.** This factor underscores the role of personal identity in determining brand interactions, especially as users seek experiences with innovative perspectives in the metaverse (Kang et al., 2023). **We propose that immersive, identity-reinforcing experiences are**

necessary to prevent detachment, in contrast to previous research (Cho et al., 2013; Chan et al., 2013), which stresses more external attributes in promoting engagement.

Factor four, *Ideal Self-Concept* (ISELF), includes two items capturing how users **perceive the alignment: brand personality and ideal self-image**. It evaluates whether the brand reflects users' aspirations, with higher scores indicating a solid coherence between brand identity and desired self-concept, confirming findings from Malär et al. (2011).

Different from prior studies, which focus on mere brand attachment (Diputra & Yasa, 2021; Hapsoro & Hafidh, 2018), we underline the importance of brands to affect self-aspirations in virtual settings, establishing a sense of identity gratification.

Factor five, *Metaverse Consumer Innovativeness* (MCIN), has five items revealing a person's tendency to engage with new technologies. Individuals scoring high in this factor have strong adaptability and enthusiasm for **embracing innovative tools** and environments. **Although Ruvio (2008) and Chan et al. (2013) claim for the wider societal impact of creative consumers in embracing new technologies, our research indicates that in the metaverse, this inventiveness is more directed to encourage identity-driven engagement across immersive explorations.**

3.2. Phase 2

3.2.1. Theoretical conceptualisation of the model

Building on existing literature, we identify the primary drivers of virtual brand-consumer experience. By leveraging the five principal domains derived from Phase 1, we propose a conceptual framework for an integrated model of Brand-Consumer Metaverse Exchange (BCME) (see Figure 4) based on the following hypotheses.

First, a negative consumer perception during a branded event is likely to reduce engagement propensity and diminish the quality of sensory and emotional involvement, essential for brand-consumer connections over time (Heinonen, 2018; Van der Westhuizen, 2018; Nadeem et al., 2021). When brand interactions lack inspiration, consumers struggle to establish positive emotional attachments, impacting the quality of future interactions (Fournier et al., 2008). In addition, a poor experience can evoke negative emotions such as dissatisfaction, which may shade the positive brand attributes (Bougie et al., 2003). This emotional imbalance highlights how passive encounters disrupt the relationship with consumers, hindering successful strategies

(Khatoon & Rehman, 2021). Such experiences discourage proactive behaviours as they lead to unsatisfactory emotional interactions (Haase et al., 2018). However, innovative users go from passive to active involvement, reducing the harmful effects of apathetic interactions by creatively transforming low-appealing experiences into worthwhile opportunities for learning (Mahardika et al., 2019; Smith & Chen, 2018). They adopt a co-development role, turning interactions into significant value-driven events (Jeppesen & Molin, 2003). Thus:

H1. MPBE negatively impacts MBE.

H4. MPBE significantly impacts MCIN.

Second, users' individualistic traits enhance engaging propensity with brands as they seek experiences that validate unique identities and preferences (Cho et al., 2013). Individualistic users pursue interactions that support their need for distinction, especially in virtual environments where they can explore personalised events (Cho et al., 2013; Barnes & Pressey, 2011). The focus on identity-affirming can elevate the degree of brand involvement and exchange, increasing the depth of brand-consumer relationships (Han et al., 2017). Thus, the alignment between brand values and consumers' desires for self-expression suggests that individualistic interrelations positively influence the overall experience (De Vries et al., 2017). Moreover, consumers with a strong sense of individuality actively seek unique experiences that reflect their self-perception, boosting their inventive tendencies as they pursue unique self-expressive interactions (Chan et al., 2013; Ruvio, 2008; Orth & Rose, 2017). Individualistic, tech-savvy customers are more inclined to explore novel facets of metaverse brands (Mahardika et al., 2019) as they value distinctive, identity-reinforcing experiences that match with individual traits. Hence:

H2. MIS positively impacts MBE.

H5. MIS positively impacts MCIN.

Third, a strong coherence between a brand personality and a consumer ideal-self boosts attraction and exchange (Dessart et al., 2015). This connection expresses the embodiment of aspirational attributes that users aspire to, serving as a projection of their idealised selves (Tsai et al., 2015). When brand image includes users' ideal values, this can influence behaviours and motivations (Kim & Hyun, 2016), reinforcing deeper connections through self-congruence (Hosany & Martin, 2012). Additionally, when customers relate to a brand on this ideal level,

they are encouraged to explore inventive potentials that contribute to bridging the gap between the real and actual self (Malär et al., 2011). This alignment encourages the adoption of technologies that reflect desired qualities as consumers seek experiences that resonate with their expected values (Santos et al., 2022; Roehrich, 2004; Smith & Chen, 2018). We suggest that:

H3. ISELF positively impacts MBE.

H6. ISELF positively impacts MCIN.

Fourth, **individuals with a high level of innovativeness are proactive in seeking novel brand experiences, forming stronger brand relationships** (Gerrath & Biraglia, 2021; McDonald & Alpert, 2007). **This tendency promotes sensory attraction when exploring creative events in virtual settings** (Dobrowolski et al., 2014; Xi et al., 2023) and contributes to shaping brand identities through social participation and sharing (Roberts et al., 2013). **Whereas unreceptive virtual encounters can lead to disengagement** (Mahardika et al., 2019; Smith & Chen, 2018), **innovative users transform these poor interactions into engaging events through deeper, active explorations** (Chan et al., 2013; Ruvio, 2008). **Additionally, the alignment between users' aspirational self-image and brand values increases involvement and supports emotional connections** (Hollenbeck & Kaikati, 2012). **Consequently, this alignment boosts the likelihood to interact in immersive settings, thanks to strong** emotional ties (Santos et al., 2022). Hence:

H7. MCIN positively affects MBE.

H10-11-12. MCIN is a significant mediator for MPBE-MBE, MIS-MBE and ISELF-MBE.

Fifth, **generational differences affect behavioural patterns and expectations, with unique values** (Solomon, 2020) offering key motivations for understanding cohort disparities in the metaverse (Thangavel et al., 2022). **Different age groups exhibit distinct patterns in technology adoption and engagement, influencing brand interactions** (Calvo-Porrà & Pesqueira-Sanchez, 2020). **Similarly, cultural factors influence behavioural models as virtual brand encounters differ across countries due to diverse expectations and interactions with technology** (Nayeem, 2012; Nam & Kannan, 2020).

These variations suggest that age and country of residence can mitigate the relationship between consumer experiences and interactive expectations in virtual environments (Constantinides et al., 2010). Thus:

H8. AGE positively impacts MBE.

H9. COU positively impacts MBE.

H13-14-15. AGE is a significant moderator for MPBE-MBE, MIS-MBE, and ISELF-MBE.

H16-17-18. COU is a significant moderator for MPBE-MBE, MIS-MBE, and ISELF-MBE.

3.2.2. Confirmatory factor analysis

The structural validity of the model was evaluated through a confirmatory factor analysis (CFA) in IBM AMOS, 23 (Harrington, 2009). The main objective was to verify and **validate the resulting latent variables. Discriminant validity, convergent validity, and reliability were evaluated (Figure 5, Table 4a, 4b). Results from CFA evidenced the model's good fit statistics, including CMIN/DF: 2.623, RMSEA: .066, CFI: .956 and RMR: .044 (Hu & Bentler, 1999; Browne & Cudeck, 1992). All items achieved standardised factor loadings above .60 with AVE (Average Variance Extracted) exceeding .50, confirming convergent validity (Hair et al., 2017). Additionally, Maximum Shared Variance (MSV) was lower than the respective AVE for all variables. Cronbach Alpha and composite reliability scores exceeded .70, indicating strong reliability. Inter-variable correlations, shown alongside the square root of AVE values (in bold, Table 5), demonstrated excellent discriminant validity for all factors (Fornell & Larcker, 1981).**

3.2.3. Path analysis

To test the relationship between MPBE, MIS, ISELF and MBE, we utilised the structural equation modelling (SEM) through AMOS, 23 path analysis by imputing factor scores from CFA. As part of the hypotheses, we tested MCIN as a mediator and AGE and COU as moderators (Figure 6). Results evidenced a good model fit with RMR: .004; GFI: .998; CFI: .999; RMSEA: .042. Findings indicate that MPBE is negatively and significantly associated with MBE ($\beta = -.141$, $p < .001$), MIS ($\beta = .157$, $p < .05$), and ISELF ($\beta = .205$, $p < .001$) positively and significantly impacts MBE. Additionally, MPBE reveals a negative and significant influence on MCIN ($\beta = -.169$, $p < .001$); MIS ($\beta = .715$, $p < .001$) and ISELF ($\beta = .311$, $p < .001$) evidence a significant positive impact on MCIN. Also, MCIN indicates a significant positive effect on

MBE ($\beta=.744$, $p<.001$). Lastly, Age ($\beta=-.096$, $p=.091$) is not a significant driver for MBE while COU ($\beta=.017$, $p=.743$) suggests a positive and insignificant effect. Based on these findings we accept H1, H2, H3, H4, H5, H6, H7, and reject H8, H9.

3.2.4. Mediation analysis

The mediation analysis, utilising the classical approach (Baron & Kenny, 1986), with 500 bootstrap samples and a bias-corrected 90% confidence interval, reveals significant indirect effects (Table 7). Specifically, MCIN emerges as a partial-negative mediator for the relationship MPBE-MBE ($\beta=-.126$, $p<.001$) and a partial-positive mediator for the relationship of MIS ($\beta=.532$, $p<.001$) and ISELF ($\beta=.231$, $p<.001$) with MBE. Therefore, we accept H10, H11 and H12.

3.2.5. Moderation analysis

The moderation analysis, following Hayes's (2017) approach, tested the interaction effects of control variables on the model. Results from the moderation test (Table 8) indicate that AGE interactions with MPBE ($\beta=.005$ $p=.889$), MIS ($\beta=-.025$ $p=.380$), and ISELF ($\beta=.071$ $p=.380$) are not significant for MBE. Similarly, COU interactions with MPBE ($\beta=-.094$ $p=.013$), MIS ($\beta=-.030$ $p=.635$) and ISELF ($\beta=.069$ $p=.187$) are also not significant moderators. Therefore H13, H14, H15, H16, H17 and H18 are all rejected.

3.2.6. Discussion

Findings support the core hypotheses presented, revealing significant relationships between the independent variables (MPBE, MIS, ISELF) and MBE.

First, the results confirm the negative impact of MPBE on MBE, suggesting how unfavorable or unsatisfying experiences with virtual brands significantly diminish consumer's willingness to engage. This insight extends the work of Vidal-Tomás (2023) and Gupta et al. (2024) emphasising the persistent inconsistency in virtual experiences adoption. Interestingly, because users have higher expectations for immersion and involvement, minor flaws in the metaverse setting may have a disproportionate impact on their impressions, aligning with Xi et al. (2023).

Additionally, our findings reaffirm those of Heinonen (2018) and Van der Westhuizen (2018) on the importance of high-quality sensory and emotional encounters as key to

shaping solid and long-lasting relationships. Even if previous research (e.g., Prentice et al., 2019; Loureiro et al., 2012; Ding et al., 2015) discusses how uninspiring interactions inhibit emotional attachment, our findings emphasise the higher inhibitory risk that brands need to face in the metaverse. In this case, the immersive and interactive potential raises the expectations for emotional and sensory engagement, where poor experiences severely undermine the development of enduring connections. Further supporting this need, our results align with Prentice et al. (2019), Loureiro et al. (2012) and Ding et al. (2015), who demonstrate how uninspiring interactions can reduce emotional attachment, ultimately decreasing constancy. However, when contextualised in virtual settings, we argue that the inadequate experiences are amplified due to the metaverse peculiarities (Xi et al., 2023). Here, neglecting the quality of user experience, especially in terms of emotional and sensory dimensions, becomes critical as it may jeopardise the consumer journey.

Furthermore, the positive effects of ISELF on MBE support the idea that consumers value personal associations with virtual brands that prioritise individualised experiences over group well-being (Akin, 2011). This finding is consistent with Kim and Hyun (2016) and Hosany and Martin (2012) since the balance of brand image and ideal self can effectively influence behaviours, enabling personal expressions through brand values. However, our study indicates that virtual consumers not only align with brands that represent their aspirational selves but also seek elements related to their actual selves, extending prior models of self-congruence (Kressmann et al., 2006). **In contrast to Hadi et al. (2024), who stress the importance of real identity traits in conveying authenticity, our results demonstrate how brand personality alignment improves the experience and increases hedonistic satisfaction, supporting brand identity as a means of self-expression.**

Third, the positive effects of MIS on MBE support previous studies affirming that consumers with individualistic features interact with brands more efficiently, looking for experiences that validate their distinct identities, preferring tailored interactions (Cho et al., 2013). Nevertheless, findings go beyond earlier research by showing that although individuality increases participation, it also calls for a careful balance for shared values to **enhance the relational bond** (De Vries et al., 2017).

Finally, the mediating influence of consumer innovativeness (MCIN) **affirms the proactive efforts of creative users in the metaverse.** While prior studies suggest that passive interactions risk disengagement (Mahardika et al., 2019; Smith & Chen, 2018), our findings

show that innovative consumers actively pursue interactive experiences to mitigate **discontent**, aligning with Chan et al. (2013). This indicates that exploiting new technologies increases positive engagement especially among tech-savvy users (aligning with Xi et al., 2023).

4. Conclusions

4.1. Theoretical Implications

The study introduces the **Brand-Consumer Metaverse Exchange (BCME)** model, based on five subdomains (MPBE, MIS, ISELF, MCIN, and MPBE). It broadens the theoretical exploration beyond two-dimensional digital or physical places by arguing that immersive settings stimulate virtual psychological connections.

Our research extends the understanding of sensory engagement and emotional connections by contextualising unique motivational behaviours. Whereas prior studies (e.g., Lashkova et al., 2020; Ghali et al., 2024) emphasise the role of emotions in interactions, we highlight the need to include cognitive and sensory assets in brand communications. Contrasting conventional frameworks, we present the notion of "emotional amplifier places" to describe how immersive settings use interactive cues for emotional involvement, possibly resulting in excitement and overload. This insight expands existing literature (e.g., Laros & Steenkamp, 2005; Watson & Spence, 2007) where overstimulation is a boundary, resulting in disengagement during poor quality interactions.

Moreover, MBE construct contributes to virtual brand literature by delineating sensory perceptions, brand attachment and consumer engagement as essential determinants. Our findings bridge a gap between virtual and traditional brand experience theories (Alvarez et al., 2023; Schmitt et al., 2015; Brakus et al., 2009), suggesting that virtual settings intensify not only positive but also negative emotions. Specifically, we establish the main causes of unfavorable brand experiences, such perceived inauthenticity in avatar-brand interactions and technical issues that diminish user satisfaction.

Additionally, we situate individualism as part of virtual interactions, expanding the perspective of self-representation and identity (MIS) in immersive contexts. Our results

reaffirm Barnes and Pressey's (2011) proposition that individualism drives virtual participation among metaverse users. However, by building on the centrality of self-expression and aspirational identity (ISELF) we offer a refined interpretation of how self-expression theory applies to user engagement in virtual branding. This theoretical contribution positions individualism as a core factor in forming successful relationships explaining how users maintain brand connections when supported in their individual aspirations (Peng et al., 2024; Farah et al., 2024). The research additionally stresses the differences in self-representation throughout cultures and demographics, showing that virtual involvement and brand experience are not universal and depend on sociological, technical, and cultural aspects.

Also, findings on passive brand experience (MPBE) underscore the strategic value of virtual spaces to evoke negative attitudes toward poor-quality events (Prentice et al., 2019; Westhuizen, 2018). This insight contrasts with traditional engagement theories. Indeed, they do not fully exploit the potential of virtual brands to design a high-quality experience within technologically advanced spaces (Ahmed et al., 2024). Finally, innovative experiences indicate new virtual touchpoints (Choudhury & Harrigan, 2014) creating a relevant shift from traditional to multisensory, technology-driven brand management.

The BCME model merges psychology and technology explaining how emotional and sensory inputs, are essential preconditions for engaging interactions. This distinction between human cognition and innovative technology defines the narrative for future multidisciplinary research. The configuration of core determinants such as MPBE, MIS and ISELF, indicates that the brand-user experience is a combination of multiple motivational drivers including the desire for multisensory-pleasant experiences, individuality traits and self-expression. This model incorporates MCIN as a mediator, indicating the relevance of innovative personalities in bridging psychological subdomains' ability to affect experience.

4.2. Practical Implications

From a practical perspective, managers should leverage the study insights to design engaging virtual spaces. For instance, the role of positive emotions, such as joy or passion, can be utilised to create environments that support emotional consistency and reinforce

brand advocacy, particularly in contexts where ephemeral interactions tend to dominate (Vidal-Tomás, 2023; Gupta et al., 2024). Unlike traditional settings, metaverse interactions demand engagement strategies that appeal to multiple sensory levels, reflecting the importance of virtual aesthetics and emotional resonance in virtual brand presence (Chen et al., 2024; Suh, 2024). This suggests that managers must go beyond conventional touchpoints for successful virtual positioning actions.

Utilising MBE as a driving construct can help practitioners to implement data-driven strategies to monitor brand attachment and engagement over time, as suggested by Alvarez et al. (2023). Aligned with strategies that prioritise sensory-rich surroundings, emotional resonance during virtual encounters can contribute to a progressive development of the consumer lifetime value (Prentice et al., 2019).

Additionally, brands should design positioning strategies grounded in identity values, targeting consumers by appealing to their personal expressiveness and individualistic traits, central for virtual identity expression (Peng et al., 2024; Farah et al., 2024). This approach is relevant since our results identify MIS as a key driver in the model.

The importance of MPBE from a management standpoint draws attention to the risks of developing uninteresting interactions in the metaverse, where a lack of emotional, sensory, or cognitive engagement can have a massive detrimental effect on MBE. Aligning with Oh et al. (2023) and Nadeem et al. (2021) on the importance of sensory and emotional components, managers must concentrate on developing emotionally compelling and dynamic virtual settings.

Furthermore, with high levels of metaverse awareness and generally positive perceptions of virtual environments, particularly among Gen Z, brands have a unique opportunity to tackle this demographic. By developing exclusive virtual experiences, brands can increase brand love and leverage Gen Z's crucial position (Thangavel et al., 2022). A key element of this strategy consists of crafting highly personalised environments that empower users individualities (Hou et al., 2019).

Finally, the significant mediating role of MCIN indicates that individualistic-centric metaverse brands are instrumental for retaining and engaging innovative consumers. Practical actions can involve tailoring metaverse experiences with a user-centric approach (Mourtzis et al., 2022) that balances individual and innovative aspects of the experience.

Overall, the BCME framework offers clear guidance for practitioners to implement effective virtual landing strategies to monitor experiential levels. Through solid KPIs (key performance indicators) brands can target tech-driven pioneers (Baker, 2006) and early adopters to influence peers, especially during crucial phases of brand positioning.

4.3. Future Suggestions and Limitations

Although our research provides significant insights and theoretical implications, it is not without limitations. Even with a strict protocol for experimental design, and analysis, the limited sample size may constrain the generalizability of results. Future research could explore a larger sample incorporating diverse branded experiences across virtual worlds. We also propose conducting longitudinal analyses to explore the evolution of interactions over time. Moreover, including qualitative methods could provide deeper insights into users' sentiments and communication patterns when comparing various branded events. Finally, future research should investigate into the implications of emerging technologies and advancements in virtual marketing across specific sectors.

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