Social commerce in the social media age: understanding how interactive commerce enhancements navigate app continuance intention

Received 27 January 2024
Revised 7 April 2024
Accepted 2 May 2024

Sin-Er Chong, Siew-Imm Ng and Norazlyn Kamal Basha
School of Business and Economics, Universiti Putra Malaysia, Selangor, Malaysia, and
Xin-Jean Lim
Business School, Sun Yat-Sen University, Shenzhen, Guangdong, China and School of Business and Economics, Universiti Putra Malaysia, Selangor, Malaysia

Abstract

Purpose – By integrating the Uses and Gratifications Theory and Flow Theory, this research seeks to untwine the veiled effects of interactive commerce enhancements (ICEs), specifically haptic imagery and social presence, in promoting user immersion and sustaining social commerce (SC) users' usage intention, considering the moderating role of autotelic personality.

Design/methodology/approach – The research utilized purposive sampling of Malaysian SC app users with recent transactions. A dual-source data collection approach, encompassing offline and online channels, was employed to ensure a broad and diverse respondent pool. Partial least squares–structural equation modeling was chosen for its adeptness in analyzing complex relationships in predictive studies.

Findings – The findings revealed the significant positive effects of haptic imagery and social presence on user immersion and continuance intention within SC apps. Social presence and immersion were found to mediate the proposed paths. Additionally, autotelic personality traits were identified as moderators, influencing the strength of these relationships.

Originality/value – This research makes a unique contribution by addressing critical gaps in SC environments, extending the concept of ICEs, understanding the impacts of underlying mediators and pioneering the examination of autotelic personality traits' moderating effects. It introduces a fresh perspective on how individual differences impact user engagement. This groundbreaking study benefits social media and interactive marketing literature by comprehensively understanding how ICEs elevate SC, fostering innovation and heightened engagement.

Keywords Interactive commerce enhancements, Haptic imagery, Social presence, Immersion, Continuance intention, Social commerce, Uses and Gratifications Theory, Flow Theory, PLS-SEM

Paper type Research paper

Preliminary Note

This research aims to address the call made by Wang (2021) in the *Journal of Research in Interactive Marketing* (*JRIM*). Wang's call emphasizes the evolving landscape of interactive marketing, acknowledging a shift from traditional e-commerce and social media marketing toward the burgeoning realm of social commerce (SC). This research aligns with the multidisciplinary perspective encouraged by Wang (2021), delving into the dynamic

The authors would like to express their appreciation to the Research Management Centre of Universiti Putra Malaysia (GPB/2021/9696700) for financially supporting this research.

Conflict of interest: The authors declare that they have no conflict of interest.

Journal of Research in Interactive Marketing
Vol. 18 No. 5, 2024
pp. 865-899

2040-7122
DOI 10.1108/JRIM-01-2024-0047

intersection of SC applications with theoretical implications and practical relevance to social media marketing applied fields. This research is also poised to respond to the insightful call articulated by Lim *et al.* (2022) in the *JRIM*. Lim *et al.* (2022) advocate for future research to scrutinize new technologies suitable for interactive marketing, specifically within the platform economy, such as SC. As suggested, we extend the investigation by integrating two relevant theories to explain the adoption of interactive technology in SC comprehensively. In essence, we addressed the critical research gaps outlined in the paper and responded to researchers' call for investigations into customer behaviors and interactivities within the social media domain.

Introduction

Social commerce (SC) represents the evolved iteration of social media, integrating transactional elements to enhance user engagement and facilitate seamless interactions within digital platforms (Yadav *et al.*, 2013). Hence, the relationship between social media and SC is symbiotic, with each influencing and shaping the other in profound ways (Li *et al.*, 2023). Predictions indicate that SC sales could hit approximately US$8.5 trillion by 2030. During 2022, close to 90 per cent of Asian social media users engaged in SC purchases (Statista, 2023). Doubtlessly, social media platforms serve as bustling marketplaces where users engage with content and seamlessly transition into commerce activities, forming a dynamic bridge between social interactions and commercial transactions (Zhao *et al.*, 2023). SC platforms leverage user-generated content to enhance product discovery and build trust among potential consumers (Leong *et al.*, 2023). Therefore, understanding the SC landscape is pivotal for marketers seeking to optimize their interactive marketing strategies within the social media landscape (Kuo and Chen, 2023). The continuance intention of SC users serves as a crucial indicator, signaling the success and resonance of social media-driven commerce, as sustained engagement within these platforms reflects the enduring effectiveness of integrated interactive marketing strategies.

While projections suggest exponential growth in SC over the next decade, there remains a dearth of understanding regarding the intricate factors driving its sustained usage by SC users (Hu *et al.*, 2022; Osatuyi *et al.*, 2020; Yu *et al.*, 2024). The existing body of research provides only a partial understanding of what truly shapes user behavior in the rapidly evolving realm of SC (Wang *et al.*, 2023). Chiu *et al.* (2022) also observed a significant gap in the scholarly examination of consumer behavior in SC. Prior research has predominantly adopted a single theoretical lens (Akram *et al.*, 2021; Chen *et al.*, 2018; Cheng *et al.*, 2019; Hajli, 2013; Han, 2023; Hew *et al.*, 2016; Molinillo *et al.*, 2021; Xue *et al.*, 2020; Zhang *et al.*, 2014), failing to provide a comprehensive understanding of the complex SC phenomenon.

Furthermore, studies examining technological factors in SC have primarily investigated website quality (Liang *et al.*, 2011; Molinillo *et al.*, 2018), perceived personalization (Zhang *et al.*, 2014), perceived sociability (Zhang *et al.*, 2014), perceived usefulness and perceived ease of use (Doha *et al.*, 2019; Hew *et al.*, 2016; Qu *et al.*, 2023), IT affordances (Tuncer, 2021) and system and service quality (Busalim *et al.*, 2021; Molinillo *et al.*, 2021). However, specific interactive-related factors have been largely overlooked. There exists a critical need for scholarly exploration into determinants influencing user experience and retention, particularly interactive-related factors (Lim *et al.*, 2022). While some scholars have commenced research on interactive-related factors like interactivity (Busalim *et al.*, 2023; Herrando *et al.*, 2017; Qu *et al.*, 2023), there remains a conspicuous gap in comprehending whether these factors' influence on SC continuance intentions is influenced by individual traits, such as autotelic personality. This trait, closely associated with immersing oneself in activities, poses an intriguing avenue for exploration in understanding user behavior in SC.

This knowledge deficit is significant, as it hinders our comprehension of the contributions of interactive elements, within the digital social media realm, to subsequent SC continued adoption.

Hence, this study aims to bridge existing gaps in understanding by (1) Integrating two prominent theories, namely the Uses and Gratifications Theory (UGT) and Flow Theory (FT), to examine how interactive-related factors influence the intention of users to continue engaging in SC; (2) Including two key interactive commerce enhancement factors (ICEs) – haptic imagery and social presence, to delve into users' immersion experiences and their subsequent intention to continue participating in SC applications; (3) Uncovering differentiated effects of these ICEs on fostering immersion and SC continuance intention, particularly among individuals with varying levels of autotelic personality traits. Through these comprehensive efforts, this research endeavors to contribute valuable insights into the dynamics of user behavior and engagement in the context of SC.

SC's departure from traditional retail is significant, and its ongoing evolution is driven by integrating interactive and immersive elements into social media usage. Notably, concerns arise about the jumbled impact of ICEs on consumer behavior (Perez-Vega *et al.*, 2022). Haptic imagery, an ICE, revolutionizes user experiences by offering tangible interactions beyond visual and auditory realms (MacLean, 2022). In interactive marketing, the richness of digital encounters is also linked to the sense of presence (Tom Dieck *et al.*, 2023). Social presence, identified as an ICE, mimics real-world social interactions on platforms, enhancing the user experience and aligning with the desire for social connections during online shopping (Sun *et al.*, 2022). Despite the increasing creation of these enhancements, there exists a crucial knowledge gap about their precise influence on continuance intention, the vital factor steering prolonged user usage (Franque *et al.*, 2020; Ornati and Kalbaska, 2022), especially within the SC settings (Hu *et al.*, 2022; Li *et al.*, 2023). Additionally, Barger *et al.* (2016) advocated using social media communication technology beyond short-term gains, urging its use to establish enduring engagement strategies for sustained relationships.

Thus, our research seeks to untwine the veiled effects of ICEs, specifically haptic imagery and social presence, in sustaining SC users' usage intention. We seek to integrate two theories in addressing the observed lack of extensive studies investigating consumer behavior in SC, which has primarily focused on a single theoretical standpoint (Chiu *et al.*, 2022). Our study attempts to address the call for a comprehensive model that embraces multiple perspectives to illuminate SC behavioral intention (Wang *et al.*, 2023). Therefore, the current study draws on the UGT, often applied in media consumption, and FT from a psychological background to understand the integrated framework from a comprehensive perspective.

Moreover, we seek to elucidate how social presence and immersion, fostered by ICEs, play a mediating role in shaping users' continuance intention through the perspective of the FT. Furthermore, we aim to comprehend the moderating effect of autotelic personality traits in influencing the impact of ICEs on user experiences from the standpoint of FT. Individual differences play a pivotal role in shaping SC user behavior (Aydın, 2019). Research on the continued use of SC platforms is limited, especially regarding the impact of personality traits on the adoption (Mouakket, 2018). The autotelic personality, centered on deriving pleasure from intrinsic merits (Tse *et al.*, 2020), is especially pertinent in the context of SC. It implies a natural inclination toward sustained engagement, a crucial aspect to explore in the realm of SC usage (Tse *et al.*, 2020). Particularly, our study revolves around the key research questions (RQs):

RQ1. Are the ICEs (such as haptic imagery and social presence) the key predictors of immersion and SC continuance intention?

RQ2. Do social presence and immersion play mediating roles on the indirect paths?

RQ3. Does autotelic personality moderate the effect of the ICEs (such as haptic imagery and social presence) on immersion and continuance intention?

Overall, this groundbreaking study benefits social media and interactive marketing literature by comprehensively understanding how ICEs elevate SC experiences and foster heightened engagement. This study aims to provide insights that advance social media research by providing app developers the effective and interactive marketing strategies. It serves as a guidepost for navigating the evolving social media-driven commerce and underscores the imperative of a nuanced comprehension of SC dynamics for the success of interactive marketing endeavors. By deciphering the intricacies of SC, practitioners can tailor their approaches within the social media space, ensuring that interactive marketing efforts resonate authentically with user expectations and contribute to sustained engagement.

Literature review and theoretical background

Social media and interactive marketing research

Social media's interactive landscape serves as an optimal arena for deploying interactive marketing strategies. This strategic approach empowers businesses to establish dynamic connections with consumers through interactive communication channels (Cheung *et al.*, 2020). Flourishing amidst rapid technological evolution and the pervasive impact of social media, interactive marketing encompasses cutting-edge elements such as virtual reality simulations, AI-driven chatbots, voice-activated content, interactive short-form videos and live streaming. The seamless integration of these innovations, complemented by the ubiquity of mobile and messaging apps, underscores the indispensable role of interactivity in social media marketing landscapes. The compelling synergy between interactive marketing and social media not only allows for a highly personalized and tailored approach but also cultivates a profound, immersive experience that resonates deeply with customers (Wang, 2021). The seamless transition of users from interacting with content on social media to actively participating in commercial transactions is notably pronounced in the context of SC (Tian and Lee, 2022).

The dynamic nature of social media platforms has become a focal point, with research highlighting their influence on user engagement, brand interactions and the overall customer journey (Liao *et al.*, 2021). Emerging insights delve into the role of interactive marketing strategies in capitalizing on the participatory nature of social media, leading to enhanced brand–consumer relationships (Gligor and Bozkurt, 2021). From the interactive marketing perspective, Peltier *et al.* (2023) acknowledged that leveraging artificial intelligence for managing social media responses has the potential to amplify consumer engagement with a brand's content. This, in turn, leads to increased efficacy in social media endeavors and advantageous outcomes for the brand. Building upon the foundational relationship between interactive marketing and social media dynamics, the integration of cutting-edge social media insights extends its implications to the realm of SC (Zhao *et al.*, 2023).

While extensive research has been conducted on various aspects of social media, the rapidly evolving landscape continues to present new challenges and opportunities that warrant further investigation (Lim *et al.*, 2022). As highlighted by scholars, new forms of social media such as SC should be explored further in terms of how new antecedents and consequences are conceptualized. Building on the recommendation by Lim *et al.* (2022) to adopt a strategic perspective in studying technology adoption within interactive marketing, our research endeavors to investigate the impact of ICEs on user experience and their consequent effect on SC continuance intention. In doing so, we integrate various pertinent

theories to provide a comprehensive understanding of the adoption of these technologies within the relatively under-researched field of SC. To elaborate further, the emergence of SC represents a significant shift in how individuals interact and transact online, yet the literature has yet to fully explore its complexities and implications (Osatuyi *et al.*, 2020). Existing studies often focus on traditional forms of social media (Yu *et al.*, 2024), overlooking the unique dynamics and functionalities of SC platforms (Mehrabioun, 2024). This gap in the literature underscores the need for research that delves into the nuances of SC and its impact on user continuance intention. Moreover, as interactive features become increasingly prevalent in these platforms, understanding their role in driving user engagement and continuance intention is paramount (Petit *et al.*, 2019). By addressing these gaps, our current research aims to contribute to a deeper understanding of the evolving landscape of social media and its implications for SC post-adoption behavior. This could further contribute to the current body of knowledge within the social media landscape as SC operates within social media (Leong *et al.*, 2023). By shedding light on the effectiveness of ICEs in SC, our study seeks to provide valuable insights that can inform both scholarly discourse and practical strategies for businesses operating in this space.

A review of SC research

At its core, SC applications amalgamate the social aspect of social media with the transactional functionality of e-commerce, fostering a space where users engage, share and transact within a unified digital environment (Zhao *et al.*, 2023). These applications leverage social interactions, user-generated content and peer recommendations to facilitate buying and selling activities, creating an interactive shopping experience. The SC landscape is poised for substantial growth, with forecasts predicting a remarkable increase in Gross Merchandise Value. It envisions a surge from US$1408.1m in 2023 to a projected US$4409.3m by 2028 in Malaysia (Yahoo Finance, 2023). Despite the industry's ongoing evolution, data from multiple sources reveals a considerable decline in user engagement on SC platforms (Marketing Charts, 2023; The Economic Times, 2022). This shift in user behavior signifies a noteworthy transformation in user preferences within the SC sphere. Hence, our ongoing research is crucial for comprehending the primary determinants, especially through the lens of interactive marketing, which guides continuance intention amidst the evolving dynamics observed.

As the social media landscape continually evolves, it is imperative to track the trajectory of studies within SC literature over the past decade. The trajectory of SC literature has evolved from initial explorations of factors driving SC intention to more nuanced examinations of user behavior and platform dynamics. As summarized in Table I, the dimensions employed in SC studies can be broadly categorized into several categories: social, environmental, motivational, technological and user perception. Given that SC uniquely integrates social elements that facilitate user engagement in social activities, it follows that the social dimension serves as a pivotal aspect in examining behavioral intentions within the realm of SC. The social dimension is utilized to explore the impact of various social-related factors such as social support (Busalim *et al.*, 2021; Chen and Shen, 2015; Hu *et al.*, 2022; Liang *et al.*, 2011; Molinillo *et al.*, 2018, 2020; Zhang *et al.*, 2014), relationship quality (Hajli, 2014; Liang *et al.*, 2011), recommendations and referrals (Hajli, 2013), perceived sociability (Zhang *et al.*, 2014), social presence (Herrando *et al.*, 2017), socializing (Mikalef *et al.*, 2017), social capital (Doha *et al.*, 2019), mutuality (Xue *et al.*, 2020), social interaction (Busalim *et al.*, 2021; Hu *et al.*, 2022; Qu *et al.*, 2023), friendship factors (Yu *et al.*, 2024), social reaction (Han, 2023) and social aspect (Busalim *et al.*, 2023) on behavioral outcomes within SC platforms.

In leveraging the environmental dimension of SC, scholars have also underscored the importance of environmental stimuli in driving positive cognitive states and behavioral

Table I.
A review of dimensions and factors applied in determining SC behavioral outcomes

Timeline	Dimension					Variables		
Authors	Social	Environmental	Motivational	Technological	Users' perception	Antecedents	Mediator	Outcome variables
Liang *et al.* (2011)	✓			✓		Social support, website quality, relationship quality	-	SC intention, continuance intention
Hajli (2013)	✓				✓	Rating and reviews, forums & communities, recommendations and referrals	Trust	Intention to buy
Zhang *et al.* (2014)	✓			✓	✓	Perceived interactivity, perceived personalization, perceived sociability	Social support, social presence, flow	SC intention
Chen and Shen (2015)	✓				✓	Social support (emotional support, informational support)	Community commitment, trust toward community & members	Social shopping intention, social sharing intention
Hew *et al.* (2016)				✓	✓	Concern for social media information privacy, perceived usefulness, confirmation	Continuance intention to use mobile SC, satisfaction	Brand loyalty
Liu *et al.* (2016)		✓			✓	Perceived expertise, perceived similarity, perceived familiarity	Flow experience	Purchase intention
Herrando *et al.* (2017)	✓		✓	✓		Social presence, interactivity, enjoyment	sPassion,	sWOM
Mikalef *et al.* (2017)	✓	✓				Socializing, personal recommendation, product selection, information availability	Purchase intention	WOM

(*continued*)

Table I.

Timeline	Dimension					Variables		
Authors	Social	Environmental	Motivational	Technological	Users' perception	Antecedents	Mediator	Outcome variables
Chen *et al.* (2018)			✓		✓	Flow, enjoyment (extrinsic motivation), perceived usefulness (intrinsic motivation), perceived sacrifice, perceived risk	Perceived value	Purchase intention
Molinillo *et al.* (2018)	✓			✓		Informational social support, emotional social support, flow, social presence, website quality	-	SC intention
Herrando *et al.* (2018)			✓			sPassion	Flow	sWOM
Cheng *et al.* (2019)					✓	Trust disposition, quality-assured shared information, familiarity, endorsements by other members	Particularized trust toward SC members, system trust toward SC apps	Social WOM intention, social shopping intention
Doha *et al.* (2019)	✓		✓	✓	✓	Social/hedonic motivations (social capital, homophily, engagement and group fill), economic motivations (user innovativeness, service innovativeness and perceived value), utilitarian motivations (perceived usefulness and perceived ease of use)	-	Intention to purchase
Yeon *et al.* (2019)					✓	Vendor trust, SNS trust, heuristic factors, systematic factors	Attitude	Intention to buy, actual purchasing behavior

(*continued*)

Table I.

Timeline	Dimension					Variables		
Authors	Social	Environmental	Motivational	Technological	Users' perception	Antecedents	Mediator	Outcome variables
Xue *et al.* (2020)	✓	✓		✓	✓	Personalization, responsiveness, entertainment, mutuality, perceived control	Perceived usefulness, perceived risk, psychological distance	SC engagement
Molinillo *et al.* (2020)	✓					Social support, community drivenness, community identification, community trust	Customer engagement	Willingness to co-create, stickiness intention, positive eWOM intention, repurchase intention
Tuncer (2021)				✓	✓	IT affordances (visibility, metavoicing, guidance shopping)	Trust in seller, trust in social media platform, flow experience	SC intention
Akram *et al.* (2021)			✓			Utilitarian motivations (convenience, selection, information availability, lack of sociality), hedonic motivations (adventure, idea, social, gratification shopping)	Customer engagement	Online purchase intention
Busalim *et al.* (2021)	✓		✓	✓		Social support, social interaction, social presence, interactivity, information quality, service quality, system quality, hedonic motivation, utilitarian motivation, perceived value	Relationship quality, customer satisfaction	Customer engagement behavior in SC

(*continued*)

Table I.

Timeline	Dimension					Variables		
Authors	Social	Environmental	Motivational	Technological	Users' perception	Antecedents	Mediator	Outcome variables
Molinillo *et al.* (2021)		✓		✓	✓	Information quality, service quality, rewards and recognition, customization	Perceived value	Repurchase intention, positive eWOM intention, customer engagement behavior intention
Hossain *et al.* (2021)		✓			✓	Perceived similarity, perceived expertise, perceived familiarity	Perceived flow	Customer trust, relationship commitment, CRM performance
Hu *et al.* (2022)	✓		✓		✓	Source credibility, social interaction	Perceived enjoyment (hedonic motivation), perceived usefulness (utilitarian motivation), informational social support, emotional social support	Continued SC intention
Lin and Wang (2022)			✓		✓	Autonomous motivation of SC, controlled motivation of SC	SC information seeking, perceived usefulness of SC	Purchase intention, confirmation, satisfaction, SC information sharing intention, repurchase intention

(*continued*)

Table I.

Timeline	Dimension					Variables		
Authors	Social	Environmental	Motivational	Technological	Users' perception	Antecedents	Mediator	Outcome variables
Yu *et al.*, 2024	✓				✓	Friendship factors (informational influence factor, interpersonal trust, perceptions of friends' knowledge)	Confirmation of social shopping, perceived usefulness of social shopping	Satisfaction, continuance intention of social shopping
Han (2023)	✓				✓	Brand, social reaction	-	Trust, perceived risk, urge to buy impulsively
Qu *et al.* (2023)	✓			✓	✓	Perceived ease of use, perceived usefulness, social interactivity	Utilitarian shopping value, hedonic shopping value	User stickiness
Busalim *et al.* (2023)	✓	✓		✓		Collaboration, community, interactivity, social aspect	Customer engagement	Repurchase intention, eWOM intention

outcomes. For instance, Liu *et al.* (2016) and Hossain *et al.* (2021) found that perceived expertise, perceived similarity and perceived familiarity can positively impact flow experience which can subsequently encourage positive behavioral responses in SC contexts. Further environmental stimuli, including responsiveness and entertainment (Xue *et al.*, 2020), information and service quality (Molinillo *et al.*, 2021) and collaboration and community (Busalim *et al.*, 2023), are scrutinized within the context of SC research. Additionally, motivation-related factors have been investigated using the dimension of motivation. These factors include sPassion (Herrando *et al.*, 2017, 2018), enjoyment (extrinsic motivation) and perceived usefulness (intrinsic motivation) (Chen *et al.*, 2018) and utilitarian motivations and hedonic motivations (Akram *et al.*, 2021; Busalim *et al.*, 2021; Doha *et al.*, 2019; Hu *et al.*, 2022). Moreover, it is noteworthy that Lin and Wang (2022) have conceptualized two novel types of SC motivations: autonomous and controlled. These motivations were discovered to have a significant impact on SC consumers' pre-purchase and post-purchase behavioral outcomes.

Furthermore, research investigating technological aspects in SC has predominantly focused on examining website quality (Liang *et al.*, 2011; Molinillo *et al.*, 2018), perceived personalization (Xue *et al.*, 2020; Zhang *et al.*, 2014), perceived usefulness and perceived ease of use (Doha *et al.*, 2019; Hew *et al.*, 2016; Qu *et al.*, 2023), IT affordances (Tuncer, 2021), as well as system and service quality (Busalim *et al.*, 2021; Molinillo *et al.*, 2021). On top of that, researchers investigated the overall impact of interactivity (Busalim *et al.*, 2023; Herrando *et al.*, 2017; Zhang *et al.*, 2014), leading to the neglect of specific interactive-related factors. In the context of SC, there is a pressing need for scholarly examination of the interactive-related factors influencing user experience and retention (Lim *et al.*, 2022). Lastly, the majority of SC research concentrated on investigating the influence of users' perceptions on SC behavioral outcomes. These factors include trust (Chen and Shen, 2015; Cheng *et al.*, 2019; Hajli, 2013; Tuncer, 2021; Yeon *et al.*, 2019), perceived interactivity, perceived personalization, perceived sociability (Zhang *et al.*, 2014), perceived risk (Chen *et al.*, 2018; Xue *et al.*, 2020), perceived similarity, perceived expertise, perceived familiarity (Hew *et al.*, 2016; Hossain *et al.*, 2021), perceived value (Molinillo *et al.*, 2021) and perceived usefulness of social shopping (Yu *et al.*, 2024).

Table II shows the popular theoretical perspectives adopted in SC studies. The Stimulus–Organism–Response (SOR) Model appears to be the most commonly utilized theoretical framework for investigating consumer behaviors within the context of SC. The model is a comprehensive framework that effectively elucidates how consumers' behaviors are influenced by environmental or situational cues and how these factors are perceived by consumers (Zhao *et al.*, 2023). Existing studies have utilized this model to comprehend the role of environmental stimuli and their impacts on consumers' perceptions and reactions, consequently shaping their resulting response or consumer behavior within the SC contexts (Herrando *et al.*, 2018; Hossain *et al.*, 2021; Liu *et al.*, 2016; Molinillo *et al.*, 2018, 2021; Qu *et al.*, 2023; Tuncer, 2021; Xue *et al.*, 2020; Zhang *et al.*, 2014).

Overall, the past decade has seen significant growth in SC studies, with efforts focused on understanding various factors encompassing social, environmental, motivational and technological dimensions, as well as users' perceptions toward SC platforms. Scholars have meticulously examined SC outcome variables such as SC intention, purchase and repurchase intention, information sharing intention, engagement, loyalty, stickiness, satisfaction and social word-of-mouth (WOM) intention. However, continuance intention remains an under-researched topic within this SC domain (Hu *et al.*, 2022; Osatuyi *et al.*, 2020; Yu *et al.*, 2024). Moreover, despite the urging of scholars in the interactive marketing field, the effectiveness of interactive enhancement features on impacting user experience and behavioral intention has not received sufficient attention in the context of SC (Lim *et al.*, 2022). In addition, individual differences studied in SC content are limited to gender

Theory	Description	Authors
Stimulus–Organism–Response Model	This framework suggests that the stimuli individuals encounter in their environment trigger cognitive and emotional processes within them (organism), influencing their behavioral responses.	Zhang *et al.* (2014); Liu *et al.* (2016); Molinillo *et al.* (2018); Herrando *et al.* (2018); Xue *et al.* (2020); Tuncer (2021); Molinillo *et al.* (2021); Hossain *et al.* (2021); Qu *et al.* (2023)
Social Support Theory	This theory elucidates how social support elements impact users and subsequently respond to their actions within SC settings.	Hajli (2013); Molinillo *et al.* (2018); Molinillo *et al.* (2020); Busalim *et al.* (2021); Hu *et al.* (2022)
Trust Transfer Theory	This theory provides insights into the mechanisms through which trust established in social platforms influences consumers' trust in SC behavioral intentions.	Chen and Shen (2015); Cheng *et al.* (2019); Han (2023)
Expectation Confirmation Model	This theory explains the continuance usage of mobile SC as an information systems continuance model	Hew *et al.* (2016); Lin and Wang (2022); Yu *et al.*, 2024
Social Exchange Theory	This theory suggests that users evaluate the benefits they derive from their engagement, such as social support or informational resources, against the effort and resources they invest.	Molinillo *et al.* (2018); Phan *et al.* (2020); Kwon *et al.* (2020)
Flow Theory	This theory offers valuable insights into how users experience and engage with SC platforms, highlighting the importance of creating optimal flow conditions.	Herrando *et al.* (2018); Hossain *et al.* (2021); Herrando *et al.* (2022)
Technology Acceptance Model	This theory proposes that users' attitudes and intentions toward information systems are primarily determined by two key factors: perceived usefulness and perceived ease of use.	Doha *et al.* (2019); Solangi *et al.* (2022); Khan *et al.* (2023)
Motivation Theory	This theory posits that consumers' behavioral intentions can be determined by hedonic factors such as perceived enjoyment.	Mikalef *et al.* (2017); Doha *et al.* (2019); Hu *et al.* (2022)
Theory of Planned Behavior	This theory posits that human behavior is primarily determined by three factors: attitude, subjective norms and perceived behavioral control that could shape individuals' intentions to perform a behavior, which in turn, predict their actual behavior.	Hung *et al.* (2018); Yeon *et al.* (2019); Leong *et al.* (2022)
Commitment–Trust Theory	This theory explains the joint impacts of relationship commitment and trust in building and maintaining long-term successful cooperation between the relevant parties.	Chen and Shen (2015); Hossain *et al.* (2021)
Uses and Gratifications Theory	This theory aids in elucidating the psychological desires influencing individuals' media usage choices and the factors that attract them to specific media-related actions.	Mikalef *et al.* (2017); Busalim *et al.* (2021)
Social Learning Theory	This theory explains user behavior through ongoing interactions among cognitive processes, behavioral actions and environmental influences.	Akram *et al.* (2021); Riaz *et al.* (2021)

Table II.
Popular theoretical perspectives adopted in SC studies

differences (Chen *et al.*, 2018; Mouakket, 2018; Sohaib, 2021). Despite the relevance of autotelic personality in differentiating user experience (Tse *et al.*, 2020), empirical investigations into autotelic personality have been notably absent in studies on SC.

Addressing these gaps in the literature presents an exciting opportunity for this research to delve deeper into the dynamics of SC and the role of interactive features in shaping user behavior and platform sustainability. On top of that, efforts to discern users' motivations in SC engagement have embraced a single theoretical perspective, including the SOR Model, Technology Acceptance Model and Theory of Planned Behavior (Wang *et al.*, 2023; Zhao *et al.*, 2023). As observed from the literature review above, there is a growing recognition of the need for an integrated theoretical approach to grasp the intricacies of SC dynamics. Notable gaps persist, as highlighted by Lim *et al.* (2022), who advocated for future research to amalgamate relevant theories comprehensively, particularly in understanding social media-related systems such as SC. Thus, the current study seeks to bridge this gap by integrating the UGT and FT, exploring how ICEs influence user experience and subsequent continuance intention.

UGT and FT

Beyond conventional technology adoption perspectives, the UGT unveils various gratifications in consumer social media use (Pelletier *et al.*, 2020). It explains the intentional behaviors of individuals in consuming media content (Katz *et al.*, 1973). It focuses on how individuals actively engage with media platforms, driven by specific needs and desires, seeking gratifications and fulfilling their needs. This theory highlights that users are active participants, selecting and using media content to satisfy diverse needs, gain gratification and exert control over their media consumption patterns. Applying UGT, Kim and Kim (2019) explored the link between perceived gratifications, technological attributes and changes in social media usage. Users with entertainment and recognition needs favored increased Facebook usage, while those valuing browsing aspects leaned toward using Instagram more. Aligning with UGT, Javornik *et al.* (2022) unveiled the motivations for using augmented reality filters on social media and their effect on well-being. Previous research employing the UGT in understanding user interactions within SC platforms has laid a foundation (Busalim *et al.*, 2021), yet there remains a need for a deeper exploration of the connections between ICEs (i.e. haptic imagery and social presence), immersion and users' continuance intention.

Apart from UGT, FT centers on the psychological state of flow experience when individuals are fully immersed and deeply focused on an activity (Csikszentmihalyi, 1975). In SC, FT reveals how users' engagement and continued interaction are influenced by achieving a state of flow as SC users seek a seamless and absorbing experience. Zhang *et al.* (2014) observed that perceived interactivity and social presence can positively impact flow experience which eventually causes heightened SC intention. Tuncer (2021) revealed that the flow, driven by technological stimuli, can enhance users' SC intention. However, understanding how the synergy between ICEs amplifies user immersion, creating a unique user experience that influences continuance intention, is a significant research gap to be filled. Integrating the UGT and FT, the current study constructs a research framework to examine how ICEs influence immersion and continuance intention. This theoretical integration elucidates mechanisms driving continuance intention, simultaneously exploring how users' personality traits moderate the effects of ICEs.

Hypotheses development and research framework

Impact of ICEs

Haptic imagery revolves around the integration of tactile sensations within the digital environment (Peck *et al.*, 2013). It refers to the incorporation of sensory feedback, primarily touch-related cues, allowing users to experience a sense of touch virtually (Ivanov *et al.*, 2022).

Unlike traditional online shopping experiences that lack physical interaction, haptic imagery introduces a tactile dimension to the digital interface (Racat and Plotkina, 2023). By simulating the feel, texture or physical attributes of products, this sensory-enabling technology bridges the gap between physical and digital experiences, and enhances users' online shopping experiences. Through a tactile experience, haptic imagery contributes to a sense of realism and tangibility in the user's interactions with products, potentially extending to their interactions with others within the platform (Ornati and Kalbaska, 2022). When users engage in this lifelike exploration online through haptic imagery, it might trigger a sense of social presence, making the online shopping experience more interactive and engaging (Hadi and Valenzuela, 2020). This heightened sensory experience can transcend the mere evaluation of products, extending to the user's overall perception of being present and connected within the SC platform.

As users experience a more vivid and realistic portrayal of products, a stronger sense of being engaged and connected within the platform's social sphere could be established (Shen *et al.*, 2021). Immersive experiences often result from the degree of sensory engagement and involvement within virtual commerce setting (Liao *et al.*, 2022). When users engage with products through tactile simulation, it triggers a deeper level of sensory engagement, creating a more realistic and immersed experience (Brakus *et al.*, 2009; Shen *et al.*, 2021). Racat and Plotkina (2023) observed that consumers seek and perceive haptic stimulation positively in online shopping experiences. Integrating haptic feedback into online platforms generally enhances the online purchasing experience positively. Haptic feedback can boost user confidence and reduce perceived risks in shopping platforms (Silva *et al.*, 2021), promoting sustained engagement. Therefore, we propose the following hypotheses:

H1. Haptic imagery positively influences SC users' social presence.

H2. Haptic imagery positively influences SC users' immersion.

H3. Haptic imagery positively influences SC users' continuance intention.

Social presence, akin to real-world social interactions, is the perception of being present and connected with others in an online environment. Its relevance within SC platforms is substantial, encapsulating the sense of human interaction and connection (Wang *et al.*, 2023). Drawing on UGT, users seek a social environment resembling face-to-face interactions. Social presence, fulfilling this need, fosters a sense of community and connectivity (Busalim *et al.*, 2021). Communication channels and other features enhancing social presence create an engaging, immersive environment, fostering user connection and involvement (Zhang *et al.*, 2014). When users embrace the spatial aspects of the digital environment and experience presence, they become more easily absorbed in the activities within the application (Rodríguez-Ardura and Meseguer-Artola, 2018). Thus, it is expected to heighten immersion by facilitating a more realistic and interactive online social experience. This positive social experience facilitated by social presence is anticipated to strengthen users' continuance of technology use (Sun *et al.*, 2022). Users are more likely to continue engaging with the platform if they perceive a sense of belonging from social presence and feel socially connected (Gao *et al.*, 2017). Hence, we posit the following hypotheses:

H4. Social presence positively influences SC users' immersion.

H5. Social presence positively influences SC users' continuance intention.

Effect of immersion on continuance intention

Based on FT, immersion is a psychological state characterized by complete absorption and deep involvement in an activity (Csikszentmihalyi, 1975). Within the context of SC,

immersion manifests when users become fully engaged, losing track of time and feeling deeply absorbed in their interactions and activities on the platform (Zhang *et al.*, 2014). This state of absorption leads to a more satisfying and enjoyable user experience (Tuncer, 2021). Moreover, Liao *et al.* (2022) revealed that immersion can promote purchase intention in online commerce. The enriched and absorbing experiences attained through immersion are presumed to create a positive perception and emotional connection, prompting users to maintain their usage within the SC platform. Thus, we propose the following hypothesis:

H6. Immersion positively affects SC users' continuance intention

Mediating effect of social presence and immersion

Prior studies have indicated that the incorporation of haptic imagery within digital environments enhances users' sense of social presence (Racat and Plotkina, 2023). The heightened social presence is anticipated to foster a deeper state of immersion among users within the SC ecosystem (Rodríguez-Ardura and Meseguer-Artola, 2018; Zhang *et al.*, 2014). The amplified social presence, facilitated by haptic imagery, is also presumed to positively influence users' intentions to persist in engaging with the SC platform as Gu *et al.* (2023) verified the positive relationship between social presence and sustained participation intention in live-streaming shopping contexts. Additionally, the literature underscores the effectiveness of haptic technology in amplifying the sense of social presence, positing this as the mechanism behind the enhanced performance. Consequently, messages integrated with haptic elements, by intensifying feelings of social presence, can wield greater persuasive influence on user behavior and more profound impact on overall performance, thereby supporting the mediating role of social presence (Hadi and Valenzuela, 2020).

The present study also proposes to test the mediating role of immersion. Drawing from FT, the term immersion and flow experience can be used interchangeably, denoting the deep engagement and absorption individuals undergo (Csikszentmihalyi, 1975). Haptic imagery, fostering a heightened sense of engagement and absorption, is anticipated to facilitate immersion among users (Huang and Liao, 2017). This immersion, in turn, is expected to influence users' intentions to persist in using the SC platform as it can effectively promote purchase intention in live-shopping contexts (Liao *et al.*, 2022). Besides, flow can positively influence return and repurchase intentions in SC settings (Herrando *et al.*, 2019). Baker *et al.* (2019) have also demonstrated a favorable association between heightened social presence and the flow experience. Liu *et al.* (2016) have discussed the mediating role of immersion between environmental stimuli and purchase intention within SC context. Additionally, Tuncer (2021) found that immersion is the underlying mechanism between IT affordances and SC intention. Therefore, we posit the following hypotheses:

H7a. Social presence mediates the path between haptic imagery and immersion.

H7b. Social presence mediates the path between haptic imagery and continuance intention.

H8a. Immersion mediates the path between haptic imagery and continuance intention.

H8b. Immersion mediates the path between social presence and continuance intention.

Moderating effect of autotelic personality

According to FT, Tse *et al.* (2020) defined autotelic personality as a set of attributes leading individuals to seek intrinsic enjoyment and fulfillment in activities, focusing on the experience itself rather than external stimuli. Autotelic individuals are intrinsically motivated, finding satisfaction in the activity independent of external incentives,

facilitating effortless immersion in activities and often experiencing states of flow (Baumann, 2021). Transposing this notion to the SC context, users with heightened autotelic traits are anticipated to exhibit reduced susceptibility to external uses and gratifications. Their engagement within the platform is envisaged to stem from intrinsic enjoyment derived from experiences using the app rather than external stimuli such as ICEs, signifying a self-driven SC involvement.

Based on FT, individuals with high autotelic traits may show reduced responsiveness to external stimuli like haptic imagery and social presence in SC. Their engagement is less influenced by external factors due to their intrinsic fulfillment-seeking inclination. These users are anticipated to prioritize intrinsic satisfaction (Tse *et al.*, 2020), engaging in SC activities driven by the inherent experiences rather than external inducements. Conversely, less autotelic users may show a greater attraction to ICEs, amplifying the impact of these enhancements on both immersion and continuance intention within SC platforms. The effects of ICEs on immersion and continuance intention could be more accentuated among individuals with lower autotelic traits. Accordingly, we propose the following hypotheses:

H9a. The positive relationship between haptic imagery and social presence will be more pronounced among users with lower autotelic personality traits.

H9b. The positive relationship between haptic imagery and immersion will be more pronounced among users with lower autotelic personality traits.

H9c. The positive relationship between haptic imagery and continuance intention will be more pronounced among users with lower autotelic personality traits.

H9d. The positive relationship between social presence and immersion will be more pronounced among users with lower autotelic personality traits.

H9e. The positive relationship between social presence and continuance intention will be more pronounced among users with lower autotelic personality traits.

Figure 1 illustrates the research framework for this study.

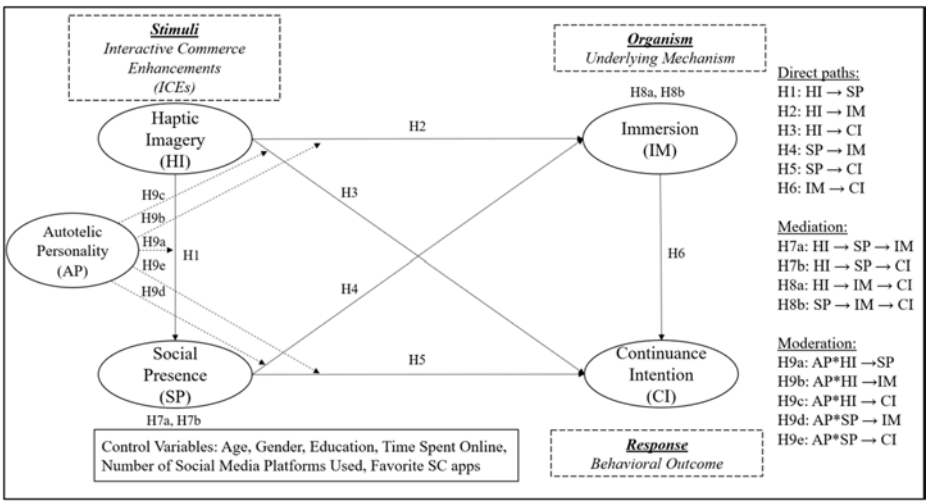

Figure 1.
Research framework

Source: Authors' own work

Research methodology

Measures and data collection

The measurements utilized were drawn from established sources, detailed in Table III and adapted into the context of SC app to ensure content validity. Haptic imagery, social presence and immersion were assessed using a five-point Likert scale, while continuance intention and autotelic personality were gauged on a seven-point Likert scale. This is to mitigate common method variance (CMV) and reduce the occurrence of straight-lining problems (Podsakoff *et al.*, 2024). We conducted both a pretest, engaging marketing professors and marketing practitioners and a subsequent pilot test with a sample size of 30 respondents to validate the survey instrument's effectiveness before the main data collection phase (Saunders *et al.*, 2019). To enhance survey validity, control variables such as age, gender, education, time spent online, number of social media platforms used and respondents' favorite SC apps were considered. This research employed purposive sampling, selecting Malaysian participants who had conducted at least one transaction on an SC app within the last 6 months, aiming for a targeted sample (Lim *et al.*, 2019). This assured data relevance while minimizing sampling errors (Saunders *et al.*, 2019). We employed a dual-source data collection approach, encompassing both offline and online channels, to ensure comprehensive coverage and diverse respondent inclusion (Ji *et al.*, 2023). A token of appreciation worth RM10 (voucher), approximately US$2.15 was provided.

Study context used in the questionnaire

At the beginning of the questionnaire, respondents were briefed on the meaning of SC apps. Subsequently, they were asked to recall recent experiences in using their favorite SC apps. Based on these experiences, evaluate their favorite SC apps, in terms of haptic imagery, social presence, immersion and continuance intention. Recognizing the abstraction of haptic imagery, participants were asked to envision scenarios where they could virtually sense the texture of shoes or simulate the feeling of touching them through the app interface. To further enhance respondents' understanding, we supplemented these adapted items with a visual aid (see Figure 2), illustrating how products, such as shoes, could be displayed within the SC app environment. This image served as a reference point to help participants visualize and recall the tactile sensations associated with interacting with products on the app.

Sample and SC app usage

Given an effect size of 0.15 indicating a medium effect, an alpha level of 0.05, a power of 0.80 and six predictors, GPower 3.1 indicates that a minimum sample size of 98 is necessary (Faul *et al.*, 2009). In total, 400 questionnaires were collected, resulting in 369 valid responses after the data-cleaning procedure of removing the straight-lining cases and outlier cases. Recognizing the significance of missing values in survey research, we implemented prevention steps ahead of the main data collection phase (Aguinis *et al.*, 2021). For the online questionnaire, we made every question compulsory to answer, ensuring that respondents responded to each item before proceeding. Similarly, for offline questionnaires, we verified that all questions were answered before providing vouchers to the respondents. These measures were put in place to prevent missing values, thereby enhancing the overall predictive power. In addition to the preventive measures outlined earlier, we conducted a thorough examination of the raw data to identify and address outliers. Specifically, we defined outliers as data points that deviated by at least 3 standard deviations from the mean. This criterion aligns with the common definition of outliers in statistical analysis (Aguinis *et al.*, 2013; Sullivan *et al.*, 2021). Upon applying this criterion, we identified 13 cases that met the threshold for being classified as outliers. Subsequently, these outlying cases were excluded from our dataset to ensure the robustness and accuracy of our analysis.

Construct	Item	Source	Outer loading	α	CR (ρ_a)	CR (ρ_c)	AVE
Haptic Imagery	HI1: While using this app, I felt as if moving my fingers on the product displayed (e.g. the shoes).	(Ivanov *et al.*, 2022)	0.881	0.820	0.831	0.892	0.734
	HI2: While using this app, I felt as if the product displayed can be tried on my body (e.g. the shoes were on my feet).		0.824				
	HI3: While using this app, I felt that I could examine the texture of the product displayed (e.g. the texture of the shoes).		0.864				
Social Presence	SP1: I feel a sense of human contact when using this app.	(Gao *et al.*, 2017)	0.910	0.919	0.920	0.943	0.805
	SP2: I feel a sense of sociability when using this app.		0.855				
	SP3: I feel a sense of human warmth when using this app.		0.887				
	SP4: I feel a sense of human sensitivity when using this app.		0.935				
Immersion	IM1: I was deeply engrossed when using this app.	(Tuncer, 2021; Liao *et al.*, 2022)	0.859	0.877	0.877	0.916	0.731
	IM2: My attention was focused when using this app.		0.860				
	IM3: While browsing this app, I feel that time is passing quickly.		0.835				
	IM4: When browsing this app, I often focus too much and forget about other things I have to do.		0.865				
Continuance Intention	CI1: In the future, I am willing to provide my experiences and suggestions when my friends on this app want my advice on buying something.	(Hu *et al.*, 2022)	0.860	0.905	0.907	0.930	0.725
	CI2: I am willing to continue sharing my own shopping experience with my friends on this app.		0.873				
	CI3: In the future, I am willing to recommend products that are worth buying to my friends on this app.		0.853				
	CI4: I will consider the shopping experiences of my friends on this app when I want to shop.		0.833				
	CI5: I am willing to continue buying the products recommended by my friends on this app.		0.839				
Autotelic Personality	AP1: I often try to develop interest and curiosity to enjoy life.	(Tse *et al.*, 2020)	0.687	0.860	0.865	0.893	0.545
	AP2: I am persistent in the things that I do.		0.745				
	AP3: I am low self-centeredness.		0.732				
	AP4: I do and enjoy things for their own sake regardless of whether there will be any external rewards.		0.748				
	AP5: I habitually react to boring situations with interesting ideas to transform the moments into enjoyment.		0.708				
	AP6: I tend to turn potential challenges into opportunities to learn.		0.745				
	AP7: I find it easy to stay focused and control my attention.		0.796				

Note: The respondents were asked to respond to these statements based on their favorite SC apps

Table III.
Measurement items of constructs and results of the measurement model assessment

Figure 2.
Users can virtually feel the texture of the shoes on SC app

Source: Authors' own work

The demographic profile is detailed in Table IV. Among the respondents, there was a relatively balanced representation in terms of gender, with 53.93 per cent of male and 46.07 per cent of female. The majority belonged to the Malay ethnicity (38.48 per cent), followed closely by the Chinese (35.50 per cent), while 18.70 per cent were Indian, and 7.32 per cent identified as belonging to other ethnic groups. The age distribution varied, with the largest segment falling within the range of 26–30 years (36.31 per cent). In terms of educational attainment, the majority of respondents had completed an undergraduate degree (60.16 per cent). Concerning monthly income, nearly half of the respondents fell within the range of RM2,001–RM4,000 (37.13 per cent) as the highest percentage worked at the executive level (43.63 per cent).

Table V presents the respondents' engagement with SC apps. The initial questionnaire query focused on whether respondents had made any purchases via their favorite SC app in the past 6 months. Cases that responded "Yes" for this question were considered as valid responses. Instagram stood out as the most favored SC app, accounting for 17.07 per cent, closely followed by WhatsApp (16.53 per cent) and TikTok/DouYin (15.99 per cent). Activities predominantly performed on these platforms included product or service purchasing (41.73 per cent), live-shopping (40.11 per cent) and group-buying (27.37 per cent). The majority accessed these apps for durations ranging from 30 min to 3 h, with 36.86 per cent of users spending 1 to 3 h and 31.44 per cent spending 30 min to 1 h on these platforms daily.

Demographics	Category	Frequency	Percent (%)
Gender	Male	199	53.93
	Female	170	46.07
Ethnicity	Malay	142	38.48
	Chinese	131	35.50
	Indian	69	18.70
	Others	27	7.32
Age	≤25 years	61	16.53
	26–30 years	134	36.31
	31–35 years	91	24.66
	36–40 years	40	10.84
	41–45 years	30	8.13
	≥46 years	13	3.52
Highest Level of Education	Secondary or below	39	10.57
	Diploma	64	17.34
	Undergraduate degree	222	60.16
	Postgraduate degree	44	11.92
Monthly Income	<RM2,000	51	13.82
	RM2,001–RM4,000	137	37.13
	RM4,001–RM6,000	111	30.08
	RM6,001–RM8,000	43	11.65
	RM8,001–RM1,0000	13	3.52
	>RM10000	14	3.79
Occupation	Management level	62	16.80
	Executive level	161	43.63
	Self-employed	50	13.55
	Housewife	21	5.69
	Student	32	8.67
	Others	43	11.65

Table IV.
Demographic profile
(n = 369)

Favorite SC app	Frequency	Percent (%)
Instagram	63	17.07
WhatsApp	61	16.53
TikTok/DouYin	59	15.99
Facebook	54	14.63
XiaoHongShu	48	13.01
Telegram	33	8.94
WeChat	24	6.50
Twitter	14	3.79
YouTube	13	3.52
*SC activities performed**	*Frequency*	*Percent of cases (%)*
Purchasing products or services	154	41.73
Live-shopping	148	40.11
Group-buying	101	27.37
Sharing and receiving suggestions for purchasing products or services	65	17.62
Browsing for shopping posts	45	12.20
Browsing for products or services ratings and reviews by other users	26	7.05
Daily access time	*Frequency*	*Percent (%)*
Less than 30 mins	35	9.49
30 mins-1hour	116	31.44
1hour-3 hours	136	36.86
More than 3 h	82	22.22

Note: *Respondents were allowed to select multiple options

Table V.
SC app usage

Data analysis and results

Partial least squares–structural equation modeling

This research employs PLS-SEM due to its suitability for analyzing complex relationships in predictive-focused studies (Sarstedt *et al.*, 2022). The application of PLS-SEM techniques is particularly advantageous for robust estimations, especially when dealing with data exhibiting non-normal distribution patterns which was the case of the current research. Mardia's coefficient was applied to assess multivariate skewness and kurtosis (Mardia, 1970). The results demonstrated that kurtosis (b = 37.688; p < 0.001) surpassed the 20-point threshold, indicating non-normal distribution of the data (Kline, 2023). SmartPLS 4 was selected due to its capabilities to advanced modeling techniques, more efficient assessment of measurement and structural models, as well as streamlined mediation and moderation analyses (Cheah *et al.*, 2023).

Common method variance

Two subsequent statistical assessments were performed to mitigate the potential impact of CMV (Chopdar and Paul, 2023; Podsakoff *et al.*, 2024). Initially, Harman's single-factor test unveiled that a solitary factor accounted for less than 50 per cent of the overall variance, indicating a minimal likelihood of CMV. Furthermore, a full collinearity test was conducted to identify potential CMV issues. Consequently, the VIF values for the constructs, including haptic imagery (1.475), social presence (1.683), immersion (2.549), continuance intention (2.207) and autotelic personality (1.509), were found to be below the threshold value of 3.3, affirming the insignificance of CMV concerns (Kock, 2015, 2017).

Measurement model evaluation

All evaluation criteria applied to assess the measurement model adhere to the guidelines outlined by Hair *et al.*, 2021. Displayed in Table III, loadings for all items surpassed the threshold of 0.708, adhering to the suggested criterion. Subsequently, internal consistency was assessed using Cronbach's alpha (α) and composite reliability (CR) which includes ρ_a and ρ_c. All metrics exceeded the recommended 0.7 thresholds, indicating sound reliability. The constructs exhibited an average variance extracted (AVE) surpassing 0.5, signifying established convergent validity. We conducted a thorough examination to ensure the discriminant validity of the measurements. Table VI provides the results for the Fornell–

Fornell–Larcker criterion	1	2	3	4	5
1. Autotelic Personality	*0.738*				
2. Continuance Use Intention	0.625	*0.852*			
3. Haptic Imagery	0.292	0.563	*0.857*		
4. Immersion	0.650	0.797	0.542	*0.855*	
5. Social Presence	0.569	0.646	0.339	0.678	*0.897*
Heterotrait–monotrait ratio of correlations					
	1	2	3	4	5
1. Autotelic Personality					
2. Continuance Use Intention	0.704				
3. Haptic Imagery	0.342	0.649			
4. Immersion	0.744	0.893	0.632		
5. Social Presence	0.636	0.707	0.387	0.755	

Note: HTMT < 0.90

Table VI.
Discriminant validity

Larcker Criterion, indicating that the square root of the AVE for each construct was greater than the correlations between that construct and all other constructs. Additionally, heterotrait–monotrait (HTMT) values for all variables remained below 0.90 as shown in Table VI, confirming discriminant validity (Henseler *et al.*, 2015; Sarstedt *et al.*, 2022). In short, the measurements utilized in this study exhibited robust reliability and validity, establishing the suitability for further evaluation of the structural model.

Structural model evaluation

Direct effects. The evaluation of the structural model adhered to the criteria outlined by Hair *et al.*, 2021 and the results are demonstrated in Table VII. All variance inflation factor (VIF) values remained under 3.3, signifying the absence of substantial collinearity among the constructs. Additionally, we assessed the significance and relevance of path coefficients. The hypotheses (H1–H6) were supported as a result of running bootstrapping technique which employed 10,000 subsamples, demonstrating statistical significance (p-value < 0.05, t-value > 1.645 for one-tailed test, CI does not include a zero).

Following, the evaluation of the coefficient of determination (R^2) for endogenous variables and the effect size (f^2) was conducted to understand the model's explanatory power. The values (R^2 of IM = 0.670; R^2 of CI = 0.718) surpassed the 0.67 threshold, signifying substantial explanatory strength. Specifically, the direct influences of HI and SP collectively accounted for 67.0 per cent of the variance in IM. Meanwhile, the combined impact of HI, SP, and IM elucidated 71.8 per cent of the variance in CI. Next, the paths for H1, H3 and H5 demonstrated small effect sizes, whereas the paths for H2, H4 and H6 showcased medium effect sizes. Additionally, the influence of control variables (age, gender, education, time spent online, number of social media platforms used and respondents' favorite SC apps) on CI did not show statistical significance.

As shown in Table VIII, the PLSpredict procedure indicated the model's predictive relevance, with Q^2 values for IM (Q^2 = 0.563) and CI (Q^2 = 0.526) exceeding 0.50, signifying large predictive relevance (Hair *et al.*, 2019). Upon examining the Q^2predict statistic, it is noteworthy that all Q^2predict values for the indicators exceed zero. This implies that the predictions generated through PLS-SEM outperform the naïve LM benchmark. Therefore, comparing the RMSE values with the naïve LM benchmark was meaningful (Shmueli *et al.*, 2019). The RMSE was utilized, noting highly symmetrically distributed prediction errors. Consequently, the results showcased the model's medium predictive capability, with majority of the indicators in the PLS-SEM displaying lower RMSE values than the LM figures (i.e. negative values shown in the last column of Table VIII).

Mediation and moderation effects. The bootstrapping technique was employed to assess the mediation effects of social presence and immersion. As depicted in Table VII, the mediating effect of social presence was deemed significant (CI excluding zero; p-value < 0.05) across paths (HI → SP → IM and HI → SP → CI), confirming hypotheses H7a and H7b. Similarly, the mediating effect of immersion was significant (CI excluding zero; p-value < 0.001) across paths (HI → IM → CI and SP → IM → CI), supporting hypotheses H8a and H8b. Hence, both the mediating roles of social presence and immersion were affirmed.

Furthermore, autotelic personality was found to significantly moderate all the proposed paths except for the path of AP*HI → CI. Thus, all the moderation hypotheses were supported (i.e. H9a, H9b, H9d and H9e), except for H9c. The effect sizes of the moderation paths proposed for H9a, H9d and H9e were large while the effect size of the moderation path proposed for H9b was medium (Hair *et al.*, 2021). Figure 3, employing slope analysis available in SmartPLS 4, illustrates a stronger positive correlation between HI and SP among individuals exhibiting lower AP traits (red slope is the steepest). Moving to Figure 4,

Table VII. Hypothesis testing results

Hypotheses	β	Std. deviation	t-value	p-value	Confidence interval	VIF	f^2	Result
Direct effects								
H1: HI → SP	0.140**	0.051	2.765	0.003	(0.055, 0.220)	1.192	0.027(S)	H1 was supported
H2: HI → IM	0.256***	0.035	7.312	0.000	(0.199, 0.315)	1.302	0.152 (M)	H2 was supported
H3: HI → CI	0.203***	0.037	5.545	0.000	(0.144, 0.265)	1.576	0.093 (S)	H3 was supported
H4: SP → IM	0.337***	0.041	8.200	0.000	(0.267, 0.403)	1.630	0.212 (M)	H4 was supported
H5: SP → CI	0.140**	0.046	3.069	0.001	(0.065, 0.216)	2.068	0.034 (S)	H5 was supported
H6: IM → CI	0.256***	0.035	7.312	0.000	(0.310, 0.497)	3.120	0.191 (M)	H6 was supported
Control effects								
Age → CI	0.041ns	0.029	1.388	0.083	(−0.008, 0.089)	-	-	-
Education → CI	0.037ns	0.025	1.473	0.070	(−0.005, 0.079)	-	-	-
Gender → CI	−0.034ns	0.022	1.532	0.055	(−0.002, 0.062)	-	-	-
Time spent online → CI	0.026ns	0.032	0.794	0.214	(−0.029, 0.078)	-	-	-
No. of social media platforms used → CI	−0.043ns	0.032	1.350	0.089	(−0.096, 0.010)	-	-	-
Favorite SC apps → CI	−0.008ns	0.029	0.292	0.385	(−0.056, 0.039)	-	-	-
Mediation effects								
H7a: HI → SP → IM	0.047**	0.018	2.589	0.005	(0.018, 0.078)	-	-	H7a was supported
H7b: HI → SP → CI	0.020*	0.010	1.980	0.024	(0.005, 0.037)	-	-	H7b was supported
H8a: HI → IM → CI	0.105***	0.020	5.144	0.000	(0.072, 0.138)	-	-	H8a was supported
H8b: SP → IM → CI	0.138***	0.025	5.469	0.000	(0.096, 0.179)	-	-	H8b was supported
Moderation effects								
H9a: AP*HI →SP	−0.183***	0.058	3.137	0.000	(−0.281, − 0.088)	1.319	0.039 (L)	H9a was supported
H9b: AP*HI →IM	−0.094*	0.041	2.280	0.011	(−0.165, − 0.029)	1.433	0.018 (M)	H9b was supported
H9c: AP*HI → CI	−0.010ns	0.045	0.215	0.415	(−0.083, 0.063)	1.476	0.000 (N)	H9c was not supported
H9d: AP*SP → IM	−0.125***	0.037	3.354	0.000	(−0.187, − 0.064)	1.427	0.035 (L)	H9d was supported
H9e: AP*SP → CI	−0.143***	0.034	4.165	0.000	(−0.201, − 0.087)	1.678	0.045 (L)	H9e was supported

Notes: β = path coefficient; f^2 = effect size; HI = haptic imagery; SP = social presence; IM = immersion; CI = continuance intention; AP = autotelic personality; S = small; M = medium; L = large; ns = nonsignificant; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table VIII.
PLSpredict results

	Q^2 (construct)	Q^2predict (indicators)	PLS-SEM_RMSE	LM_RMSE	PLS-SEM_RMSE-LM_RMSE
IM1	0.563	0.368	1.028	1.033	−0.005
IM2		0.419	0.922	0.941	−0.019
IM3		0.423	0.992	1.009	−0.017
IM4		0.428	1.057	1.077	−0.020
CI1	0.526	0.391	1.284	1.290	−0.006
CI2		0.405	1.239	1.240	−0.001
CI3		0.390	1.369	1.356	0.013
CI4		0.321	1.501	1.496	0.005
CI5		0.390	1.498	1.500	−0.002

Notes: IM = immersion; CI = continuance Intention; RMSE = root mean squared error

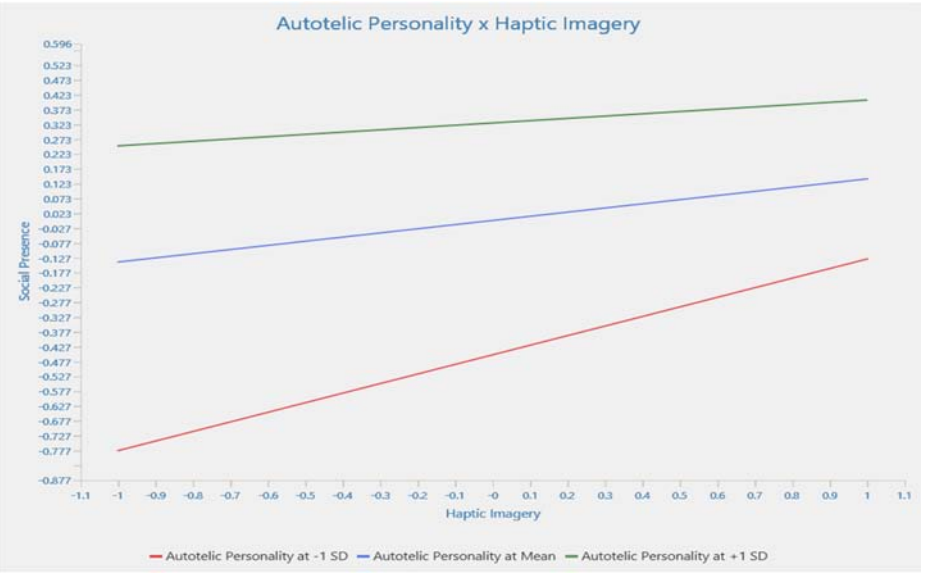

Figure 3.
Interaction plot for H9a: AP*HI →SP

Source: Authors' own work

it delineates a heightened positive association between HI and IM among users characterized by lower AP traits. Additionally, Figure 5 portrays a more prominent positive relationship between SP and IM among individuals with lower AP traits. Lastly, Figure 6 demonstrates a more emphasized positive correlation between SP and CI among users exhibiting lower AP traits. Please note that the lower AP traits were represented by the steepest slopes (red) in all the interaction plots.

Discussion

This study aimed to explore the impacts of ICEs, focusing on haptic imagery and social presence, on user immersion and intention to continue using SC apps. Through dual-source data collection and rigorous analysis, the study addressed three RQs effectively.

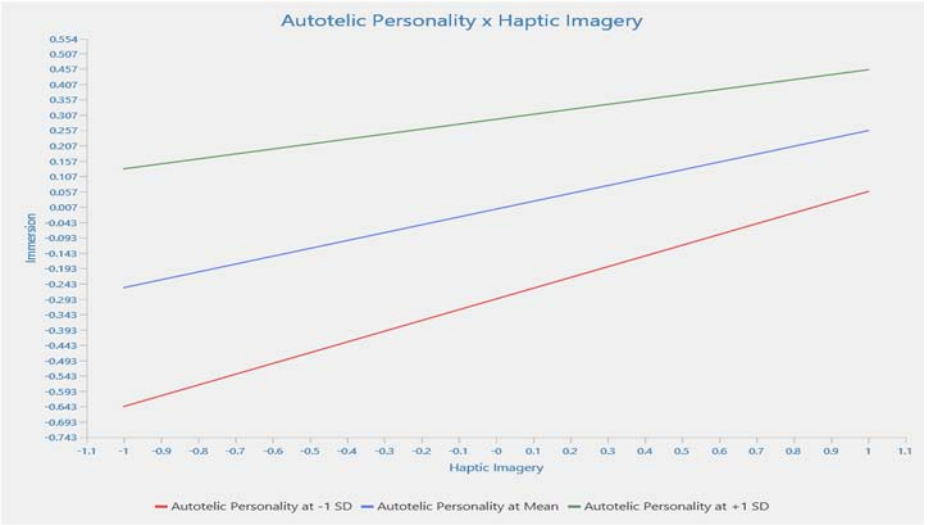

Figure 4.
Interaction plot for H9b: AP*HI →IM

Source: Authors' own work

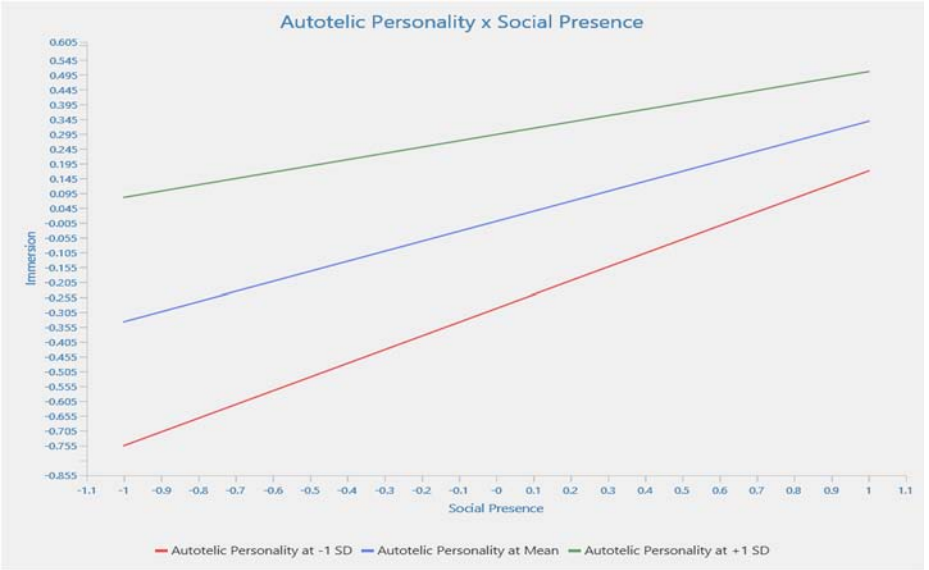

Figure 5.
Interaction plot for H9d: AP*SP → IM

Source: Authors' own work

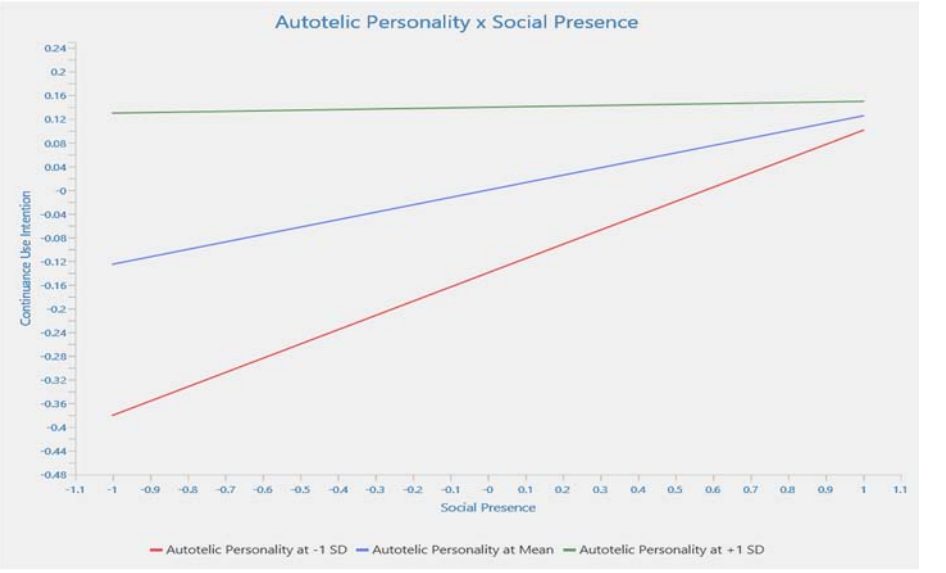

Figure 6.
Interaction plot for H9e: AP*SP → CI

Source: Authors' own work

The findings emphasize the positive effects of haptic imagery and social presence as crucial predictors for user immersion and continuance intention in SC. This aligns with previous research, emphasizing the strategic use of haptic technology, particularly with emerging touch-enabled technologies, to boost impulse buying and improve online channel engagement (De Canio and Fuentes-Blasco, 2021). Previous literature has also evinced the future utilization of haptic technologies in digital business-to-business and end-consumer markets (Ornati and Kalbaska, 2022). This indication stems from the observed potential of haptic technologies in enhancing digital interactions and mobile shopping experiences (Racat and Plotkina, 2023). The outcomes related to social presence echo prior research, indicating its positive impact on continuous participation intention by elevating consumers' perceived enjoyment. This, in turn, fortifies consumers' memorable experiences in live-streaming shopping contexts. Our discoveries also affirm the favorable impact of social presence, aligning with earlier studies that highlighted its ability to positively influence the flow experience and subsequently drive SC intention (Zhang *et al.*, 2014).

Second, this study reveals the mediating roles of social presence and immersion in the indirect pathways. Specifically, our results affirm the significant mediating role of social presence, linking haptic imagery to both immersion and continuance intention. This finding corresponds with previous research that has highlighted the mediating role of social presence in linking haptic sensations with smartphone behavioral performance (Hadi and Valenzuela, 2020). Baker *et al.* (2019) similarly discovered that in a virtual world environment, social presence serves as a significant mediator for the impact of telepresence on trust and enjoyment. Moreover, we addressed the mechanism by which immersion mediates between ICEs and continuance intention. Liao *et al.* (2022) showed that immersion mediates the relationship between communication style and purchase intention in live-streaming commerce, but the current research further extends the knowledge of underlying mechanism that immersion represents to illustrate its potency in enhancing SC usage experience.

Third, autotelic personality was found to moderate the effect of the ICEs (such as haptic imagery and social presence) on immersion and continuance intention. The findings reveal that the favorable impact of haptic imagery on boosting social presence becomes more evident among individuals with lower autotelic personality traits. Additionally, the impact of haptic imagery in heightening immersion is more pronounced among these users. Similarly, the constructive influence of social presence in elevating immersion is notably stronger among them. Lastly, the positive effect of social presence on fostering continuance intention appears to be more apparent among these users. These results suggest that users exhibiting lower autotelic traits may be more susceptible to the persuasive impact of ICEs, particularly in shaping their immersive experiences and fostering continued engagement on SC platforms. These insights underline the importance of considering individual differences in designing more personalized and immersive experiences within the SC apps.

The findings related to the moderating effect of autotelic personality align with the theoretical underpinnings of FT, particularly regarding the nature of autotelic personality (Tse *et al.*, 2020). FT by Csikszentmihalyi (1975) posits that individuals with high autotelic traits exhibit a predisposition toward seeking intrinsic enjoyment and immersion in activities for their inherent gratification. However, the lack of significant differences in the relationship between haptic imagery and continuance intention across different autotelic personality traits might indicate the robustness of haptic stimuli in shaping users' intentions. Haptic imagery, possess an inherent ability to captivate users, regardless of their individual tendencies toward seeking intrinsic enjoyment. This suggests that the persuasive power of haptic cues in driving continuance intention operates independently of an individual's tendency toward being intrinsically motivated.

Theoretical contributions

This research provides three significant revelations by addressing the critical gaps in understanding the influence of ICEs on continuance intention within SC settings. Currently, research on the effectiveness of these advancements in ensuring sustained usage is lacking, with existing literature primarily centered on a singular theoretical approach when observing consumer behavior in SC (Chiu *et al.*, 2022; Franque *et al.*, 2020). First, we complement the interactive marketing research on social media by proposing a comprehensive model to illuminate SC continuance intentions from integrated perspectives of UGT and FT. Specifically, our study unveils the constructive influence of haptic imagery and social presence in fostering immersion and continuance intention. The current research represents a significant extension of the existing interactive marketing landscape, particularly within the domain of SC.

Second, we make a noteworthy contribution to interactive marketing research by adopting the concept of social presence and immersion in social media literature. Previous studies often overlooked elucidating the underlying mechanisms of how these technological enhancements influence consumer behavior (Ornati and Kalbaska, 2022). However, this paper integrates the UGT and FT to understand the holistic picture between the variables. The findings reveal the mediating roles played by social presence and immersion as catalysts for positive experiences within SC platforms, emphasizing the significance of mediators in bolstering continuance intention. This insight forms a novel theoretical foundation for investigating the effectiveness of interactive marketing strategies in the SC context.

Third, we make a unique theoretical contribution by introducing autotelic personality as the influential moderator in the social media and SC literature. Previous studies have frequently probed into extrinsic moderators (Liao *et al.*, 2022), often overlooking the substantial influence of intrinsic factor – a crucial moderator inspired by theory, despite

scholars have emphasized the influence of personality traits on user continuance intention (Mouakket, 2018). This research delves into the moderating influence of autotelic personality within the model, delineating the boundaries that impact the strength of the ICEs in these moderating paths, thereby enhancing the depth of the theoretical model. These findings illustrate that the impact of ICEs varies dynamically based on personality differences, advancing beyond static perspectives found in previous SC research.

Managerial implications

Current research offers actionable insights for optimizing interactive marketing within the social media landscape. First, understanding the effectiveness of ICEs in driving user immersion and continuance intention provides valuable insights for social media app developers as SC features are being integrated within. It strongly suggests the need to advance the app technology and explore novel ways to amplify immersion levels, thereby elevating sustained usage. Haptic sensations can be enhanced by investing in technology that refines tactile feedback and incorporates interactive elements. Harnessing the potential of haptic imagery, the app developers can redefine the user journey through interactive haptic experiences such as virtual try-ons and captivating demonstrations. Moreover, the social presence experience can be enriched through features simulating nuanced social interactions. Leveraging social presence features opens avenues for live interactive sessions, collaborative shopping, tailored recommendations and virtual social events.

Third, understanding how autotelic personality traits moderate the effects of ICEs provides a unique perspective for personalized app design. To ensure sustained usage among less autotelic users, app developers can significantly enhance ICEs to meet their gratification needs. A user-centric design approach is essential, focusing on interactivity and social engagement to prolong user engagement. SC apps can adapt by incorporating adjustable features to cater to users' varying preferences and apply user profiling to offer tailored recommendations or user-specific features in elevating engagement. Customizing engagement strategies based on different autotelic traits, such as providing challenges for intrinsic rewards or nurturing social communities for those valuing interaction, holds promise in promoting continued usage.

Limitations and future research

Primarily, this research was generalized across SC app categories without specific focus. Subsequent investigations could consider distinct SC app categories, such as group-buying apps, peer-sharing apps or influencer communities. This targeted approach will provide additional insights into how the model operates within these specialized contexts. Another limitation of our study is that we did not extensively explore how users' reactions to haptic stimuli may vary across different product categories. Future research could address this limitation by investigating the differential impact of haptic imagery on user experiences within various product domains, such as apparel, electronics or cosmetics. Understanding these variations can provide valuable insights into the effectiveness of haptic features in enhancing user engagement and satisfaction across different types of products in SC environments. Besides, exploring the moderating effects of product categories on the relationship between haptic stimuli and user outcomes can further enrich our understanding of the role of tactile sensations in shaping user behaviors within SC platforms.

Additionally, this study primarily focused on continuance intention within SC apps, omitting exploration into other critical outcomes like switching intention. Future studies could delve into this factor to offer a more comprehensive understanding of SC app usage dynamics. The study overlooked the potential moderation effect of diverse in-app categories

on the influence of ICEs. Subsequent research should probe this aspect to discern whether ICEs exhibit varying efficacy across distinct product categories (e.g. apparel versus pet supplies). Furthermore, this research has not included other potential variables such as personalization, eye tracking or brand engagement (Florenthal, 2019). Future research could explore these aspects to deepen our understanding of user engagement dynamics on SC platforms, aligning with the evolving landscape of digital interaction and consumer behavior. Moreover, employing a cross-sectional approach limited the data capture to a specific point in time. To track the evolving nature of SC apps, future research could employ longitudinal or experimental methods. Lastly, the sample for this research was restricted to Malaysian users of SC apps, limiting the generalizability of the findings to a broader global SC audience. Future investigations should aim to replicate this study across diverse geographical locations to enhance the relevance of the research insights.

ORCID iDs

Sin-Er Chong https://orcid.org/0009-0005-5474-3680
Xin-Jean Lim https://orcid.org/0000-0002-6794-3607

References

Aguinis, H., Gottfredson, R.K. and Joo, H. (2013), "Best-practice recommendations for defining, identifying, and handling outliers", *Organizational Research Methods*, Vol. 16 No. 2, pp. 270-301. doi: 10.1177/1094428112470848.

Aguinis, H., Hill, N.S. and Bailey, J.R. (2021), "Best practices in data collection and preparation: recommendations for reviewers, editors, and authors", *Organizational Research Methods*, Vol. 24 No. 4, pp. 678-693. doi: 10.1177/1094428119836485.

Akram, U., Junaid, M., Zafar, A.U., Li, Z. and Fan, M. (2021), "Online purchase intention in Chinese social commerce platforms: being emotional or rational?", *Journal of Retailing and Consumer Services*, Vol. 63, p. 102669. doi: 10.1016/j.jretconser.2021.102669.

Aydın, G. (2019), "Do personality traits and shopping motivations affect social commerce adoption intentions? Evidence from an emerging market", *Journal of Internet Commerce*, Vol. 18 No. 4, pp. 428-467. doi: 10.1080/15332861.2019.1668659.

Baker, E., Hubona, G. and Srite, M. (2019), "Does 'being there' matter? The impact of web-based and virtual world's shopping experiences on consumer purchase attitudes", *Information & Management*, Vol. 56 No. 7. doi: 10.1016/j.im.2019.02.008.

Barger, V., Peltier, J.W. and Schultz, D.E. (2016), "Social media and consumer engagement: a review and research agenda", *Journal of Research in Interactive Marketing*, Vol. 10 No. 4, pp. 268-287. doi: 10.1108/JRIM-06-2016-0065.

Baumann, N. (2021), "Autotelic personality", in Peifer C, Engeser S (eds.), *Advances in Flow Research*, Springer International Publishing, Cham, pp. 231-261. doi: 10.1007/978-3-030-53468-4_9.

Brakus, J.J., Schmitt, B.H. and Zarantonello, L. (2009), "Brand experience: what is it? How is it measured? Does it affect loyalty?", *Journal of Marketing*, Vol. 73 No. 3, pp. 52-68.

Busalim, A., Hollebeek, L.D. and Lynn, T. (2023), "The effect of social commerce attributes on customer engagement: an empirical investigation", *Internet Research*, Vol. ahead-of-print. doi: 10.1108/INTR-03-2022-0165.

Busalim, A.H., Ghabban, F. and Hussin, A.R.C. (2021), "Customer engagement behaviour on social commerce platforms: an empirical study", *Technology in Society*, Vol. 64, p. 101437. doi: 10.1016/j.techsoc.2020.101437.

Cheah (Jacky), J.-H., Magno, F. and Cassia, F. (2023), "Reviewing the SmartPLS 4 software: the latest features and enhancements", *Journal of Marketing Analytics*, Vol. 12, pp. 97-107. doi: 10.1057/s41270-023-00266-y.

Chen, C., Hsiao, K. and Wu, S. (2018), "Purchase intention in social commerce an empirical examination of perceived value and social awareness", *Library Hi Tech*, Vol. 36 No. 4, pp. 583-604. doi: 10.1108/LHT-01-2018-0007.

Chen, J. and Shen, X.-L. (2015), "Consumers' decisions in social commerce context: an empirical investigation", *Decision Support Systems*, Vol. 79, pp. 55-64. doi: 10.1016/j.dss.2015.07.012.

Cheng, X., Gu, Y. and Shen, J. (2019), "An integrated view of particularized trust in social commerce: an empirical investigation", *International Journal of Information Management*, Vol. 45, pp. 1-12. doi: 10.1016/j.ijinfomgt.2018.10.014.

Cheung, M.L., Pires, G.D., Rosenberger, P.J. and De Oliveira, M.J. (2020), "Driving consumer-brand engagement and co-creation by brand interactivity", *Marketing Intelligence & Planning*, Vol. 38 No. 4, pp. 523-541. doi: 10.1108/MIP-12-2018-0587.

Chiu, W., Oh, G.-E. and Cho, H. (2022), "An integrated model of consumers' decision-making process in social commerce: a cross-cultural study of the United States and China", *Asia Pacific Journal of Marketing and Logistics*, Vol. 35 No. 7, pp. 1682-1698. doi: 10.1108/APJML-01-2022-0029.

Chopdar, P.K. and Paul, J. (2023), "The impact of brand transparency of food delivery apps in interactive brand communication", *Journal of Research in Interactive Marketing*, Vol. 18 No. 2, pp. 238-256. doi: 10.1108/JRIM-12-2022-0368.

Csikszentmihalyi, M. (1975), *Beyond boredom and anxiety: experiencing flow in work and play*, Jossey-Bass, San Francisco, CA.

De Canio, F. and Fuentes-Blasco, M. (2021), "I need to touch it to buy it! How haptic information influences consumer shopping behavior across channels", *Journal of Retailing and Consumer Services*, Vol. 61, p. 102569. doi: 10.1016/j.jretconser.2021.102569.

Doha, A., Elnahla, N. and McShane, L. (2019), "Social commerce as social networking", *Journal of Retailing and Consumer Services*, Vol. 47, pp. 307-321. doi: 10.1016/j.jretconser.2018.11.008.

Faul, F., Erdfelder, E., Buchner, A. and Lang, A.-G. (2009), "Statistical power analyses using G*Power 3.1: tests for correlation and regression analyses", *Behavior Research Methods*, Vol. 41 No. 4, pp. 1149-1160. doi: 10.3758/BRM.41.4.1149.

Florenthal, B. (2019), "Young consumers' motivational drivers of brand engagement behavior on social media sites: a synthesized U&G and TAM framework", *Journal of Research in Interactive Marketing*, Vol. 13 No. 3, pp. 351-391. doi: 10.1108/JRIM-05-2018-0064.

Franque, F.B., Oliveira, T., Tam, C. and Santini, F.D.O. (2020), "A meta-analysis of the quantitative studies in continuance intention to use an information system", *Internet Research*, Vol. 31 No. 1, pp. 123-158. doi: 10.1108/INTR-03-2019-0103.

Gao, W., Liu, Z. and Li, J. (2017), "How does social presence influence SNS addiction? A belongingness theory perspective", *Computers in Human Behavior*, Vol. 77, pp. 347-355. doi: 10.1016/j.chb.2017.09.002.

Gligor, D. and Bozkurt, S. (2021), "The role of perceived social media agility in customer engagement", *Journal of Research in Interactive Marketing*, Vol. 15 No. 1, pp. 125-146. doi: 10.1108/JRIM-12-2019-0196.

Gu, Y., Cheng, X. and Shen, J. (2023), "Design shopping as an experience: exploring the effect of the live-streaming shopping characteristics on consumers' participation intention and memorable experience", *Information & Management*, Vol. 60 No. 5, p. 103810. doi: 10.1016/j.im.2023.103810.

Hadi, R. and Valenzuela, A. (2020), "Good vibrations: consumer responses to technology-mediated haptic feedback", *Journal of Consumer Research*, Vol. 47 No. 2, pp. 256-271. doi: 10.1093/jcr/ucz039.

Hair, J., Hult, G.T.M., Ringle, C. and Sarstedt, M. (2021), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 3rd ed, SAGE Publications, Los Angeles.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2-24. doi: 10.1108/EBR-11-2018-0203.

Hajli, M. (2013), "A research framework for social commerce adoption", *Information Management & Computer Security*, Vol. 21 No. 3, pp. 144-154. doi: 10.1108/IMCS-04-2012-0024.

Hajli, M.N. (2014), "The role of social support on relationship quality and social commerce", *Technological Forecasting and Social Change*, Vol. 87, pp. 17-27. doi: 10.1016/j.techfore.2014.05.012.

Han, M.C. (2023), "Checkout button and online consumer impulse-buying behavior in social commerce: a trust transfer perspective", *Journal of Retailing and Consumer Services*, Vol. 74, p. 103431. doi: 10.1016/j.jretconser.2023.103431.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115-135. doi: 10.1007/s11747-014-0403-8.

Herrando, C., Jimenez-Martinez, J. and De Hoyos, M. (2018), "From sPassion to sWOM: the role of flow", *Online Information Review*, Vol. 42 No. 2, pp. 191-204. doi: 10.1108/OIR-09-2016-0243.

Herrando, C., Jimenez-Martinez, J. and Martin-De Hoyos, M. (2017), "Passion at first sight: how to engage users in social commerce contexts", *Electronic Commerce Research*, Vol. 17 No. 4, pp. 701-720. doi: 10.1007/s10660-016-9251-6.

Herrando, C., Jimenez-Martinez, J. and Martin-De Hoyos, M. (2019), "Social commerce users' optimal experience: stimuli, response and culture", *Journal of Electronic Commerce Research*, Vol. 20 No. 4, pp. 199-218.

Herrando, C., Jiménez-Martínez, J., Martín-De Hoyos, M.J., Asakawa, K. and Yana, K. (2022), "Emotional responses in online social interactions: the mediating role of flow", *Asia Pacific Journal of Marketing and Logistics*, Vol. 35 No. 7, pp. 1599-1617. doi: 10.1108/APJML-02-2022-0091.

Hew, -J.-J., Lee, V.-H., Ooi, K.-B. and Lin, B. (2016), "Mobile social commerce: the booster for brand loyalty?", *Computers in Human Behavior*, Vol. 59, pp. 142-154. doi: 10.1016/j.chb.2016.01.027.

Hossain, M.S., Rahman, M.F. and Zhou, X. (2021), "Impact of customers' interpersonal interactions in social commerce on customer relationship management performance", *Journal of Contemporary Marketing Science*, Vol. 4 No. 1, pp. 161-181. doi: 10.1108/JCMARS-12-2020-0050.

Hu, X., Chen, Z., Davison, R.M. and Liu, Y. (2022), "Charting consumers' continued social commerce intention", *Internet Research*, Vol. 32 No. 1, pp. 120-149. doi: 10.1108/INTR-07-2020-0397.

Huang, T.-L. and Liao, S.-L. (2017), "Creating e-shopping multisensory flow experience through augmented-reality interactive technology", *Internet Research*, Vol. 27 No. 2, pp. 449-475. doi: 10.1108/IntR-11-2015-0321.

Hung, S.-Y., Yu, A.P.-I. and Chiu, Y.-C. (2018), "Investigating the factors influencing small online vendors' intention to continue engaging in social commerce", *Journal of Organizational Computing and Electronic Commerce*, Vol. 28 No. 1, pp. 9-30. doi: 10.1080/10919392.2018.1407077.

Ivanov, A., Head, M. and Biela, C. (2022), "Mobile shopping decision comfort using augmented reality: the effects of perceived augmentation and haptic imagery", *Asia Pacific Journal of Marketing and Logistics*. doi: 10.1108/APJML-06-2022-0518.

Javornik, A., Marder, B., Barhorst, J.B., McLean, G., Rogers, Y., Marshall, P. and Warlop, L. (2022), "'What lies behind the filter?' Uncovering the motivations for using augmented reality (AR) face filters on social media and their effect on well-being", *Computers in Human Behavior*, Vol. 128, p. 107126. doi: 10.1016/j.chb.2021.107126.

Ji, F., Wang, F. and Wu, B. (2023), "How does virtual tourism involvement impact the social education effect of cultural heritage?", *Journal of Destination Marketing and Management*, Vol. 28, p. 100779. doi: 10.1016/j.jdmm.2023.100779.

Katz, E., Blumler, J.G. and Gurevitch, M. (1973), "Uses and gratifications research", *The Public Opinion Quarterly*, Vol. 37 No. 4, pp. 509-523.

Khan, A.G., Hasan, N. and Ali, M.R. (2023), "Unmasking the behavioural intention of social commerce in developing countries: integrating technology acceptance model", *Global Business Review*, Vol. 1, pp. 1-25. doi: 10.1177/09721509231180701.

Kim, B. and Kim, Y. (2019), "Facebook versus Instagram: how perceived gratifications and technological attributes are related to the change in social media usage", *Social Science Journal*, Vol. 56 No. 2, pp. 156-167. doi: 10.1016/j.soscij.2018.10.002.

Kline, R.B. (2023), *Principles and Practice of Structural Equation Modeling*, 5th ed., Guilford Publications, NY.

Kock, N. (2015), "Common method bias in PLS-SEM: a full collinearity assessment approach", *International Journal of E-Collaboration*, Vol. 11, pp. 1-10. doi: 10.4018/ijec.2015100101.

Kock, N. (2017), "Common method bias: a full collinearity assessment method for PLS-SEM", *Partial Least Squares Path Modeling*, Springer International Publishing, Cham, pp. 245-257.

Kuo, Y.-F. and Chen, F.-L. (2023), "The effect of interactivity of brands' marketing activities on Facebook fan pages on continuous participation intentions: an S-O-R framework study", *Journal of Retailing and Consumer Services*, Vol. 74, p. 103446. doi: 10.1016/j.jretconser.2023.103446.

Kwon, K.-J., Mai, L.-W. and Peng, N. (2020), "Determinants of consumers' intentions to share knowledge and intentions to purchase on s-commerce sites: incorporating attitudes toward persuasion attempts into a social exchange model", *Eurasian Business Review*, Vol. 10 No. 1, pp. 157-183. doi: 10.1007/s40821-019-00146-5.

Leong, L.-Y., Hew, T.S., Ooi, K.-B., Hajli, N. and Tan, G.W.-H. (2023), "Revisiting the social commerce paradigm: the social commerce (SC) framework and a research agenda", *Internet Research*, Vol. ahead-of-print No. ahead-of-print. doi: 10.1108/INTR-08-2022-0657.

Leong, L.-Y., Hew, T.-S., Ooi, K.-B., Metri, B. and Dwivedi, Y.K. (2022), "Extending the theory of planned behavior in the social commerce context: a Meta-Analytic SEM (MASEM) approach", *Information Systems Frontiers*, Vol. 25, pp. 1847-1879. doi: 10.1007/s10796-022-10337-7.

Li, X., Li, Z., Wang, Q. and Guo, X. (2023), "The influences of expressive and instrumental social ties in social commerce: integrating dyadic views from buyers and sellers", *Information Technology & People*, Vol. 37 No. 1, pp. 251-284. doi: 10.1108/ITP-11-2021-0875.

Liang, T.-P., Ho, Y.-T., Li, Y.-W. and Turban, E. (2011), "What drives social commerce: the role of social support and relationship quality", *International Journal of Electronic Commerce*, Vol. 16 No. 2, pp. 69-90. doi: 10.2753/JEC1086-4415160204.

Liao, J., Chen, K., Qi, J., Li, J. and Yu, I. (2022), "Creating immersive and parasocial live shopping experience for viewers: the role of streamers' interactional communication style", *Journal of Research in Interactive Marketing*, Vol. 17 No. 1, pp. 140-155, doi: 10.1108/JRIM-04-2021-0114.

Liao, S.-H., Widowati, R. and Hsieh, Y.-C. (2021), "Investigating online social media users' behaviors for social commerce recommendations", *Technology in Society*, Vol. 66, p. 101655. doi: 10.1016/j.techsoc.2021.101655.

Lim, W.M., Kumar, S., Pandey, N., Rasul, T. and Gaur, V. (2022), "From direct marketing to interactive marketing: a retrospective review of the journal of research in interactive marketing", *Journal of Research in Interactive Marketing*, Vol. 17 No. 2, pp. 232-256. doi: 10.1108/JRIM-11-2021-0276.

Lim, X.-J., Cheah, J.-H., Waller, D.S., Ting, H. and Ng, S.I. (2019), "What s-commerce implies? Repurchase intention and its antecedents", *Marketing Intelligence & Planning*, Vol. 38 No. 6, pp. 760-776. doi: 10.1108/MIP-03-2019-0145.

Lin, X. and Wang, X. (2022), "Towards a model of social commerce: improving the effectiveness of e-commerce through leveraging social media tools based on consumers' dual roles", *European Journal of Information Systems*, Vol. 32 No. 5, pp. 782-799. doi: 10.1080/0960085X.2022.2057363.

Liu, H., Chu, H., Huang, Q. and Chen, X. (2016), "Enhancing the flow experience of consumers in China through interpersonal interaction in social commerce", *Computers in Human Behavior*, Vol. 58, pp. 306-314. doi: 10.1016/j.chb.2016.01.012.

MacLean, K.E. (2022), "Designing affective haptic experience for wellness and social communication: where designers need affective neuroscience and psychology", *Current Opinion in Behavioral Sciences*, Vol. 45, p. 101113. doi: 10.1016/j.cobeha.2022.101113.

Mardia, K.V. (1970), "Measures of multivariate skewness and kurtosis with applications", *Biometrika*, Vol. 57 No. 3, pp. 519-530. doi: 10.2307/2334770.

Marketing Charts. (2023), "4 in 10 youth have taken a break from social media for mental health reasons", *Marketing Charts*, 28 March, available at: www.marketingcharts.com/digital/social-media-228886 (accessed 24 August 2023).

Mehrabioun, M. (2024), "A multi-theoretical view on social media continuance intention: combining theory of planned behavior, expectation-confirmation model and consumption values", *Digital Business*, Vol. 4 No. 1, p. 100070. doi: 10.1016/j.digbus.2023.100070.

Mikalef, P., Giannakos, M.N. and Pappas, I.O. (2017), "Designing social commerce platforms based on consumers' intentions", *Behaviour & Information Technology*, Vol. 36 No. 12, pp. 1308-1327. doi: 10.1080/0144929X.2017.1386713.

Molinillo, S., Aguilar-Illescas, R., Anaya-Sanchez, R. and Liebana-Cabanillas, F. (2021), "Social commerce website design, perceived value and loyalty behavior intentions: the moderating roles of gender, age and frequency of use", *Journal of Retailing and Consumer Services*, Vol. 63, p. 102404. doi: 10.1016/j.jretconser.2020.102404.

Molinillo, S., Anaya-Sanchez, R. and Liebana-Cabanillas, F. (2020), "Analyzing the effect of social support and community factors on customer engagement and its impact on loyalty behaviors toward social commerce websites", *Computers in Human Behavior*, Vol. 108, p. 105980. doi: 10.1016/j.chb.2019.04.004.

Molinillo, S., Liebana-Cabanillas, F. and Anaya-Sanchez, R. (2018), "A social commerce intention model for traditional E-Commerce sites", *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 13 No. 2, pp. 80-93. doi: 10.4067/S0718-18762018000200107.

Mouakket, S. (2018), "The role of personality traits in motivating users' continuance intention towards Facebook: gender differences", *The Journal of High Technology Management Research*, Vol. 29 No. 1, pp. 124-140. doi: 10.1016/j.hitech.2016.10.003.

Ornati, M. and Kalbaska, N. (2022), "Looking for haptics. Touch digitalization business strategies in luxury and fashion during COVID-19 and beyond", *Digital Business*, Vol. 2 No. 2, p. 100035. doi: 10.1016/j.digbus.2022.100035.

Osatuyi, B., Qin, H., Osatuyi, T. and Turel, O. (2020), "When it comes to satisfaction … it depends: an empirical examination of social commerce users", *Computers in Human Behavior*, Vol. 111, p. 106413. doi: 10.1016/j.chb.2020.106413.

Peck, J., Barger, V.A. and Webb, A. (2013), "In search of a surrogate for touch: the effect of haptic imagery on perceived ownership", *Journal of Consumer Psychology*, Vol. 23 No. 2, pp. 189-196. doi: 10.1016/j.jcps.2012.09.001.

Pelletier, M.J., Krallman, A., Adams, F.G. and Hancock, T. (2020), "One size doesn't fit all: a uses and gratifications analysis of social media platforms", *Journal of Research in Interactive Marketing*, Vol. 14 No. 2, pp. 269-284. doi: 10.1108/JRIM-10-2019-0159.

Peltier, J.W., Dahl, A.J. and Schibrowsky, J.A. (2023), "Artificial intelligence in interactive marketing: a conceptual framework and research agenda", *Journal of Research in Interactive Marketing*, Vol. 18 No. 1, pp. 54-90. doi: 10.1108/JRIM-01-2023-0030.

Perez-Vega, R., Hopkinson, P., Singhal, A. and Mariani, M.M. (2022), "From CRM to social CRM: a bibliometric review and research agenda for consumer research", *Journal of Business Research*, Vol. 151, pp. 1-16. doi: 10.1016/j.jbusres.2022.06.028.

Petit, O., Velasco, C. and Spence, C. (2019), "Digital sensory marketing: integrating new technologies into multisensory online experience", *Journal of Interactive Marketing*, Vol. 45, pp. 42-61. doi: 10.1016/j.intmar.2018.07.004.

Phan, Q.P.T., Pham, N.T. and Nguyen, L.H.L. (2020), "How to drive brand engagement and eWOM intention in social commerce: a competitive strategy for the emerging market", *Journal of Competitiveness*, Vol. 12 No. 3, pp. 136-155. doi: 10.7441/joc.2020.03.08.

Podsakoff, P.M., Podsakoff, N.P., Williams, L.J., Huang, C. and Yang, J. (2024), "Common method bias: it's bad, it's complex, it's widespread, and it's not easy to fix", *Annual Review of Organizational Psychology and Organizational Behavior*, Vol. 11 No. 1. doi: 10.1146/annurev-orgpsych-110721-040030.

Qu, Y., Cieślik, A., Fang, S. and Qing, Y. (2023), "The role of online interaction in user stickiness of social commerce: the shopping value perspective", *Digital Business*, Vol. 3 No. 2, p. 100061. doi: 10.1016/j.digbus.2023.100061.

Racat, M. and Plotkina, D. (2023), "Sensory-enabling technology in M-commerce: the effect of haptic stimulation on consumer purchasing behavior", *International Journal of Electronic Commerce*, Vol. 27 No. 3, pp. 354-384. doi: 10.1080/10864415.2023.2226900.

Riaz, M.U., Guang, L.X., Zafar, M., Shahzad, F., Shahbaz, M. and Lateef, M. (2021), "Consumers' purchase intention and decision-making process through social networking sites: a social commerce construct", *Behaviour & Information Technology*, Vol. 40 No. 1, pp. 99-115. doi: 10.1080/0144929X.2020.1846790.

Rodríguez-Ardura, I. and Meseguer-Artola, A. (2018), "Imagine, feel 'there', and flow! Immersive experiences on m-Facebook, and their affective and behavioural effects", *Information Technology & People*, Vol. 32 No. 4, pp. 921-947. doi: 10.1108/ITP-10-2017-0358.

Sarstedt, M., Hair, J.F. and Ringle, C.M. (2022), "'PLS-SEM: indeed a silver bullet' - retrospective observations and recent advances", *Journal of Marketing Theory and Practice*, Vol. 31 No. 3, pp. 261-275. doi: 10.1080/10696679.2022.2056488.

Saunders, M.N.K., Lewis, P. and Thornhill, A. (2019), *Research Methods for Business Students*, 8th Ed., Pearson, NY.

Shen, B., Tan, W., Guo, J., Zhao, L. and Qin, P. (2021), "How to promote user purchase in metaverse? A systematic literature review on consumer behavior research and virtual commerce application design", *Applied Sciences-Basel*, Vol. 11 No. 23, p. 11087. doi: 10.3390/app112311087.

Shmueli, G., Sarstedt, M., Hair, J.F., Cheah, J.-H., Ting, H., Vaithilingam, S. and Ringle, C.M. (2019), "Predictive model assessment in PLS-SEM: guidelines for using PLSpredict", *European Journal of Marketing*, Vol. 53 No. 11, pp. 2322-2347. doi: 10.1108/EJM-02-2019-0189.

Silva, S.C., Rocha, T.V., De Cicco, R., Galhanone, R.F. and Manzini Ferreira Mattos, L.T. (2021), "Need for touch and haptic imagery: an investigation in online fashion shopping", *Journal of Retailing and Consumer Services*, Vol. 59, p. 102378. doi: 10.1016/j.jretconser.2020.102378.

Sohaib, O. (2021), "Social networking services and social trust in social commerce: a PLS-SEM approach", *Journal of Global Information Management*, Vol. 29 No. 2, pp. 23-44. doi: 10.4018/JGIM.2021030102.

Solangi, Z.A., Solangi, Y.A., Al-Githami, S.S., Maitlo, A. and Shah, M. (2022), "Adoption of social commerce: an empirical analysis in the context of Pakistan", *International Journal of Advanced and Applied Science*, Vol. 9 No. 7, pp. 54-64.

Statista. (2023), "Global social commerce market size 2022-2030", *Statista*, 29 November, available at: www.statista.com/statistics/1251145/social-commerce-sales-worldwide/ (accessed 18 December 2023).

Sullivan, J.H., Warkentin, M. and Wallace, L. (2021), "So many ways for assessing outliers: what really works and does it matter?", *Journal of Business Research*, Vol. 132, pp. 530-543. doi: 10.1016/j.jbusres.2021.03.066.

Sun, W., Liu, H. and Wen, N. (2022), "What motivates people to continuously engage in online task-oriented check-ins? The role of perceived social presence", *Aslib Journal of Information Management*, Vol. 75 No. 2, pp. 390-406. doi: 10.1108/AJIM-05-2022-0252.

The Economic Times (2022), "Stop scrolling, now! Even a week-long social media detox can alleviate signs of depression, anxiety, says study", *The Economic Times*, available at: https://economictimes.indiatimes.com/magazines/panache/stop-scrolling-now-even-a-week-long-social-media-detox-can-alleviate-signs-of-depression-anxiety-says-study/articleshow/91438070.cms (accessed 24 August 2024).

Tian, H. and Lee, Y. (2022), "Factors affecting continuous purchase intention of fashion products on social E-commerce: SOR model and the mediating effect", *Entertainment Computing*, Vol. 41, p. 100474.

Tom Dieck, M.C., Cranmer, E., Prim, A.L. and Bamford, D. (2023), "The effects of augmented reality shopping experiences: immersion, presence and satisfaction", *Journal of Research in Interactive Marketing*, Vol. 17 No. 6, pp. 940-958. doi: 10.1108/JRIM-09-2022-0268.

Tse, D.C.K., Nakamura, J. and Csikszentmihalyi, M. (2020), "Living well by "flowing' well: the indirect effect of autotelic personality on well-being through flow experience", *Journal of Positive Psychology, Routledge Journals*, Vol. 16 No. 3, pp. 310-321. doi: 10.1080/17439760.2020.1716055.

Tuncer, I. (2021), "The relationship between IT affordance, flow experience, trust, and social commerce intention: an exploration using the S-O-R paradigm", *Technology in Society*, Vol. 65, p. 101567. doi: 10.1016/j.techsoc.2021.101567.

Wang, C.L. (2021), "New frontiers and future directions in interactive marketing: Inaugural Editorial", *Journal of Research in Interactive Marketing*, Vol. 15 No. 1, pp. 1-9.

Wang, N., Zhao, Y. and Zhou, R. (2023), "A meta-analysis of social commerce adoption and the moderating effect of culture", *Data Technologies and Applications*, Vol. 57 No. 4, pp. 537-561. doi: 10.1108/DTA-10-2021-0276.

Xue, J., Liang, X., Xie, T. and Wang, H. (2020), "See now, act now: how to interact with customers to enhance social commerce engagement?", *Information & Management*, Vol. 57 No. 6, p. 103324. doi: 10.1016/j.im.2020.103324.

Yadav, M.S., de Valck, K., Hennig-Thurau, T., Hoffman, D.L. and Spann, M. (2013), "Social commerce: a contingency framework for assessing marketing potential", *Journal of Interactive Marketing*, Vol. 27 No. 4, pp. 311-323.

Yeon, J., Park, I. and Lee, D. (2019), "What creates trust and who gets loyalty in social commerce?", *Journal of Retailing and Consumer Services*, Vol. 50, pp. 138-144. doi: 10.1016/j.jretconser.2019.05.009.

Yahoo, Finance (2023), "Malaysia social commerce market intelligence databook 2023: 50+ KPIs on end-use sectors, operational KPIs, retail product dynamics, and consumer demographics 2019-2028", *Yahoo Finance*, 8 March, available at: https://finance.yahoo.com/news/malaysia-social-commerce-market-intelligence-133300519.html (accessed 10 April 2023).

Yu, W.-J., Hung, S.-Y., Yu, A.P.-I. and Hung, Y.-L. (2024), "Understanding consumers' continuance intention of social shopping and social media participation: the perspective of friends on social media", *Information & Management*, Vol. 61 No. 4, p. 103808.

Zhang, H., Lu, Y., Gupta, S. and Zhao, L. (2014), "What motivates customers to participate in social commerce? The impact of technological environments and virtual customer experiences", *Information & Management*, Vol. 51 No. 8, pp. 1017-1030.

Zhao, W., Hu, F., Wang, J., Shu, T. and Xu, Y. (2023), "A systematic literature review on social commerce: assessing the past and guiding the future", *Electronic Commerce Research and Applications*, Vol. 57, p. 101219. doi: 10.1016/j.elerap.2022.101219.

Further Reading

Cheah (Jacky), J.-H., Magno, F. and Cassia, F. (2023), "Reviewing the SmartPLS 4 software: the latest features and enhancements", *Journal of Marketing Analytics*. doi: 10.1057/s41270-023-00266-y.

Corresponding author
Sin-Er Chong can be contacted at: sinerchong@gmail.com