LOST IN THE FLOW: UNDERSTANDING THE COGNITIVE AND AFFECTIVE DRIVERS OF ONLINE IMPULSE BUYING

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ABSTRACT:

This study examines the relationship between flow experience, user experience (both affective and cognitive), and online impulse buying behavior. Utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) on data collected from 560 online consumers, the results reveal that flow experience significantly enhances both affective and cognitive user experiences. In turn, these experiences positively influence online impulse buying behavior, with cognitive experience exerting the strongest impact. The findings contribute to the theoretical development of flow theory in the context of digital shopping and offer practical insights for enhancing user engagement and optimizing interface design to stimulate impulsive purchasing behavior.

Keywords: flow experience, affective experience, cognitive experience, online impulse buying, e-commerce, PLS-SEM.

1. Introduction

The rapid growth of e-commerce has significantly reshaped consumer behavior, especially in terms of online impulse buying, which refers to spontaneous, unplanned purchases made without prior intent. Unlike traditional retail, digital platforms use stimuli such as personalization, interactivity, and immersive content to trigger impulse decisions. Among psychological drivers (Hoffman & Novak, 1996; Caber et al., 2024), flow experience - a state of deep focus and enjoyment - has emerged as a key factor in shaping user engagement and purchase behavior online (Ghani & and Deshpande, 1994; Ming et al., 2021). Prior research has linked flow with enhanced browsing, satisfaction, and even impulsive purchasing, yet the mechanisms behind this relationship remain underexplored (Mehrabian & Russell, 1974; Eroglu et al., 2003; Onofrei et al., 2022).

To address this gap, this study introduces user experience - comprising affective and cognitive dimensions - as mediators between flow experience and online impulse buying. Drawing on theories of digital engagement and consumer psychology, the study aims to: (1) examine the direct effect of flow on impulse buying, (2) explore the mediating roles of user experience dimensions, and (3) provide empirical insights through PLS-SEM analysis.

This study contributes to a deeper understanding of how digital experiences drive spontaneous buying and offers implications for enhancing e-commerce strategies.

2. Literature review and hypothesis development

2.1. Flow experience and dimensions of flow

2.1.1. Flow experience

Flow experience, a concept introduced by (Csikzentmihaly, 1990), describes a state of deep involvement, focus, and intrinsic enjoyment that individuals experience when they are fully engaged in an activity. This psychological state is often characterized by intense concentration, a sense of control, loss of self-consciousness, and altered perception of time. Within the context of digital environments, flow experience has been widely studied in various domains, including online gaming, social media engagement, and e-commerce (Hoffman & Novak, 1996; Gao et al., 2017).

In online shopping, flow occurs when users navigate seamlessly through e-commerce platforms, interact with engaging content, and become deeply immersed in the shopping process. This heightened engagement fosters a positive user experience, leading to increased browsing duration, higher purchase likelihood, and even impulse buying (Gao et al., 2017). Recent research indicates that flow states in digital commerce environments can significantly enhance customer satisfaction and brand loyalty, making it a crucial aspect of consumer behavior studies (Novak et al., 2003; Hyun et al., 2022).

One of the key attributes of flow is its ability to reduce cognitive resistance and enhance impulsivity as consumers become more emotionally engaged and less aware of external distractions (Bao & Yang, 2022). This explains why well-designed e-commerce interfaces, gamified shopping experiences, and interactive content play a vital role in fostering flow and, consequently, influencing spontaneous purchasing decisions (García-Jurado et al., 2019).

Furthermore, flow experience is not a singular construct but is composed of multiple dimensions, including concentration, enjoyment, and time distortion. These dimensions shape the intensity and impact of flow on consumer behaviors and will be discussed in detail in the following section.

2.1.2. Dimensions of flow

Flow experience is a multidimensional construct that consists of various psychological states influencing user engagement. Among the different dimensions identified in prior research, concentration, enjoyment, and time distortion are widely recognized as the core components of flow (Csikzentmihaly, 1990; Hoffman & Novak, 1996; Gao et al., 2017). These dimensions contribute to the immersive nature of the flow state, affecting how users interact with online environments, particularly in e-commerce and digital shopping platforms.

Concentration refers to an individual's ability to focus intensely on an activity while minimizing external distractions (Csikzentmihaly, 1990). In the context of online shopping, high concentration levels enable consumers to engage deeply with digital content, process product information more effectively, and navigate e-commerce platforms with a heightened sense of involvement (Novak et al., 2003; Caber et al., 2024). Prior research suggests that enhanced concentration during online browsing increases consumer engagement and the likelihood of impulse purchases as users become more absorbed in the shopping experience (Gao et al., 2017; García-Jurado et al., 2019).

Enjoyment is the intrinsic pleasure and gratification derived from engaging in an activity (Csikzentmihaly, 1990). Consumers experiencing flow often find online shopping entertaining and rewarding, leading to higher levels of emotional satisfaction and impulsive buying tendencies (Ming et al., 2021; Bao & Yang, 2022). Recent studies highlight that gamification elements, interactive shopping experiences, and visually appealing website designs significantly enhance consumer enjoyment, reinforcing their immersion in e-commerce platforms and ultimately driving purchasing behaviors (García-Jurado et al., 2019; Hyun et al., 2022).

Time distortion occurs when individuals lose track of time due to deep engagement in an activity (Hoffman & Novak, 1996). In online shopping, consumers immersed in flow may perceive time as passing faster than usual, leading them to spend

more time on e-commerce platforms and increase their chances of making impulse purchases (Novak et al., 2003; Gao et al., 2017). Recent studies suggest that online retailers strategically design their interfaces to prolong user engagement, utilizing personalized recommendations, infinite scrolling, and engaging content to create a time-distorting effect that enhances shopping frequency and spending (García-Jurado et al., 2019; Hyun et al., 2022).

Together, these dimensions contribute to the intensity and impact of the flow experience, shaping consumer behavior in digital environments. By understanding how concentration, enjoyment, and time distortion influence impulse buying, e-commerce businesses can design strategies that optimize the shopping experience and drive customer engagement.

2.2. User experience and the relationship with flow experience

User experience (UX) plays a crucial role in shaping consumer behavior in online shopping environments, particularly in the context of flow experience. UX encompasses both affective (emotional) and cognitive (mental processing) responses, which collectively determine how consumers perceive and interact with e-commerce platforms (Hassenzahl, 2010; Wang et al., 2023). Research indicates that a seamless and immersive UX enhances flow, increasing user engagement and, in turn, influencing impulse buying behaviors (García-Jurado et al., 2019; Hyun et al., 2022).

Flow experience fosters a positive user experience by enhancing emotional satisfaction and cognitive absorption. Consumers immersed in flow exhibit higher emotional engagement and deeper information processing, leading to spontaneous and less rational purchase decisions (Gao et al., 2017; Hyun et al., 2022). This section explores the two key dimensions of UX-affective experience and cognitive experience-and their interplay with flow experience.

2.2.1. Affective experience in online shopping

Affective experience refers to the emotional responses consumers exhibit while engaging in online shopping, including pleasure, excitement, and satisfaction (Mehrabian & Russell, 1974; Eroglu et al., 2003; Onofrei et al., 2022). Emotions play a fundamental role in shaping purchase intentions, especially in digital environments where sensory cues such as music, visuals, and interactivity enhance emotional engagement (Hassenzahl, 2010; Bao & Yang, 2022).

Recent studies highlight that a well-designed shopping environment can evoke positive emotions, increasing impulse buying tendencies (García-Jurado et al., 2019). Consumers experiencing flow often report higher levels of enjoyment and emotional gratification, which strengthen their impulsive decision-making processes (Novak et al., 2003). Live-stream shopping platforms, gamified e-commerce apps, and AI-driven recommendations have been shown to heighten affective engagement, reinforcing the connection between flow and affective experience (Hyun et al., 2022). Thus, we hypothesize:

H1a: *Flow experience positively influences affective experience in online shopping.*

2.2.2. Cognitive experience in online shopping

Cognitive experience refers to the mental engagement and information processing that consumers undergo while shopping online (Youn & Faber, 2000; Eroglu et al., 2003). It includes aspects such as perceived ease of use, decision-making complexity, and the extent to which consumers actively analyze product information before purchasing (Novak et al., 2003; Hassenzahl, 2010).

Flow experience has been linked to enhanced cognitive absorption, where users become deeply engaged with website content, product descriptions, and interactive features, leading to a heightened state of concentration (Gao et al., 2017; Caber et al., 2024). However, this deep engagement may also reduce critical thinking and risk assessment, making consumers more prone to impulse purchases (Bao & Yang, 2022).

With the increasing adoption of AI-powered personalization and virtual reality shopping, cognitive experiences in online retail are evolving, creating new opportunities for brands to influence consumer decision-making (García-Jurado et al., 2019). Studies indicate that users who experience

high levels of cognitive absorption are more likely to make impulsive purchases due to reduced awareness of spending behavior (Hyun et al., 2022). Thus, we hypothesize:

H1b: *Flow experience positively influences cognitive experience in online shopping.*

2.3. Online impulse buying and the relationship with User experience, Flow experience

2.3.1. Online impulse buying

Online impulse buying refers to spontaneous, unplanned purchases made during online shopping, influenced by emotional triggers, website design, and digital engagement strategies (Verhagen & van Dolen, 2011; Mandolfo et al., 2022). Unlike traditional impulse buying, where environmental stimuli (e.g., store layout, promotional signage) drive impulsive purchases, online environments leverage digital cues such as real-time recommendations, flash sales, and gamification elements to stimulate impulse buying behaviors (García-Jurado et al., 2019). Prior research has identified two primary drivers of online impulse buying: Affective factors, such as excitement, pleasure, and perceived enjoyment (Eroglu et al., 2003). Cognitive factors, including ease of navigation, information overload, and heuristic decision-making (Dawson & Kim, 2009).

In the digital commerce landscape, flow experience plays a critical role in shaping impulse buying behaviors, as consumers immersed in a flow state exhibit reduced cognitive resistance and increased impulsivity (Gao et al., 2017). The following sections explore how flow experience and user experience dimensions influence online impulse buying.

2.3.2. Flow experience and Online impulse buying

Flow experience fosters deep engagement and immersion in online shopping environments, leading consumers to lose track of time, focus intensely on the shopping process, and experience heightened enjoyment (Novak et al., 2003). This immersive state reduces self-regulation and rational decision-making, making consumers more susceptible to impulse purchases (García-Jurado et al., 2019). Recent studies have shown that live-stream shopping platforms enhance flow, increasing both impulse purchases and post-purchase regret (Bao & Yang, 2022). E-commerce apps with gamification elements (e.g., interactive promotions, loyalty rewards) stimulate impulse buying through flow-induced engagement (García-Jurado et al., 2019). AI-driven product recommendations create a seamless, immersive shopping journey, reinforcing spontaneous purchase decisions (Hyun et al., 2022). Thus, we hypothesize:

H2: *Flow experience positively influences online impulse buying.*

2.3.3. Affective experience and Online impulse buying

Affective experience in online shopping encompasses the emotional reactions consumers exhibit while engaging with e-commerce platforms, including joy, excitement, and emotional arousal (Eroglu et al., 2003; Hassenzahl, 2010). These emotions play a critical role in spontaneous decision-making, as consumers who feel positive affective states are more likely to engage in impulse purchases (Mehrabian, 1974; Dawson & Kim, 2009). Studies suggest that a positive emotional state during online shopping enhances impulse buying tendencies, as happy consumers make quicker, less rational purchase decisions (Bao & Yang, 2022). Limited-time offers and flash sales create excitement and urgency, triggering emotion-driven impulse purchases (Mandolfo et al., 2022). Personalized marketing messages and interactive features strengthen emotional engagement, increasing spontaneous spending behaviors (García-Jurado et al., 2019). Thus, we hypothesize:

H3: *Affective experience positively influences online impulse buying.*

2.3.4. Cognitive experience and Online impulse buying

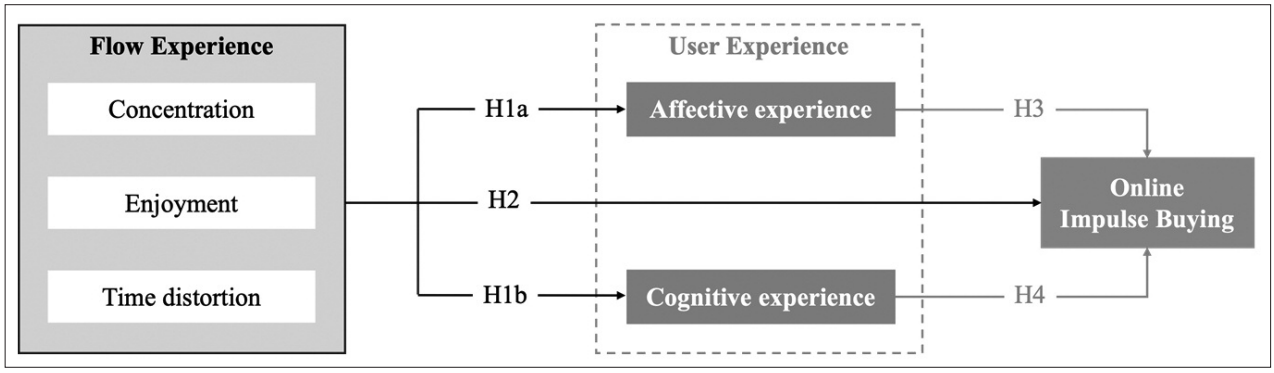
Cognitive experience in online shopping refers to the mental processing and decision-making consumers engage in while interacting with e-commerce platforms (Novak et al., 2003; Hassenzahl, 2010). A deep cognitive experience often enhances consumer engagement but can also lead to heuristic (instinct-based) decision-making, reducing rational evaluation and increasing impulse buying (Gao et al., 2017). Recent studies highlight

that consumers experiencing cognitive overload (due to vast product options and information) tend to rely on heuristics, leading to impulsive decisions (Dawson & Kim, 2009; Mandolfo et al., 2022). Engaging product descriptions, interactive media, and AI-driven personalization enhance cognitive involvement, influencing spontaneous purchase behaviors (Hyun et al., 2022). Seamless checkout processes minimize decision fatigue, encouraging quick, impulse-driven purchases (García-Jurado et al., 2019). Thus, we hypothesize:

H4: *Cognitive experience positively influences online impulse buying.*

The conceptual framework and proposed hypotheses are illustrated in Figure 1.

Figure 1. Conceptual framework



3. Materials and methods

3.1. Sample and data collection

The study employed a quantitative survey method to collect primary data through an online questionnaire distributed via social media platforms, including Facebook, Instagram, and TikTok. Given the increasing role of social media in e-commerce, this approach ensured that the survey reached a broad demographic of online shoppers who are likely to engage in impulse buying behaviors.

A total of 800 survey invitations were sent out, yielding 750 responses. After data screening, 560 valid responses were retained for analysis, ensuring data integrity and reliability. The sample size exceeds the minimum threshold for PLS-SEM analysis, following Hair et al. (2019), which suggests that a sample size of at least 10 times the number of indicators of the most complex construct is appropriate.

3.2. Research instrument design

The questionnaire was divided into two main sections: (1) Demographic Information: This section collected data on respondents' age, gender, education level, shopping frequency, and preferred online shopping platforms. (2) Measurement of Research Constructs: This section included items designed to measure Flow Experience, Affective Experience, Cognitive Experience, and Online Impulse Buying, using a 7-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree).

All measurement scales were adapted from previously validated studies, ensuring content validity and reliability. Flow Experience was evaluated through nine items encompassing three dimensions: Concentration, Enjoyment, and Time Distortion. This approach aligns with the work of Jackson & Eklund (2002), who developed the Flow State Scale-2 (FSS-2) to measure flow as a state. An example item for Concentration is: "While using social networks (SN), I'm fully absorbed by it." For Enjoyment, an illustrative item is: "I have fun interacting with SN." Regarding Time Distortion, a sample item is: "I often spend more time on SN than I intend to." Affective Experience was measured using four items adapted from the Positive and Negative Affect Schedule (PANAS) developed by Watson et al. (1988) and Rose et al. (2012). This scale is widely used to assess positive and negative affective states. A representative item is: "Sad-Cheerful." Cognitive Experience was assessed through three items derived from the Cognitive Absorption Scale by Agarwal & Karahanna (2000) and Hsu & Lu (2004), which measures deep

involvement with software. An example item is: "Most of the time I shop online, I feel that I am in flow." Online Impulse Buying behavior was evaluated using four items adapted from the scale developed by Rook & Fisher (1995) and Verhagen & van Dolen (2011), which assesses consumers' tendency toward impulse buying. A sample item is: "My purchase was unplanned."

4. Results

The final dataset consists of 560 valid responses, ensuring a diverse representation of online shoppers. The gender distribution is nearly equal (49.3% male, 50.7% female), and the majority of respondents (54.5%) fall within the 18-35 age group, reflecting the dominance of young adults in digital shopping. (see Table 1)

In terms of education, 66.1% of respondents hold at least a bachelor's degree, aligning with prior studies suggesting that higher education levels correlate with increased online shopping engagement. Most respondents (68.1%) shop online at least twice a month, with over 30% purchasing more than five items per transaction, highlighting frequent and high-volume shopping behavior. Additionally, 34.5% of respondents primarily shop via e-commerce apps, reinforcing the growing mobile commerce trend. Social media platforms, particularly Facebook, Instagram, and TikTok, play a crucial role in their shopping activities, validating the study's data collection approach.

4.1. Assessment of the measurement model

4.1.1. Convergent validity and reliability of constructs

Convergent validity was assessed by examining factor loadings, variance inflation factors (VIF), composite reliability (CR), and average variance extracted (AVE). According to Hair et al. (2019), acceptable thresholds include factor loadings above 0.7, CR above 0.7, and AVE above 0.5. Table 2 shows that all outer loadings exceed 0.7, except for AffeEx1 (0.685), which was removed due to low reliability. The remaining indicators demonstrate strong convergence. Additionally, all VIF values are below 3.5, indicating no multicollinearity issues.

Table 1. Respondent profile

	Frequency	Percent		Frequency	Percent
Gender			***Age***		
Male	276	49.3	Under 18 years old	81	14.5
Female	284	50.7	18–24 years old	107	19.1
Education			25–35 years old	100	17.9
High School	134	23.9	36–54 years old	99	17.7
Bachelor dgree	225	40.2	46–55 years old	89	15.9
Postgraduate	145	25.9	Over 55 years old	84	15.0
Professional degree	56	10.0			
Shopping Frequency			***Purchase method***		
1-2 time a month	179	32.0	Directly from SN	184	32.9
2-5 time a month	203	36.3	Website	183	32.7
Over 5 time a month	178	31.8	E-commerce Apps	193	34.5
SN Using			***Number of items purchased***		
Facebook	191	34.1	1-3 items	177	31.6
Instagram	191	34.1	3-5 items	198	35.4
TikTok	178	31.8	Over 5 items	185	33.0

Table 2. Measurement model evaluation indicators

Constructs	Code	Items	Outerloading	VIF
Flow Experience	Conce1	While using SN, I'm fully absorbed by it	0.840	2.888
	Conce2	While using SN, I'm deeply engrossed	0.844	2.936
	Conce3	While using SN, I'm completely concentrated on what I am doing	0.839	2.854
	Enjoy1	I have fun interacting with SN	0.860	3.176
	Enjoy2	Using SN is a lot of fun	0.855	3.131
	Enjoy3	I enjoy using SN	0.853	3.056
	TimeDist1	While using SN, I am so focused that I completely lose track of time	0.854	2.916
	TimeDist2	I realize time went faster than I thought and I did not even sense it as I was using SN	0.854	3.087
	TimeDist3	I often spend more time on SN than I intend to.	0.839	3.083
	AffeEx1*	Unhappy–Happy	0.685	3.112
User Experience	AffeEx2	Sad–Cheerful	0.875	1.957
	AffeEx3	Irritated–Pleased	0.858	1.924
	AffeEx4	Lethargic–Energetic	0.876	2.052
	CogEx1	When shopping online, I have experienced flow.	0.893	2.283
	CogEx2	When shopping online, I have never experienced flow.	0.898	2.335
	CogEx3	Most of the time I shop online, I feel that I am in flow.	0.884	2.317
Online Impulse buying	OnImpBu1	My purchase was spontaneous.	0.820	1.994
	OnImpBu2	My purchase was unplanned.	0.840	1.859
	OnImpBu3	I did not intend to make this purchase before it occurred.	0.846	2.022
	OnImpBu4	I could not resist making this purchase at the moment it occurred.	0.855	2.067
χ 2 = 552.842; SRMR = 0.042; NFI = 0.923; d_ULS = 0.329; d_G = 0.165 * Variables are eliminated because of their outer loading < 0.7				

Table 3 confirms the construct reliability and internal consistency, with Cronbach's alpha values ranging from 0.839 to 0.952 and CR values exceeding 0.9 for all constructs (Sarstedt et al., 2021). Furthermore, AVE values range from 0.699 to 0.795, surpassing the recommended threshold of 0.5, demonstrating strong convergent validity. Thus, the model exhibits high reliability and convergent validity, supporting its robustness for further structural analysis.

4.1.2. Discriminant validity of constructs

Discriminant validity was assessed using Fornell-Larcker criterion (Fornell & Bookstein, 1982) and Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2015). Fornell-Larcker Criterion: As seen in Table 4, the square root of AVE for each construct is greater than its correlations with other constructs, confirming adequate discriminant validity. HTMT Criterion: All HTMT values fall below 0.9, further establishing the distinctiveness of

Table 3. Construct reliability and validity

	Cronbach's alpha(〈)	Composite reliability (rho_c)	Average variance extracted (AVE)
AffeEx	0.839	0.903	0.756
CogEx	0.871	0.921	0.795
Flow Experience	0.952	0.959	0.723
OnImpBu	0.857	0.903	0.699

Table 4. Discriminant validity results

Fornell-Larcker criterion	AffeEx	CogEx	Flow Experience	OnImpBu
AffeEx				
CogEx	0.167			
Flow Experience	0.261	0.276		
OnImpBu	0.293	0.633	0.202	
HTMT Criterion	**AffeEx**	**CogEx**	**Flow Experience**	**OnImpBu**
AffeEx	0.870			
CogEx	0.144	0.892		
Flow Experience	0.236	0.253	0.850	
OnImpBu	0.248	0.549	0.183	0.836

the constructs. These results validate the measurement model, ensuring that each construct is conceptually and statistically distinct.

4.2. Structural model and path analysis

4.2.1. Path analysis rresults

Table 5 presents the standardized path coefficients (β values), t-values, and p-values, providing statistical support for all hypotheses. The results indicate that Flow Experience significantly influences both Affective Experience (H1a: $\beta = 0.236$, $p < 0.001$) and Cognitive Experience (H1b: $\beta = 0.253$, $p < 0.001$), confirming that individuals immersed in a flow state experience heightened emotional and cognitive engagement. Furthermore, Flow Experience has a direct effect on Online Impulse Buying (H2: $\beta = 0.183$, $p < 0.001$), supporting the idea that users who experience deep engagement in an online shopping environment are more likely to make spontaneous purchases. Regarding user experience, Affective Experience positively influences Online Impulse Buying (H3: $\beta = 0.170$, $p < 0.001$), suggesting that emotional engagement during shopping plays a crucial role in impulsive decision-making. Similarly, Cognitive Experience exerts the strongest influence on Online Impulse Buying (H4: $\beta = 0.521$, $p < 0.001$),

Table 5. Path analysis results

Hypothesis	Path	Path coefficients	Standard deviation	t value	p values	Results
H1a	Flow Experience -> AffeEx	0.236	0.043	5.438	0.000	Supported
H1b	Flow Experience -> CogEx	0.253	0.042	6.044	0.000	Supported
H2	Flow Experience -> OnImpBu	0.183	0.043	4.238	0.000	Supported
H3	AffeEx -> OnImpBu	0.170	0.035	4.809	0.000	Supported
H4	CogEx -> OnImpBu	0.521	0.034	15.424	0.000	Supported

indicating that a heightened cognitive state-such as deep processing of product information-can significantly increase the likelihood of impulse purchases.

4.2.2. Model fit and predictive power (R^2)

Table 6 reports the R^2 values, which measure the explanatory power of the independent variables on the dependent constructs.

Affective Experience (R^2 = 0.056): Flow Experience accounts for 5.6% of the variance, suggesting that while flow contributes to emotional engagement, additional external factors may also play a role. Cognitive Experience (R^2 = 0.064): Flow Experience explains 6.4% of the variance, indicating a moderate effect on cognitive engagement. Online Impulse Buying (R^2 = 0.330): The model explains 33% of the variance in impulse buying behavior, demonstrating a substantial influence of flow and user experience on unplanned purchases.

Table 6. R^2 Results

	R-square	R-square adjusted
AffeEx	0.056	0.054
CogEx	0.064	0.062
OnlmpBu	0.330	0.327

5. Discussion

5.1. The role of Flow experience in Online impulse buying

The results demonstrate that flow experience significantly influences both affective (H1a: β = 0.236, $p < 0.001$) and cognitive experiences (H1b: β = 0.253, $p < 0.001$), confirming that individuals deeply immersed in an online shopping environment develop heightened emotional and cognitive engagement. This aligns with previous studies suggesting that flow fosters a state of absorption, where users lose track of time and experience increased enjoyment and mental processing (Novak et al., 2003; Gao et al., 2017). Furthermore, flow experience directly impacts impulse buying behavior (H2: $\beta = 0.183$, $p < 0.001$), supporting the argument that digital environments designed to enhance flow states-such as personalized recommendations, gamification elements, and interactive content-can increase consumers' tendency to make spontaneous, unplanned purchases (García-Jurado et al., 2019; Bao & Yang, 2022). However, the relatively lower direct effect of flow on impulse buying suggests that additional psychological factors, particularly emotional and cognitive experiences, play a mediating role in driving consumer decisions.

5.2. The mediating role of Affective and Cognitive experience

A key contribution of this study is the validation of affective and cognitive experiences as mediators between flow and online impulse buying. The findings indicate that affective experience (H3: β = 0.170, $p < 0.001$) positively influences impulse buying, reinforcing the notion that consumers in a heightened emotional state are more susceptible to spontaneous purchasing behaviors (Eroglu et al., 2003). These results align with research on emotional decision-making, where positive affective states-such as excitement and joy-reduce self-regulation and increase impulse-driven consumption (Mehrabian & Russell, 1974).

More importantly, cognitive experience exhibits the strongest effect on impulse buying (H4: β = 0.521, $p < 0.001$), suggesting that deep cognitive absorption during online shopping significantly influences unplanned purchasing decisions. This finding supports the notion that digital interfaces designed to maintain user engagement and provide seamless navigation can lead to heuristic decision-making, ultimately fostering impulsive behavior (Hyun et al., 2022). The substantial impact of cognitive engagement suggests that when consumers are deeply involved in product exploration and content interaction, their ability to rationalize purchases diminishes, making them more likely to buy on impulse.

5.3. Theoretical and practical implications

5.3.1. Theoretical contributions

This study expands the application of flow theory and user experience research in the context of online impulse buying. By establishing the mediating roles of affective and cognitive experiences, the findings contribute to a more comprehensive understanding of how digital

engagement fosters impulse-driven consumer behavior. Additionally, the results confirm that cognitive engagement plays a more dominant role than affective engagement in driving impulse purchases, adding to prior studies emphasizing the cognitive underpinnings of online shopping behaviors (García-Jurado et al., 2019).

5.3.2. Practical implications

For e-commerce platforms and marketers, these findings offer actionable insights into how digital interfaces can be optimized to enhance consumer engagement and increase spontaneous purchases: (1) Enhancing flow states: Platforms should leverage AI-driven personalization, immersive visuals, and gamification strategies to maintain high user engagement levels. (2) Triggering emotional responses: Implementing dynamic pricing, limited-time offers, and interactive content can evoke positive affective states, increasing impulse buying tendencies. (3) Optimizing cognitive engagement: Designing seamless navigation, engaging product descriptions, and interactive shopping experiences can heighten cognitive absorption, reducing purchase hesitation and fostering instant purchase decisions.

5.4. Limitations and future research

Despite its contributions, this study has some limitations. First, the sample consists primarily of respondents from social media platforms, which may not fully represent all types of online consumers. Future research could explore cross-platform shopping behaviors to assess potential differences. Second, while the study validates the role of flow and user experience in impulse buying, additional psychological and situational factors-such as self-control, perceived risk, and peer influence-could be incorporated into future models for a more holistic view of consumer behavior ■

Credit authorship contribution statement

Le Thi Lan Huong: *Conceptualization, Methodology, Resources, Supervision, Validation, Writing-review, editing.*

Van Nam LE: *Data curation, Formal analysis, Investigation, Software, Visualization, Writing-original draft.*

Nguyen Thanh Thuy Anh: *Data curation, Investigation, Software, Writing-original draft.*

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CÁC YẾU TỐ NHẬN THỨC VÀ CẢM XÚC THÚC ĐẨY HÀNH VI MUA SẮM BỐC ĐỒNG TRỰC TUYẾN TRONG TRẢI NGHIỆM DÒNG CHẢY

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TÓM TẮT:

Nghiên cứu này khám phá mối quan hệ giữa trải nghiệm dòng chảy (flow experience), trải nghiệm người dùng (bao gồm yếu tố cảm xúc và nhận thức), và hành vi mua sắm bốc đồng trực tuyến. Sử dụng mô hình phương trình cấu trúc PLS-SEM trên dữ liệu thu thập từ 560 người tiêu dùng trực tuyến, kết quả cho thấy trải nghiệm dòng chảy có tác động tích cực đến cả trải nghiệm cảm xúc và trải nghiệm nhận thức của người dùng. Các trải nghiệm này lần lượt ảnh hưởng đáng kể đến hành vi mua sắm bốc đồng, trong đó trải nghiệm nhận thức có tác động mạnh nhất. Kết quả nghiên cứu góp phần phát triển lý thuyết về dòng chảy trong bối cảnh mua sắm kỹ thuật số, đồng thời đưa ra các hàm ý thực tiễn trong việc nâng cao mức độ tương tác của người dùng và tối ưu hóa thiết kế giao diện nhằm thúc đẩy hành vi mua sắm bốc đồng.

Từ khoá: trải nghiệm dòng chảy, trải nghiệm cảm xúc, trải nghiệm nhận thức, mua sắm trực tuyến theo cảm tính, thương mại điện tử, PLS-SEM