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GAMIFICATION AND CUSTOMERS' VALUE CO-CREATION INTENTION: THE ROLES OF MEDIATING AND MODERATING FACTORS

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TABLE OF CONTENTS

TABLE OF CONTENTS 3
CHAPTER 1: RESEARCH OVERVIEW 1
1.1. Practical Context 1
1.2. Theoretical Context 1
1.3. Research Objectives 2
1.4. Research Questions 2
1.5. Research Focus and Scope 2
1.6. Research Methods 3
1.7. Research Significance 3
1.7.1. Theoretical Significance 3
1.7.2. Practical Significance 4
1.8. Structure of the Dissertation 4
CHAPTER 2: THEORETICAL FOUNDATIONS AND RESEARCH MODEL 5
2.1. Concepts 5
2.1.1. Value Co-creation Intention 5
2.1.2. Gamification 5
2.1.3. Perceived Value 5
2.1.4. Customer Engagement 5
2.1.5. Perceived Personalization 5
2.1.6. Privacy Concern 5
2.1.7. E-wallet 6
2.2. Related Studies 6
2.2.1. The Effect of Gamification on Value Co-creation: An Overview 6
2.2.2. Effects of Gamification on Perceived Value and Customer Engagement 8
2.2.3. Studies on the Effect of Perceived Value on Customer Engagement 9
2.2.4.Studies on the Effects of Perceived Value and Customer Engagement on Value Co-creation 9
2.2.5. .....Studies on the Moderating Effects of Perceived Personalization and Privacy Concern 10
2.3. Research Gaps 10
2.4. Theoretical Foundations 11
2.4.1. Service-Dominant Logic (SDL) 11

2.4.2.Stimulus-Organism-Response (S-O-R) Model 11
2.4.3. Privacy Calculus Theory (PCT) 12
2.5. Research Hypotheses and Proposed Model 12
CHAPTER 3 RESEARCH DESIGN 13
3.1. Research Process 13
3.2. Qualitative Study 13
3.3. Preliminary Quantitative Study 14
.3.4. Main Quantitative Study 15
CHAPTER 4 RESEARCH FINDINGS 17
4.1. Characteristics of the Study Sample 17
4.2. Measurement Model Assessment 17
4.3. Structural Model Assessment 17
4.4. Discussion of the Research Findings 19
4.4.1. Direct Effect of Gamification on Value Co-creation Intention 19
4.4.2.Mediating Roles of Perceived Value and Customer Engagement in the Effect of Gamification on Value Co-creation Intention 19
4.4.3.Moderating Effects on the Relationship Between Perceived Value and Customer Engagement 20
CHAPTER 5 CONCLUSIONS AND MANAGERIAL IMPLICATIONS 22
5.1. Conclusion 22
5.2. Theoretical Contributions 22
5.3 Practical Contributions 22
5.4. Limitations and Directions for Future Research 23
LIST OF THE AUTHOR'S PUBLICATIONS 24

CHAPTER 1: RESEARCH OVERVIEW

1.1. Practical Context

The growth of digital payments has transformed e-wallets from simple transaction tools into platforms offering a wide range of services. In 2024, e-wallets accounted for 53% of global e-commerce transaction value and 32% of point-of-sale payments (Worldpay, 2025). In Vietnam, this development has been supported by government policies promoting cashless payments and an evolving regulatory framework (Prime Minister of Vietnam, 2021; Government of Vietnam, 2024). By September 2025, approximately 30.35 million of the nearly 49.57 million activated e-wallets in Vietnam were active (Hai Linh, 2025). Yet, using an e-wallet does not necessarily mean that customers are willing to contribute to the value created through the platform.

For e-wallet providers, the challenge therefore goes beyond increasing transaction volumes. It also involves encouraging customers to participate in value co-creation by providing feedback, suggesting improvements, sharing their experiences, and helping other users. Gamification, through features such as tasks, challenges, and rewards, offers additional opportunities for customer interaction. For example, MoMo's "MoMo City" campaign attracted approximately 8 million participants, while its "Vòng quay 'deal' luyện" campaign drew more than 4 million (Bui Phuong Linh, 2023). MoMo has also reported collecting user ideas, refining platform features in response to feedback, and acknowledging customer suggestions (MoMo, 2026). Nevertheless, participation figures mainly indicate how users respond to these activities. They do not, on their own, establish whether users perceive greater value, become more engaged, or develop stronger intentions to participate in value co-creation.

Against this background, the study examines whether gamification experiences are associated with customers' value co-creation intentions (VCCI) through perceived value, comprising utilitarian and hedonic value, and customer engagement, encompassing cognitive, emotional, and behavioral dimensions. In digital financial services, perceived personalization and privacy concerns may also influence the relationship between perceived value and customer engagement. By examining these relationships, the study seeks to provide empirical evidence to inform the design of customer experiences that go beyond attracting short-term interactions and encourage users to take a more active role in creating value together with service providers.

1.2. Theoretical Context

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1.3. Research Objectives

The main objective of this study is to examine the effect of gamification on users' VCCI in the e-wallet context. The study also investigates the roles of perceived value and customer engagement in explaining how this relationship develops. In addition, it examines whether perceived personalization and privacy concern change the strength of the relationship between perceived value and customer engagement. Based on the empirical findings, the study proposes managerial implications to support e-wallet service providers in using gamification to enhance perceived value, strengthen customer engagement, and foster users' VCCI.

Specific objectives:

- To examine the direct effect of gamification on e-wallet users' VCCI.

- To examine the indirect mechanism through which gamification affects VCCI via the mediating roles of perceived value and customer engagement.

- To examine the moderating roles of perceived personalization and privacy concern in the relationship between perceived value and customer engagement.

- To propose managerial implications based on the findings to help e-wallet service providers optimize gamification, thereby enhancing perceived value, strengthening customer engagement, fostering users' VCCI, improving the relevance of personalization, and addressing privacy concerns.

1.4. Research Questions

1. How does perceived gamification directly affect e-wallet users' VCCI?

2. How do perceived value and customer engagement sequentially mediate the effect of perceived gamification on e-wallet users' VCCI?

3. How do perceived personalization and privacy concern moderate the relationship between perceived value and customer engagement?

4. What managerial implications can be proposed to help e-wallet service providers use gamification to enhance perceived value, strengthen customer engagement, improve perceived personalization, address privacy concerns, and thereby foster users' VCCI?

1.5. Research Focus and Scope

Research scope in terms of geographical context: Our research is conducted in the Vietnamese e-wallet market,

with five popular platforms, namely MoMo, ZaloPay, Viettel Money, ShopeePay, and VNPAY. The space was one of fast-paced change, competition, and a fair amount of gamified interactions; it is the right place to look into gamification and its connection with users' VCCI.

Research scope in terms of time: The research covers the period from 2023 to 2026.

1.6. Research Methods

The dissertation employs a primarily quantitative methodology, with a qualitative stage to adapt the measurement scales and confirm their appropriateness for the context of Vietnamese e-wallets.

The qualitative stage was established upon a theoretical background and previously validated scales for six constructs. Seven experts participated in this study, recruited through snowball sampling. These lecturers, researchers , and industry practitioners were experts. Data collection was halted when we reached saturation. The results of these interviews were to evaluate and revise the content validity of the constructs in order to fine-tune the measurement items and to confirm the scales.

This was followed by a focus group session involving 10 e-wallet holders in Ho Chi Minh City, who were purposively selected based on certain eligibility criteria. It was to evaluate the readability of the questionnaire and the contextual and practical relevance to users' real experience with e-wallets. The quantitative study was conducted in two phases. The initial survey used convenience sampling with contact made via email, Zalo, and Facebook. Following the screening process, 245 qualified responses were retained and subjected to analysis using SPSS 26 for the purpose of examining the reliability and validity of the measurement scales prior to the conduct of the main survey.

The main survey was administered through an online questionnaire using a combination of convenience and purposive sampling. Participants were reached through training programs at selected institutions in Ho Chi Minh City, social media channels, the researcher's personal and professional networks, and online communities of e-wallet users. Following data screening, 1,247 valid responses were retained for the final analysis.

The main dataset was analyzed using SmartPLS 4.1.1.5 following the PLS-SEM procedure. The analysis included the assessment of the measurement model and structural model, as well as hypothesis testing for direct, indirect, mediating, and moderating effects. For higher-order constructs, the study applied the disjoint two-stage approach. The sample size was determined with reference to established recommendations for structural equation modeling and was maintained at a sufficiently large level to improve the stability and robustness of the empirical results.

1.7. Research Significance

1.7.1. Theoretical Significance

First, drawing on service-dominant logic (SDL), this study seeks to provide further empirical evidence on the relationship between perceived gamification and VCCI as a pre-behavioral state. Unlike previous studies that have examined actual value co-creation behavior or specific forms of co-creation intention (Jun et al., 2020; García-Magro et al., 2023; Tabaeeian et al., 2024; Zhang et al., 2025), this dissertation focuses on customers' willingness to actively contribute to value creation through their everyday interactions with e-wallet platforms.

Second, within the Stimulus-Organism-Response (S-O-R) framework, the study treats perceived value and customer engagement as two distinct states within the Organism (O) component. Perceived value reflects customers' assessments of utilitarian and hedonic benefits, whereas customer engagement captures their cognitive, emotional, and behavioral investment in the platform. By examining their individual and sequential mediating effects, the study aims to

clarify how these two distinct yet interconnected states help explain customers' intentions to participate in value co-creation.

Third, drawing on privacy calculus theory (PCT), the study examines perceived personalization and privacy concerns as two potential boundary conditions shaping the relationship between perceived value and customer engagement. This approach seeks to extend empirical understanding of how data-related factors may influence customer engagement in the e-wallet context.

Taken together, the integration of SDL, S-O-R, and PCT provides a unified explanatory framework for understanding VCCI in e-wallet services, with particular attention to the underlying psychological states and the potential moderating roles of data-related factors.

1.7.2. Practical Significance

This study is expected to provide empirical evidence to help e-wallet providers in Vietnam manage gamification in ways that encourage customers' intentions to participate in value co-creation, rather than simply increasing transaction volumes or short-term engagement. Based on the research findings, the thesis proposes creating opportunities for users to provide feedback, offer suggestions, and share their experiences, while also encouraging others to participate in traffic safety initiatives.

By examining the mediating roles of perceived value and customer engagement, the study is expected to help managers assess gamification beyond participation rates, completed tasks, or rewards earned. The proposed recommendations will pay particular attention to utilitarian and hedonic value, as well as the cognitive, emotional, and behavioral dimensions of customer engagement.

The study also examines perceived personalization and privacy concerns to provide a basis for considering the relevance of personalized content and promotional offers, alongside the need for transparency and personal data protection. Practical implications will be drawn from the empirical findings, while maintaining a clear distinction between customers' intentions to engage in value co-creation and their actual contributions.

1.8. Structure of the Dissertation

The dissertation is organized into five chapters: Chapter 1, Research Overview; Chapter 2, Theoretical Foundations; Chapter 3, Research Design; Chapter 4, Research Findings and Discussion; and Chapter 5, Conclusions and Managerial Implications.

CHAPTER 2: THEORETICAL FOUNDATIONS AND RESEARCH MODEL

2.1. Concepts

2.1.1. Value Co-creation Intention

VCCI is a pre-behavioral state that reflects the individual's will and conscious mental state on the future participation in an interactive, cooperative, and resource-sharing service with other actors for the joint creation or extension of value. It is a contrast to value co-creation activity as such in that it represents an individual's disposition and inclination to action, such as engaging in co-creation itself or similar behaviors, as opposed to those contributions that have already occurred (Ajzen, 1991; Zhao et al., 2019). Based on AbdelAziz et al. (2023), this dissertation defines VCCI in the e-wallet domain as the degree of users' willingness to continue to take part in value co-creation activities in the future, including actively seeking information or knowledge to enhance their participation capability and bringing friends to join. In this sense, VCCI reflects users' orientation toward actively contributing to the creation, modification, or enhancement of e-wallet service value.

2.1.2. Gamification

Applications have dealt with different worldviews of gamification, from a consideration of the level of game design elements to the consideration of gamifying as a whole. In e-wallets, by contrast, users continued to make payments and carry out financial transactions, but these tasks were shaped to suggest progress, accomplishment of goals, feedback, or established patterns of reward (Zhang et al., 2023). Based on Werbach (2014) and Huotari and Hamari (2017), this study defines gamification as the degree to which the activity of interacting with a non-game service over time is. Interaction with a non-game service becomes game-like in use. To be sure, the conceptualization in this article is similar to that used by Akhtar et al. (2024) for measurement in mobile payment.

2.1.3. Perceived Value

Based on Karjaluoto et al. (2019), we consider two aspects of perceived value: utilitarian value and hedonic value. Utilitarian value is characterized by practical advantages and the degree to which a service facilitates users reaching their objectives. Conversely, hedonic value relates to the excitement, curiosity, leisure time, and enjoyment associated with utilizing services.

2.1.4. Customer Engagement

Customer engagement occurs at three different levels: cognitive, emotional, and behavioral engagement. The cognitive dimension reflects the attention, concentration, and interest that customers direct toward a brand. The affective dimension represents feelings of fondness, closeness, and emotional attachment, and the behavioral dimension indicates customer choice, survival, and participation in the service. Therefore, customer engagement is a state in which customers devote their cognitive, emotional, and behavioral resources to their relationship with a brand or firm (Brodie et al., 2011; Behnam et al., 2021)

2.1.5. Perceived Personalization

Perceived personalization is the degree to which users feel or experience that a service has been customized according to their own needs and preferences (Henkens et al., 2021). Like a number of other previous studies (Alalwan et al., 2024), we define perceived personalization as the extent to which users consider that the products, services, and experiences offer an individualized experience tailored to their personal needs, preferences, and patterns of behavior.

2.1.6. Privacy Concern

Privacy concern is the perception or feeling of an individual with regard to the risk/fear of uncertainty and adverse consequences about future events related to his/her provided information to a certain organization or service provider (Ioannou et al., 2020). Ciftci et al. (2024)state that privacy concern suggests how much a person is worried or concerned that their personal information might be gathered, stored, managed, or utilized in a way that they do not want, or that somehow compromises their security.

2.1.7. E-wallet

An e-wallet or digital wallet is an application or software platform that allows users to perform online financial transactions such as payments, money transfer, etc. on Internet-enabled mobile devices (Ramli, 2021; Chawla & Joshi, 2019). Some literature refers to e-wallets as digital equivalents of physical wallets that are capable of holding payment information, identification information, and transactional information (Yaakopa et al., 2021). E-wallets are considered payment intermediary services in Vietnam, which provide identified accounts for customers to open electronic accounts for storing and managing balances. The e-wallets are commercially backed by the funds maintained in the service providers' payment guarantee account on a 1:1 basis (State Bank of Vietnam, 2024). In this thesis, the e-wallet is the service, which is established under the digital infrastructure, offered by a regulated entity, that the user avails as a medium for depositing and withdrawing money, making payments, sending and receiving money, amongst other digital services.

2.2. Related Studies

2.2.1. The Effect of Gamification on Value Co-creation: An Overview

The PRISMA method was used for the selection process to guarantee full traceability and to obtain reliable results when searching and selecting for studies on gamification and value co-creation. The search of the literature was performed in Scopus on November 28 , 2025. A total of 381 records were initially retrieved, and the selection was limited to peer-reviewed articles written in English within the relevant subject areas. Following title and abstract screening of full text where available, studies that reported gamification or value co-creation as marginal issues were excluded, resulting in a total of 29 articles. Four additional studies identified through ScienceDirect and Google Scholar brought the final sample to 33 articles, including 23 Q1, 6 Q2, 2 Q3, and 2 Q4 publications.

A supplementary search was conducted in the Vietnamese Science and Technology Information System using corresponding Vietnamese keywords, but no relevant studies were identified. This finding suggests that the relationship between gamification and value co-creation remains insufficiently examined, particularly in the Vietnamese context.

(1) Research Methods Used: The analysis of the 33 studies indicates considerable methodological diversity, including qualitative methods (12 studies), quantitative methods (10 studies), mixed methods (3 studies), and review or synthesis studies (8 studies). Overall, research in this area still relies largely on qualitative designs and survey-based approaches, whereas experimental and mixed-method studies remain relatively limited. This pattern suggests the need for future research to make greater use of designs that allow stronger causal testing, longitudinal investigation, and the measurement of actual behavior.

(2) Theories used in prior studies: A synthesis of the 33 studies shows that the theoretical foundations are relatively diverse, but they can be grouped into four categories according to their explanatory functions: (1) theories related to behavior and motivation, including SDL; (2) approaches to gamification experience design; (3) technology-supporting models and tools; and (4) educational and social theories, such as interaction ritual chain theory. Among the 33 studies reviewed, SDL appears most frequently, highlighting its central role in explaining value co-creation.

(3) Research themes

(a) Approaches to Gamification in Relation to Value Co-Creation

Research on gamification and value co-creation can be grouped into three main approaches: game design elements, perceived experiences, and the organization of interactions. *First,* the design-based approach focuses on tasks, rewards, competition, and cooperation. Jun et al. (2020) found that different types of rewards had varying relationships with intentions to continue participating in social value co-creation, while Lu et al. (2024b) reported a positive relationship with green value co-creation behavior. However, losing in gamified activities may negatively affect customer engagement (Leclercq et al., 2018). These findings suggest that the effectiveness of gamification depends on both its design and the context in which it is implemented. *Second*, the experience-based approach emphasizes perceived value and the quality of interactions. García-Magro et al. (2023), Tabaeeian et al. (2024), and Nguyen et al. (2025) identified relationships between gamified experiences and various aspects of value co-creation. In contrast, Lopes et al. (2023) found that positive experiences do not necessarily translate into customer engagement or value co-creation. These studies also differ in how they conceptualize gamification. *Third,* the interaction-oriented approach views gamification as a means of facilitating dialogue and resource integration. Literature reviews by Merhabi et al. (2021) and Ciuchita et al. (2023), together with the case study by Patricio et al. (2020), shed light on different forms of customer participation. However, they do not directly examine customers' intentions to engage in value co-creation. *Overall,* existing evidence varies in research methods, levels of analysis, and outcome variables. The influence of a game on value co-creation behavior cannot be equated with the intention to engage in value co-creation. Further research is therefore needed to examine the relationship between gamification and VCCI among e-wallet users.

(b) Mechanisms Explaining the Relationship Between Gamification and Value Co-Creation

Previous studies have explained the relationship between gamification and value co-creation through three main perspectives. *First,* the value-based perspective focuses on the benefits perceived by users. Green value and expected benefits have been identified as factors associated with green value co-creation intention (Zhang et al., 2025), while utilitarian, hedonic, and social benefits have been linked to different aspects of value co-creation (García-Magro et al., 2023). However, these constructs should not be regarded as equivalent to overall perceived value. *Second,* the motivational and emotional perspective highlights the mediating roles of psychological benefits and emotional energy in explaining social value co-creation intention and green value co-creation behavior (Jun et al., 2020; Lu et al., 2024b). *Third,* the engagement-based perspective provides evidence for the mediating role of brand engagement (Rather et al., 2023). Meanwhile, exploratory studies have drawn attention to the importance of cooperation and social connections in value co-creation (Nobre & Ferreira, 2017; Dreher & Ströbel, 2023).

Taken together, differences in conceptual definitions, research methods, and outcome measures suggest a need for further investigation. In particular, perceived value and customer engagement warrant examination as two sequential mediating states in the relationship between gamification and VCCI. At the same time, caution is needed when interpreting causal relationships based on cross-sectional data.

(c) Types of Value Co-Creation Outcomes Examined in Previous Research

Previous studies have examined value co-creation outcomes at three levels. At the intention level, research has focused on customers' willingness to participate in social or green value co-creation in the future (Jun et al., 2020; Zhang et al., 2025). At the behavioral level, value co-creation involves actual activities such as information sharing, providing feedback, and cooperation (García-Magro et al., 2023). At the organizational level, value co-creation has been associated with relationship quality, innovation, and sustainability (Colabi et al., 2022). These levels are not equivalent. Current participation in value co-creation activities does not necessarily demonstrate an intention to continue making voluntary

contributions in the future.

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(e) Synthesis of Research Directions and Issues Requiring Further Investigation

Existing research has approached gamification from the perspectives of game design, perceived experiences, and the organization of interactions, with explanatory mechanisms involving perceived value, emotions, and customer engagement. However, differences in research methods, conceptual definitions, and outcome variables have resulted in findings that are not entirely consistent. In particular, participation in gamified activities, actual value co-creation behavior, and VCCI represent distinct concepts and should not be used interchangeably. Although perceived value and customer engagement have received research attention, their sequential mediating roles and the conditions under which these relationships may vary remain insufficiently understood. These unresolved issues provide a basis for identifying research gaps and developing the proposed research model.

2.2.2. Effects of Gamification on Perceived Value and Customer Engagement

Gamification as a mechanism for creating value in the customer experience: Existing studies view gamification not simply as the addition of points, badges, or rewards, but as a mechanism for restructuring the user experience in ways that allow functional, hedonic, emotional, and social value to emerge (Shi et al., 2022; Kaur et al., 2023; Aulia et al., 2023). However, perceived value has not been conceptualized consistently across studies, and some research still places greater emphasis on economic benefits. This suggests that the effectiveness of gamification depends on the fit between game mechanisms, users' goals, and customer needs.

Perceived value as a mechanism linking gamification to behavioral responses: Studies in e-commerce, on-demand services, and digital payments indicate that perceived value can serve as a bridge between gamification and outcomes such as attitudes, purchase intention, and continuance intention (Wong et al., 2022; Aulia et al., 2023; Pandey & Ansari, 2023). Gamification can enhance utilitarian benefits while also generating enjoyment and a sense of achievement. However, most studies have focused on relatively immediate behavioral responses and relied on cross-sectional data, leaving the longer-term development of customer relationships less clearly understood.

Customer engagement as a relational state and mediating mechanism: Gamification can also function as a relationship-building mechanism that encourages customers to invest cognitive, emotional, and behavioral resources in their interactions with a platform or brand. Customer engagement may therefore be both an outcome of gamification and a mediating mechanism leading to loyalty, word-of-mouth, retention, and value co-creation (Bitrián et al., 2021; Qian et al., 2022; Rather et al., 2023; Zhang et al., 2023). Nevertheless, customer engagement needs to be clearly distinguished from closely related relational constructs, and its multidimensional nature should be adequately assessed.

The sustainability of gamification effects: The long-term effectiveness of gamification depends not only on rewards but also on whether motivation becomes internalized and whether the experience creates a sense of meaning,

competence, autonomy, and social connection (Jun et al., 2020; Cao et al., 2022; Hsu, 2022). Rewards possibly elicit fast-paced interaction, but their impact due to outer motivation may fade. In general, empirical evidence showed that gamification can improve perceived value and user involvement, but not all results are consistent (i.e., Qian et al., 2022; Dzandu et al., 2022; Aulia et al., 2024). Thus, gamification effects across different domains, user categories, and technological and cultural backgrounds need to be further investigated.

2.2.3. Studies on the Effect of Perceived Value on Customer Engagement

Perceived value as an antecedent of customer engagement: The literature so far mostly indicates that service buyers are more prepared to devote their mind, emotions, and actions to engagement when they sense that service is more meaningful to them (Qian et al., 2022; Karjaluoto et al., 2019; Bapat & Hollebeek, 2023). The perceived value is likely to contribute to the functional, economic, social, emotional, and hedonic aspects of the consumer benefits. However, the degree to which each value component impacts in different contexts and the conceptualization of perceived value is not always consistent across different research studies.

The mechanism linking perceived value to customer engagement: The relationship may also be less direct than a simple value-to-engagement path suggests. Some studies indicate that favorable value perceptions first contribute to relational or psychological responses such as satisfaction, trust, commitment, perceived fairness, or relationship quality (Itani et al., 2019; Karjaluoto et al., 2019; Bapat & Khandelwal, 2023; Japutra et al., 2023). These responses may then encourage customers to invest more strongly in their relationship with the brand or platform. Perceived value can therefore be seen as an evaluation of what customers gain from the service, while customer engagement represents a deeper form of cognitive, emotional, and behavioral involvement that may develop from that evaluation.

In digital interactive environments: On digital platforms, value is created not only through the core service function but also through interface design, content, communities, and interaction mechanisms (Qian et al., 2022; Wongkitrungrueng & Assarut, 2020; Lu et al., 2022). Customer engagement may therefore be directed toward the platform, brand, seller, or community, and its target as well as its cognitive, emotional, and behavioral dimensions should be clearly specified. Although most studies report a positive relationship between perceived value and customer engagement, some inconsistent findings indicate that this relationship may vary depending on service characteristics, usage purposes, and the interaction context.

2.2.4. Studies on the Effects of Perceived Value and Customer Engagement on Value Co-creation

Perceived value as an antecedent of value co-creation: Existing studies suggest that customers are more willing to invest their time, knowledge, and experience in value co-creation when they perceive that participation provides meaningful benefits. Perceived value is therefore not merely an outcome of consumption but may also serve as a motivation for customers to continue contributing their resources. Evidence from mobile banking, brand communities, sharing services, and online review settings indicates that service attributes are more likely to encourage value co-creation when users perceive them as generating benefits that are valuable either to themselves or to the wider community (Mostafa, 2020; Zhao et al., 2019; Chen & Lee, 2023; Liu & Meng, 2024).

Customer engagement as a mechanism for promoting value co-creation: Customer engagement reflects the extent to which customers invest cognitive, emotional, and behavioral resources in their relationship with a platform. Highly engaged customers are more likely to share experiences, support other community members, provide feedback, and participate in service improvement. Through these activities, they may move beyond the role of service users and become active contributors to value creation (Behnam et al., 2021; Ferm & Thaichon, 2021; Yen et al., 2020; Wang et

al., 2024).

In digital interactive environments: Digital platforms provide an environment in which perceived value and customer engagement can develop continuously through content, technology, community participation, and social interaction (Jun et al., 2020; El Afi & Ouiddad, 2021; Wang et al., 2024; Zhang et al., 2025). However, adding gamification or interactive features does not automatically lead to value co-creation. Users may participate primarily to obtain rewards while remaining unwilling to contribute knowledge, ideas, or other resources.

The role of contextual conditions: The influence of perceived value and customer engagement can be moderated by trust, self-efficacy, social norms, community features, and organizational support (Nadeem et al., 2021; Abror et al., 2023; Amin et al., 2024). In general, perceived value and customer engagement are key predictors of value co-creation, but the magnitude of their impacts may be different in service types, platforms, user motivations, and technology environments. In fact, some aspects of customer engagement could be too weak to lead to VCCI. Prior research shows that personalization leads to improved experiential value, satisfaction, customer engagement, and continuance intention by providing content, recommendations, or services that better fit individual preferences (Gao et al., 2023; Zhu et al., 2021; Alalwan et al., 2024).

2.2.5. Studies on the Moderating Effects of Perceived Personalization and Privacy Concern

The role of perceived personalization: Perceived personalization has also been studied as a potential moderating factor that may influence the relationships between perceived usefulness, perceived value, or technology experience and outcomes such as satisfaction, customer engagement, and use intention in several digital environments (Henkens et al., 2021; Balan & Mathew, 2022; Albashrawi & Motiwalla, 2019).

The role of privacy concern: Existing research suggests that privacy concern serves as a lens through which users evaluate the perceived benefits and risks, influencing satisfaction, consumer engagement, privacy management, and continuance intention (Li et al., 2019; Liu et al., 2021; Lim et al., 2022). Hence, privacy concerns should not be considered as merely a negative response, at least for its effects, but also a potential moderator for the impact of perceived value and user experience.

The inconsistency of moderating effects: Findings on the moderating roles of perceived personalization and privacy concern are not uniform. In some studies, personalization strengthens positive relationships between service perceptions and user outcomes, while in others the interaction effect is weak or statistically insignificant. Similarly, privacy concern may weaken favorable user responses, yet its influence can become limited when perceived benefits or trust in the platform are sufficiently strong (Henkens et al., 2021; Abdalla, 2024; Albashrawi & Motiwalla, 2019; Li et al., 2019). These mixed findings suggest that such moderating effects may depend on service type, technological context, data sensitivity, and user characteristics.

2.3. Research Gaps

The Role of Gamification in Customers' Value Co-Creation Intention

Previous research on gamification has largely focused on customer interaction, continuance intention, or actual value co-creation behavior. However, positive experiences do not necessarily translate into value co-creation (Lopes et al., 2023). Although some studies have examined VCCI, they have typically focused on specific forms of co-creation (Jun et al., 2020; Zhang et al., 2025). VCCI, however, reflects customers' willingness to contribute in the future and is conceptually distinct from both interaction and actual behavior. This distinction highlights the need to examine the relationship between perceived gamification and VCCI among e-wallet users.

The Sequential Mediating Mechanism Linking Gamification to Value Co-Creation Intention

Previous studies have identified the mediating roles of psychological benefits, emotions, and engagement in the relationship between gamification and value co-creation (Jun et al., 2020; Rather et al., 2023; Lu et al., 2024b). However, these mechanisms have generally been examined separately and in relation to different outcome variables. Perceived value captures how customers evaluate the benefits gained from gamified experiences, whereas customer engagement reflects the cognitive, emotional, and behavioral investment they make in a platform. Although individual relationships among these constructs have been explored, evidence concerning their sequential mediating roles in explaining VCCI remains limited and inconclusive. This dissertation therefore examines both the individual and sequential mediating effects of perceived value and customer engagement to better understand how gamification is associated with VCCI among e-wallet users.

The Moderating Roles of Perceived Personalization and Privacy Concerns in the Relationship Between Perceived Value and Customer Engagement

Previous research suggests that the relationship between perceived value and customer engagement may vary depending on the conditions under which customers interact with a service (Itani et al., 2019). Personalization has been examined in relationships involving perceived value and behavioral intentions (Henkens et al., 2021; Balan & Mathew, 2022), while findings on the moderating role of privacy concerns have been mixed (Albashrawi & Motiwalla, 2019; Li et al., 2019). Against this background, a third research gap concerns the limited understanding of how perceived personalization and privacy concerns may simultaneously moderate the relationship between perceived value and customer engagement in the e-wallet context.

2.4. Theoretical Foundations

2.4.1. Service-Dominant Logic (SDL)

In SDL, consumers are active agents who engage in value co-creation with producers by sharing their knowledge, experiences, capabilities, feedback, and other personal resources (Ranjan & Read, 2016). In this dissertation, gamification is considered as an assemblage of service resources that enables experience and interaction. Tasks, rewards, or progress mechanics can only generate value when they are noticed by users and aligned with their personal needs, goals, and environment of use (Huotari & Hamari, 2017). The perceived value represents the users' estimation of the value that is formed from this process; customer engagement indicates the degree to which users devote cognitive, emotional, and behavioral efforts; and VCCI represents their intention to keep contributing resources to the platform.

2.4.2. Stimulus-Organism-Response (S-O-R) Model

The S-O-R model of Mehrabian and Russell (1974) brings individual response under three parts: stimulus (S), which is an environmental factor, organism (O), which is a physical and emotional state of a person, and response (R), which is a behavioral response to the environment. Environmental features may shape behavior not only directly, but also indirectly when people perceive, appraise, and process them through cognitive, affective, and/or psychological states of mind before a response is generated. Stimuli can be technological features and attributes of the interaction in digital contexts. The organism is the appraisals and psychological experiences derived from these interactions, and the response is the approach or avoidance intentions and behaviors. In this thesis, gamification is the stimulus (S), perceived value and customer engagement are two organism states (O), and VCCI is the response (R). Hence, the S-O-R model elucidates how a gamified experience could be transformed into VCCI via users' value evaluation and the subsequent formation of customer engagement.

2.4.3. Privacy Calculus Theory (PCT)

PCT argues that personal data recipients' decisions are influenced by a privacy calculus based on the trade-off between the expected benefits and the perceived privacy risks of disclosing personal information (Laufer & Wolfe, 1977). When the benefits are perceived as higher than the risks, the users are more likely to keep submitting data and using the services. On the other hand, if privacy threats are more pronounced, users may limit what information they disclose or how much they engage. Benefits in digital contexts can entail convenience, efficiency, and customized services, while risks are related to over-collecting data, misusing personal information, or losing control of personal data (Choi et al., 2015; Kezer et al., 2022. In this thesis, perceived personalization stands for the positive side, and privacy concern stands for the negative side. Thus, we use PCT to model how these two elements may moderate the perceived value-customer engagement nexus.

Hence, SDL, the S-O-R model, and PCT serve as a coherent theoretical base for the conceptual framework of this study. These three perspectives are complementary: SDL describes the nature of value creation and the active role of users; the S-O-R framework describes the process by which stimuli are transformed into internal processed and then behaviors; and the PCT explains under which data-related conditions these processes are changed.

2.5. Research Hypotheses and Proposed Model

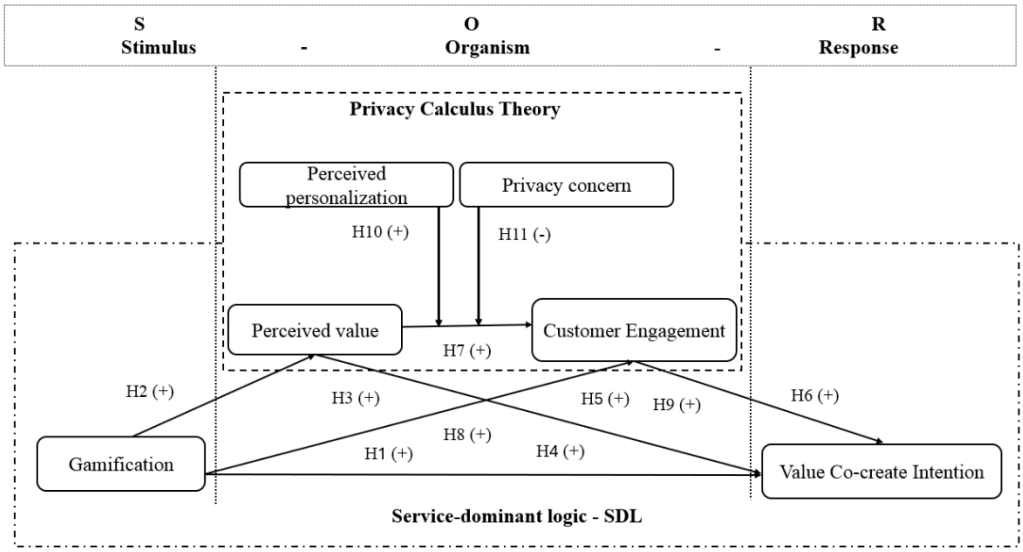


Figure 2.1. Proposed Research Model

H1: Gamification has a positive effect on customers' VCC intention.

H3: Perceived value has a positive effect on customers' VCC intention.

H4: Customer perceived value mediates the effect of gamification on customers' VCC intention.

H5: Gamification has a positive effect on customer engagement.

H6: Customer engagement has a positive effect on VCC intention.

H7: Perceived value has a positive effect on customer engagement.

H8: Customer engagement mediates the effect of gamification on VCC intention.

H9: Gamification affects VCC intention through the sequential mediation of perceived value and customer engagement.

H10: Perceived personalization positively moderates the effect of perceived value on customer engagement.

H11: Privacy concern negatively moderates the effect of perceived value on customer engagement.

CHAPTER 3 RESEARCH DESIGN

3.1. Research Process

The study was conducted following the scale development and validation procedure proposed by Churchill (1979) for marketing research. The study was carried out in four main stages: (1) reviewing the theoretical background and developing the research model; (2) conducting qualitative research to design and refine the measurement scales; (3) conducting a preliminary quantitative study to provide an initial assessment of the scales; and (4) conducting the main quantitative study to test the research model and hypotheses.

3.2. Qualitative Study

Expert In-Depth Interviews

Purpose: Deep interviewing is a qualitative methodology that relies on open-ended questions to investigate participants' views, experiences, and sense-making of the subject matter (Silverman, 2021). In this thesis, expert in-depth interviews were conducted to: (1) understand the conceptual meaning and the contextual application, (2) to scrutinize and enhance the suggested connections of the research model; and (3) to modify the content, wording, and semantic clarity of the adopted measurement scales to cater to e-wallet users in Vietnam.

Procedure: For the purpose of this research, experts were selected from the academic and industry fields who had extensive knowledge about, and/or experience with, the Vietnamese e-wallet environment. Participants were approached using snowball sampling, and the data collection was based on the principle of information saturation. Following the seventh interview, which consisted of three academic experts and four industry practitioners, there was no more substantive knowledge to be gained from additional interviews; therefore, the process of data gathering was halted (Guest et al., 2020). The interviews were semi-structured and explored the significance of constructs, the proposed relationships in the research model, and the measurement instruments. The interview data were analyzed thematically, coded and interpreted in relation to the theoretical framework underpinning the study. Moreover, the Lawshe's (1975) Content Validity Ratio (CVR) was applied to evaluate the necessity for each measurement item and to assist in the finalization of the scales.

Results of the in-depth expert interviews

Regarding the research constructs and measurement structure: None of the six constructs was considered unnecessary or conceptually inappropriate. The proposed measurement structures were therefore kept, with the final decision based not only on expert judgment but also on their consistency with the theoretical definitions and evidence reported in earlier studies.

Regarding the relationships in the proposed model: In the end, the seven experts rated the suggested relations as theoretically sound and in line with the dynamics of interaction among the users of e-wallets. For example, regarding the influence of privacy concern as a moderator, three experts expressed that its effect might be influenced by users' perceptions of risk related to data and the importance users attached to functional benefits and service convenience. Based on the integration of expert opinions and their corroboration with the theoretical ground and previous research, the model and the hypotheses were kept without any alterations.

Regarding the development of measurement scales for the research constructs: To some extent, the adopted measurement scales were considered by the experts to be compatible with the conceptual content of the constructs. Most

of the changes were related to wording or contextualization and do not affect the meaning of the original scales. The experts also suggested changing the order of several items. More concrete and easily recognizable statements were placed earlier, while broader or more abstract statements appeared later, making the questionnaire easier to follow.

Focus group discussion

Purpose: The purpose of the focus group session was to study the ways users understood the research constructs and measurement items when applied to e-wallet use. The convergence between the implied message of the scales and the perceived interpretation of the items by users were investigated thoroughly. This allowed us to identify words that were ambiguous, phrasings that were too complex, expressions that sounded too unnatural, as well as items that could be understood in more than one way. The results of the discussion were used to further improve the scales and finalize the questionnaire for the quantitative study.

Procedure: Ten e-wallet users were purposively selected for the discussion. A focus group discussion with 10 purposively selected e-wallet users. This took place at the University of Finance – Marketing in June 2025 and took about 90 minutes. The participants were told the aim of the study, that participation was voluntary, that their responses would be kept confidential, and that they could withdraw from the study at any time. Responding to a battery of open-ended questions, the discourse centered on the clarity, naturalness, simplicity, and relevance of the items to participants' ownership and usage of e-wallets. The feedback was condensed, content analyzed, and contrasted against the theoretical foundation of each construct. Amendments were made where appropriate without deviating from the core concept of the scales.

Results of the focus group discussion: Most measurement items were understood as intended, although several required minor revision. Five items: UV3, HV2, AE1, BE3, and PP4 were modified after the discussion. The changes mainly involved shortening or simplifying sentence structures, making the object of evaluation more explicit, and replacing wording that participants considered less natural in the context of e-wallet use. No new construct was introduced, and the revisions did not change the theoretical meaning of the original scales.

3.3. Preliminary Quantitative Study

Purpose: The preliminary quantitative study was conducted to provide an initial assessment of the reliability and validity of the measurement scales. The results were used as a basis for revising, removing, or supplementing measurement items that did not meet the required criteria. This stage also provided an empirical basis for refining the questionnaire and data collection procedures before the main quantitative study.

Preliminary questionnaire design: In addition to an introduction explaining the purpose of the survey, instructions for completing the questionnaire, and assurances regarding anonymity and confidentiality, the questionnaire consisted of four sections: the screening section, descriptive section, main measurement section, and demographic information section.

Sampling method and sample size: After the questionnaire had been finalized, it was sent to two experts for further review. A pilot test was also conducted with 10 consumers to examine the content, structure, and length of the questionnaire before the preliminary survey. Data for the preliminary survey were collected using convenience sampling in July 2025. Eligible respondents were required to be at least 18 years old, able to make independent decisions regarding their use of the service, and to have experienced gamified interactions on an e-wallet within the six months preceding the survey. Individuals working in the e-wallet industry or involved in communication, promotional, or review activities

related to e-wallet brands for income-generating purposes were excluded. To reduce potential response bias, participants were also required not to have taken part in a similar discussion or study within the previous six months.

According to the inverse square root method proposed by Kock and Hadaya (2018) for PLS-SEM, the minimum sample size was determined based on the smallest path coefficient that the study aimed to detect and was estimated at approximately 160 observations. To ensure that this minimum requirement was met, 265 responses were collected. After data screening, 245 valid responses were retained for the preliminary analysis, while 20 responses were excluded because the respondents gave identical ratings across the questionnaire items.

Data Analysis

Scale reliability: Reliability was assessed using Cronbach's Alpha together with the Corrected Item-Total Correlation. According to Hair et al. (2021), a scale is generally considered acceptable when Cronbach's Alpha is 0.70 or higher, although values from 0.60 may be acceptable in exploratory research. Measurement items with corrected item-total correlations above 0.30 were retained, while items that did not meet this criterion were considered for removal before further analysis.

Exploratory Factor Analysis (EFA): EFA was employed to explore the underlying structure among the measurement items and to provide a preliminary assessment of the scale structure. Data suitability was assessed using a Kaiser-Meyer-Olkin (KMO) value of at least 0.50 (Netemeyer et al., 2003) and a statistically significant Bartlett's test at $p < 0.05$ (Hair et al., 2017). The study used Principal Axis Factoring (PAF) as the extraction method together with Promax oblique rotation. Factors were retained when their eigenvalues exceeded 1, the total variance explained reached at least 50%, and item factor loadings were 0.50 or higher. Items that failed to meet these criteria were considered for removal before subsequent analyses.

Results of the preliminary quantitative study: The measurement scales demonstrated good reliability, with Cronbach's Alpha values ranging from 0.840 to 0.918, while all corrected item-total correlations exceeded the required threshold. The EFA results also supported the appropriateness of the measurement structure. The observed items loaded on their intended factors, no substantial cross-loadings were identified, and all items were retained for the main study.

.3.4. Main Quantitative Study

Purpose: The main quantitative study was conducted to assess and confirm the reliability and validity of the measurement scales for the research constructs. This stage also aimed to test the proposed research model and hypotheses in a systematic manner.

Data collection method: The target respondents were e-wallet users aged 18 years or older who were able to make independent decisions regarding their use of the service and had experienced gamified interactions while using an e-wallet within the six months preceding the survey. This criterion was intended to ensure that respondents had sufficient recent experience to evaluate the gamification-related constructs in the subsequent measurement sections. Respondents were excluded if they worked in the e-wallet industry or were involved in communication, promotional, or e-wallet review activities for income-generating purposes. To reduce potential bias, participants were also required not to have taken part in a similar discussion or study within the previous six months. The questionnaire was administered through Google Forms, with required-response settings applied to avoid missing data. Screening questions were also included to exclude respondents who did not meet the study criteria. Data were collected using a structured questionnaire survey.

(1) Respondents were directly contacted via undergraduate, postgraduate, short-term, and part-time study courses at multiple universities located in the city of Ho Chi Minh, Vietnam, particularly the University of Finance – Marketing, Ho Chi Minh City University of Technology (HUTECH), and the University of Economics Ho Chi Minh City.

(2) The survey link was shared on social networks such as Facebook and Zalo among people known to the researcher both personally and professionally.

(3) The questionnaire was also made available in virtual brand community networks for e-wallet users, in order to target a wider range of respondents who had experience playing with gamified e-wallet applications.

In addition to recruitment of participants by convenience-based approaches, the study consulted market share information for leading e-wallet providers in Vietnam, reported by Decision Lab, to mitigate potential sample skew. From August to October 2025, the main survey data were collected. Following screening and cleaning, a final sample of 1,247 responses was deemed valid for analysis. Of these, 41.13% were from channel (1) and 38.57% and 20.30% were from channel (2), and (3) respectively. Channel (3) was employed as a specific complementary channel. In the actual process, the distribution of responses was observed and checked with the desired sample structure for each e-wallet brand, and more respondents were solicited if needed. This strategy facilitated the mitigation of the imbalance between types of users, the enhancement of the coverage of the survey, and the improvement of the representativeness of the final sample. The final sample of N = 1,247 was substantially larger than the minimum required sample size calculated based on the inverse square root method of Kock and Hadaya (2018) and Soper's (2018) sample size calculator.

CHAPTER 4 RESEARCH FINDINGS

4.1. Characteristics of the Study Sample

Descriptive Statistics: The majority of users were young in age, as 74.98% of the respondents fall within the age group of 18-35. The office workers (including students) composed 62.71%, and females were 53.09% of the sample. The majority of respondents had attained a level of education beyond high school (88.13%), and 86.21% indicated a monthly income of less than VND 25 million. The most reported interaction was mini-games (30.89%), followed by doing tasks and getting rewards (26.88%), and accumulating activities to achieve milestones or levels of progress (19.36%). The respondents' top two reasons for joining were rewards or monetary incentives (29.18%) and fun or entertainment (24.03%). Sixty percent of the respondents played gamified elements with the frequency ranging from once a month to one to two times per day. With regard to e-wallet, MoMo was the most popular platform with 36.25% respondents, followed by ZaloPay (27.51%), Viettel Money (14.43%), ShopeePay (13.39%), and VNPAY (8.42%). This spread suggests that the sample includes users from at least a wide variety of e-wallet platforms.

Distributional Characteristics of the Data: Most of the measurement items showed skewness and kurtosis values between -2 and +2. The distributions were therefore considered reasonably well behaved, with no indication of severe departures from normality.

Assessment of Common Method Bias: For Harman's single-factor test, the data first showed adequate suitability for factor analysis, with a KMO value of 0.953 and a statistically significant Bartlett's test ($p < 0.001$). The first unrotated factor explained 33.91% of the total variance, remaining well below the 50% reference level. A further check using full collinearity VIF produced values below 3.3 for all constructs. Overall, the preliminary test results basically meet the requirements.

4.2. Measurement Model Assessment

The results indicate that all measurement items demonstrated satisfactory measurement quality. The outer loadings of the AE, BE, CE, GM, HV, PC, PP, UV, and VI scales were all above 0.708. Cronbach's Alpha and composite reliability values exceeded 0.70, while the AVE values of all constructs were above 0.50, supporting internal consistency reliability and convergent validity. All HTMT values were below 0.85, indicating adequate discriminant validity. Accordingly, all measurement items were retained for subsequent analyses.

In terms of customer engagement as a reflective higher-order construct, affective, behavioral, and cognitive engagement loadings were AE = 0.863, BE = 0.830, and CE = 0.811, respectively. Cronbach's $\alpha = 0.783$ and the composite reliability (CR) = 0.873, and AVE = 0.697 were within acceptable levels, basically meets the criteria for assessing discriminant validity. Consequently, customer engagement was confirmed to be a valid reflective higher-order construct.

For the formative higher-order construct of perceived value, hedonic value and utilitarian value were both significant with outer weights of 0.637 and 0.479, respectively. Both constructs had a VIF of 1.553 , indicating that multicollinearity was not a concern. The redundancy test also satisfied the criterion, with $R^2 = 0.702$, which supported convergent validity and explanatory power. For this reason, perceived value passed the evaluation for a formative higher-order construct.

4.3. Structural Model Assessment

Assessment of VIF, R^2, f^2, and Q^2

The bootstrapping results based on 10,000 resamples show that all direct effects were statistically significant. Gamification had positive effects on perceived value (β = 0.616), customer engagement (β = 0.202), and VCCI (β = 0.349). Perceived value positively affected customer engagement (β = 0.517) and VCCI (β = 0.299), while customer engagement also had a positive effect on VCCI (β = 0.245). All of these relationships were significant at $p < 0.001$.

The indirect effects through perceived value (β = 0.184), customer engagement (β = 0.050), and the sequential pathway from gamification to perceived value, customer engagement, and VCCI (β = 0.078) were also statistically significant. Because the direct effects remained significant and operated in the same direction as the indirect effects, the mediating relationships can be characterized as complementary mediation.

With respect to moderation, perceived personalization strengthened the effect of perceived value on customer engagement (β = 0.173; $p < 0.001$). In contrast, privacy concern did not show a statistically significant moderating effect (β = −0.054; $p = 0.058$).

Assessment of direct and indirect effects

Bootstrapping with 10,000 samples showed that all direct effects were statistically significant. Gamification positively affected perceived value (β = 0.616), customer engagement (β = 0.202), and VCCI (β = 0.349). Perceived value affected engagement (β = 0.517) and VCC intention (β = 0.299), while engagement positively affected VCC intention (β = 0.245); all effects had $p < 0.001$.

The indirect effects through perceived value (β = 0.184), engagement (β = 0.050), and the sequential path gamification, perceived value, engagement, VCC intention (β = 0.078) were all statistically significant. Because the direct effect remained significant and had the same sign as the indirect effects, the mediators exhibited complementary mediation.

Regarding moderation, perceived personalization strengthened the effect of perceived value on engagement (β = 0.173; $p < 0.001$). In contrast, privacy concern did not have a statistically significant moderating effect (β = -0.054; $p = 0.058$).

Importance-Performance Map Analysis (IPMA): The IPMA, with VI as the target construct, shows that gamification has the highest importance but a relatively lower performance level (0.661; 72.041), followed by perceived value (0.425; 76.158) and customer engagement (0.245; 76.499). Gamification should therefore receive the greatest managerial priority for improvement. At the component level, hedonic value and affective engagement appear to offer greater room for further improvement.

Assessment of Unobserved Heterogeneity: The FIMIX-PLS results did not clearly point to the best number of segments, as the model selection criteria were partly contradictory. The two-segment solution was more stable, while the three-segment solution was weakly divided, and the four- and five-segment solutions were less stable, and they generated quite small clusters. Therefore, there is a lack of support for a practically relevant latent segmentation structure. The dissertation, therefore, focuses on the full-sample model for hypothesis testing and interpretation.

Measurement Invariance and Multi-Group Analysis: The required degree of measurement invariance for the assessment of the structural relationships across the groups was supported by the MICOM. The MGA based on gamification experience frequency revealed that only the gamification–perceived value relationship was significantly different across groups. This association was stronger in high-experience-frequency users (β = 0.618) than in low-experience-frequency users (β = 0.497; $p = 0.021$). No significant differences were found for the remaining

relationships. Likewise, the income-based MGA showed no statistically significant differences between the two income groups ($p > 0.05$).

Endogeneity Assessment Using Gaussian Copula (Hult et al., 2018; Becker et al., 2022). The GM, PV, and CEN variables were found to be non-normally distributed, satisfying a necessary condition for applying this method. The results remained consistent with the original model in terms of the direction of effects and conclusions regarding statistical significance across all six structural relationships, three indirect effects, and two moderating effects, although some coefficient estimates changed.

4.4. Discussion of the Research Findings

4.4.1. Direct Effect of Gamification on Value Co-creation Intention

Gamification has a positive effect on VCCI. This finding is consistent with previous studies suggesting that gamification can foster value co-creation through psychological motivation, positive emotions, and higher-quality interaction (Jun et al., 2020; García-Magro et al., 2023; Tabaeeian et al., 2024). Gamification does more than provide rewards; it can also make users' contributions more goal-oriented, visible, and recognized, thereby increasing their willingness to participate in value creation with the platform (Rather et al., 2022; Zhang et al., 2025). In the Vietnamese e-wallet context, mechanisms such as point accumulation, cashback, payment-based tasks, and reward unlocking may create a sense of achievement and recognition. This helps explain the direct positive effect of gamification on users' VCCI.

4.4.2. Mediating Roles of Perceived Value and Customer Engagement in the Effect of Gamification on Value Co-creation Intention

Gamification and perceived value. Higher levels of gamification are associated with more favorable perceived value, both in utilitarian and hedonic terms. Features such as progress, feedback, challenges, and recognition may make the experience not only more enjoyable but also more useful. This finding is consistent with Qian et al. (2022), Nguyen et al. (2024), and Kaur et al. (2023), suggesting that gamification contributes not only to entertainment but also to users' evaluation of the benefits provided by the service.

Perceived value and customer engagement. Perceived value has a positive effect on customer engagement, indicating that when users perceive an e-wallet as both useful and capable of providing a positive experience, they are more likely to invest cognitive, emotional, and behavioral resources in the platform. This result is consistent with Itani et al. (2019), Qian et al. (2022), and Karjaluoto et al. (2019). However, in contrast to Wongkitrungrueng et al. (2020), the strength of this relationship may vary depending on the characteristics of the service and the type of value that is most salient to users.

Gamification and customer engagement. The results also show a positive effect of gamification on customer engagement. When interactions with an e-wallet are perceived as more game-like, users tend to pay greater attention, respond more positively, and participate more actively during service use. This finding is in line with Bitrián et al. (2021), Zhang et al. (2023), and Rather et al. (2023). In the e-wallet context, the result suggests that gamification can help move the user experience beyond purely transactional activities toward a more engaging form of interaction.

Customer engagement and VCCI. Customer engagement has a positive effect on VCCI, indicating that users who invest more cognitive, emotional, and behavioral resources in the platform are more willing to participate in value-creating activities with the firm. This finding is consistent with Behnam et al. (2021), Ferm and Thaichon (2021), Rather

et al. (2023), and Yen et al. (2020). However, the result reflects the effect of overall customer engagement on VCCI and should not be interpreted as evidence of actual value co-creation behavior.

Perceived value and VCC intention: Perceived value and VCCI. Perceived value has a positive effect on VCCI. When users perceive that an e-wallet provides both utilitarian and hedonic benefits, they are more likely to be willing to invest additional resources in value-creating activities with the platform. This finding is consistent with Abror et al. (2023a), Liu and Meng (2024), and Zhang et al. (2025). However, the relative contribution of each value dimension may vary depending on the characteristics of the service and the specific form of value co-creation being examined.

The mediating role of perceived value. Perceived value carries part of the relationship between gamification and VCCIA higher degree of gamification positively correlates with perception of value, which consequently positively correlates with intention to participate in value co-creation. This finding is consistent with Jun et al. (2020) and Zhang et al. (2025), and implies that the effect between gamification and VCCI could be accounted for partially by how users perceive the gains they obtained from the experience. This finding offers statistical support for mediation and should not be interpreted as a causal path.

The mediating role of customer engagement. Gamification has also been found to have a positive impact on customer engagement, which mediates its relationship with VCCI. When the e-wallet experience is considered more as a game, users have a tendency to be more engaged, and higher engagement in turn leads to greater intention to engage in value co-creation. This outcome is in line with the findings of Rather et al. (2023) and predicts that gamification may relate to VCCI through the cognitive, emotional, and behavioral effort exerted by users on the platform.

The sequential mediating roles of perceived value and customer engagement. The results support a sequential mediation effect connecting gamification, perceived value, customer engagement, and VCCI. Among value evaluations, those of higher levels of gamification are more positive; the higher perceived value is linked to more active customer engagement and higher VCCI. This result enhances the previous research that has mainly focused on these mediating mechanisms in an isolated manner. In addition, it is consistent with the S-O-R framework, as perceived value and customer engagement can be conceptualized as two organism states, which have different functions but operate in a theoretically sequential manner.

4.4.3. Moderating Effects on the Relationship Between Perceived Value and Customer Engagement

Perceived personalization has a positive moderating effect. The results show that perceived personalization strengthens the relationship between perceived value and customer engagement. When users perceive that the service is more closely aligned with their individual needs and usage context, the value they receive becomes more salient and meaningful, which is associated with a higher level of engagement. This result is in line with Balan and Mathew (2022), but contrasts with the literature that did not find a significant moderating impact. This indicates that the significance of personalization may lie in the research context and the particular relationship investigated.

Privacy concern does not have a significant moderating effect. There is no significant moderating effect of privacy concern. At the 5% level of significance, there is no empirical evidence to support the predicted adverse moderating effect of privacy concern. According to the Johnson-Neyman procedure, the effect of perceived value on customer engagement remains positive and statistically significant for the full range of privacy concern observed as a tendency of the strength of the association to decrease when privacy concern increases. This finding is partially consistent with the findings of Li et al. (2019), indicating that the privacy concern scenario does not always attenuate positive reactions of users.

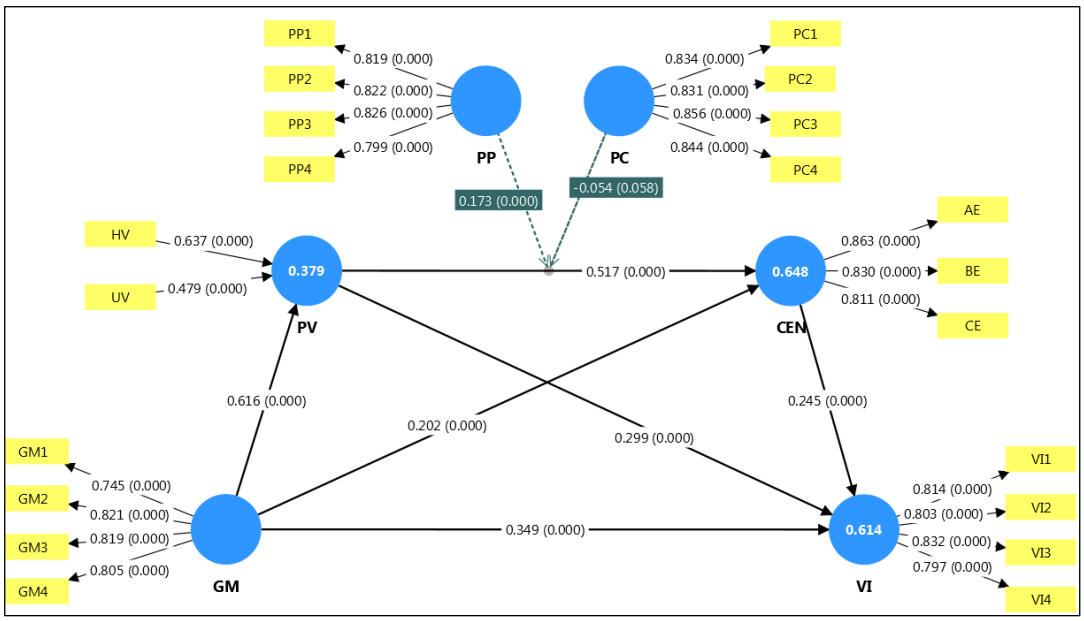


Figure 4.1. Structural Model with Higher-Order Constructs

CHAPTER 5 CONCLUSIONS AND MANAGERIAL IMPLICATIONS

5.1. Conclusion

This research tested the influence of gamification on VCCI via perceived value and customer engagement, with due consideration given to the moderating effects of perceived personalization and privacy concern. Data collected from 1,247 respondents were analyzed using PLS-SEM, with the disjoint two-stage approach applied to the higher-order constructs.

The results show that 10 hypotheses were supported, whereas the hypothesis concerning the moderating role of privacy concern was not supported. Gamification was found to have both direct and indirect effects on VCCI through the sequential pathway of perceived value and customer engagement. Perceived personalization strengthened the relationship between perceived value and customer engagement.

5.2. Theoretical Contributions

First, drawing on service-dominant logic (SDL), this dissertation provides further empirical evidence on the relationship between perceived gamification and VCCI among e-wallet users. Unlike previous studies that have focused on actual value co-creation behavior or specific forms of co-creation intention (Jun et al., 2020; García-Magro et al., 2023; Zhang et al., 2025), this study examines value co-creation intention as a pre-behavioral state, reflecting customers' willingness to actively contribute to value creation through their everyday interactions with digital services.

Second, the dissertation distinguishes between two related psychological states within the Organism (O) component of the S-O-R framework. Perceived value reflects customers' assessments of utilitarian and hedonic benefits, while customer engagement captures their cognitive, emotional, and behavioral investment in the platform. The findings support both the individual and sequential mediating effects of these constructs, providing further evidence of how these two distinct yet interconnected states help explain customers' intentions to participate in value co-creation.

Third, drawing on PCT, the dissertation examines the moderating roles of perceived personalization and privacy concerns in the relationship between perceived value and customer engagement within the same model. The findings reveal a positive moderating effect of perceived personalization, whereas the hypothesized moderating effect of privacy concerns is not supported. This difference suggests that the roles of data-related factors may depend on the specific service context.

Overall, by integrating SDL, S-O-R, and PCT, the dissertation brings together customers' active role in value creation, two mediating psychological states, and potential boundary conditions within a single framework for explaining VCCI. These contributions are based on statistical associations identified from cross-sectional data and should not be interpreted as evidence of causal relationships.

5.3 Practical Contributions

The findings suggest that e-wallet providers should prioritize improving the quality of gamified experiences by making tasks easier to understand, progress simpler to track, and achievement feedback more meaningful, rather than merely offering more rewards. Platforms could also incorporate opportunities for voluntary value co-creation, allowing users to report problems, suggest improvements, share their experiences, and help other users. Since the study measures intention rather than actual behavior, providers should monitor users' contributions through indicators such as feedback submission rates and the proportion of suggestions considered for implementation.

Regarding the mediating mechanisms, providers should maintain the utilitarian benefits that users already value while placing greater emphasis on improving hedonic value, which received relatively lower ratings. Perceived value, the cognitive, emotional, and behavioral dimensions of customer engagement, and VCCI should be assessed separately. The multi-group analysis also indicates that the relationship between gamification and perceived value differs according to users' frequency of gamification experiences, suggesting that programs may need to be adjusted for different user groups.

Personalization efforts should focus on making content, promotional offers, and recommendations more relevant to users' needs to support customer engagement. Although the hypothesized negative moderating effect of privacy concerns was not supported, e-wallet providers should continue to ensure transparency in how personal data are used and give users appropriate control over their information.

5.4. Limitations and Directions for Future Research

First, the study relies on self-reported data, a cross-sectional design, and non-probability sampling. As a result, common method bias cannot be completely ruled out, and the findings do not provide a sufficient basis for causal inference. Future research could adopt longitudinal or experimental designs and combine survey data with actual behavioral data.

Second, the Gaussian Copula analysis confirmed the direction and statistical significance of the main relationships, although some coefficient estimates changed. Moreover, the model did not include control variables reflecting users' characteristics. Future research should incorporate theoretically relevant control variables, apply additional methods to address endogeneity, and test alternative models to assess the robustness of the findings.

Third, although discriminant validity was established, the HTMT values for some pairs of constructs were relatively close to the acceptable threshold. FIMIX-PLS did not identify a clearly preferred segment solution, while the multi-group analysis found a significant difference only in the relationship between gamification and perceived value across groups with different frequencies of gamification experience. Measurement invariance across the three data collection channels was not examined. Future studies should reassess these issues using independent samples and test measurement invariance across data collection channels.

Fourth, the use of non-probability sampling, involving Vietnamese e-wallet users with prior gamification experience, limits the generalizability of the findings. The study measured VCCI rather than actual behavior and examined perceived gamification as an overall construct. Future research could extend the investigation to other contexts, employ more representative samples, examine specific gamification mechanisms, and assess actual value co-creation behavior alongside the role of privacy concerns.

LIST OF THE AUTHOR'S PUBLICATIONS

Minh, T. T. H., Trí, C. M., & Trung, B. (2025). The mechanism through which gamification affects value co-creation among MoMo e-wallet users: An extension of the S-O-R model with the moderating role of brand trust. *Journal of Economics and Development,* 341, 13-23. https://doi.org/10.33301/JED.VI.2709

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