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Transforming Customer Engagement Through Banking Super Apps: The Mediating Role Of Customer Ecosystem Innovation In Value Integration

Jusran Buraera[1*], Dian Anggraece Sigit Parawansa[2], Muhammad Asdar[3], Andi Nur Bau Massepe Mappanyompa[4]

[1]Doctoral Program of Management, Faculty of Economic and Business,
Hasanuddin University, Makassar, South of Sulawesi, Indonesia

[2],[3,4]Department of Management, Faculty of Economics and Business, Hasanuddin University, Makassar, South of Sulawesi, Indonesia

Abstract: *Research on customer ecosystems arising from the digitization in banking sectors remains scarce, despite banks actively building super apps to enhance their ecosystem capabilities in transforming customer engagement. This research looks how customer ecosystem innovation effectively mediates the interactions of multi-dimensions of value integration to question the existing path of integration directly to customer engagement. This study utilizes the three core changes framework in value creation sphere, value creation ecosystem, and process integration established by Lähteenmäki et al. (2022) to provide a novel perspective on value-driven approaches and their application within ecosystems. This enables an advanced method utilizing a quantitative approach to challlenge the previously applied qualitative method. Structural equation modeling (SEM) conducted on data from 400 app users in Indonesia indicated that hedonic and social values are the principal predictors of engagement, surpassing the previously emphasized utilitarian value. The results highlight the crucial importance of customer ecosystem in transforming these ideals into substantial customer engagement inside the financial digitalization. The study contributes to the growing body of literature on ecosystem-based business models, offering strategic insights for utilizing banking super apps, particularly in emerging markets. The findings offer advanced actionable ways for banks to integrate customer-centric and partner-driven innovations into their ecosystem capability. Future research may explore the scalability of this framework across different industries, technologies, and cultural contexts.*

Keywords: *Financial Digitalization; Customer Ecosystem Innovation; Value Integration Framework; Banking Super App Platform; Emerging Markets*

1. INTRODUCTION

Digital transformation significantly influences entire industries, including the banking sector (António Porfírio et al., 2024; Konopik et al., 2022). Digital transformation frequently involves not only adapting products and services to align with evolving customer expectations but also redefining the methods of their promotion and delivery. Innovative methods of direct customer engagement are propelling this transformation (Lähteenmäki et al., 2022; Filotto et al., 2021; Diener and Špaček, 2021). Effective digital transformation, as a holistic strategic endeavor, requires a synthesis of competencies and innovation to facilitate proficient management, mitigate failure risk, and ultimately attain success (Abdurrahman et al., 2024). Moreover, Abdurrahman et al. (2024) defined five essential organizational skills for banks to enhance their performance: technology, strategic, organizational, ecosystem, and GRC (Governance, Risk, Compliance) capabilities.

Based on a dynamic capability perspective, the key capabilities necessary for driving innovation within the ecosystem would be vigilant monitoring for signs of change, effective utilization of external resources, and adaptive evolution in response to market shifts (Priyono and Hidayat, 2024). Technological digitalization has significantly benefited customers by promoting a digital economy that incentivizes several enterprises to develop platforms and ecosystems, facilitating extensive transactions unimpeded by demographic and industrial limitations (Kotler et al., 2021).

Ecosystem business models are becoming increasingly significant in the contemporary economy, as financial institutions are progressively acknowledging their potential. Many banks are integrating into these ecosystems,

and some are even taking the lead in establishing them, viewing this model as a strategic avenue for growth and development (Matkovskaya et al., 2022). The amalgamation of the business ecosystem concept with digital technology engenders a digital business ecosystem that harnesses the potential of digital tools to foster cooperation, innovation, and value creation among various stakeholders within the ecosystem (Senyo et al., 2019). Digital business ecosystems provide companies novel chances to expand their value-creation capabilities, address heightened competition, and attain digital monopolistic power. By comprehending and using these ecosystems, firms can strategically realign themselves, enhance their organizational frameworks, and thrive in the digital era (Subramaniam, 2020).

Mobile banking (m-banking) has progressed swiftly in recent years, propelled by customers' increasing embrace of mobile technology, their broadening lifestyle preferences, and diverse economic influences (S. K. Sharma and Sharma, 2019). As the banking sector progresses in mobile banking technology amid swift and significant changes, banks are continually developing novel strategies to enhance customer participation and engagement in mobile transactions (Komulainen and Saraniemi, 2019). A super app for mobile banking is the development of a mobile banking application that provides a comprehensive ecosystem umbrella of various services based on the daily lifestyle of its users, using a single interface or integrated platform. Generally, a super app includes a third-party marketplace that is fully integrated into the ecosystem and creates big data that involves the users (Accenture, 2022). The research on the customer ecosystem associated with the use of mobile banking applications is still rather limited (Lipkin and Heinonen, 2022). Matkovskaya et al. (2022) also explains there exists a shortage of research explicitly focused on the banking ecosystem, despite the increasing prevalence and potential of such ecosystems. Most research focus on user motives and goals, as well as customer experiences (Komulainen and Saraniemi, 2019;(Mostafa, 2020). In the perspective of customer centricity, the previous research by Komulainen and Saraniemi (2019), indicated that value of utilitarian, hedonic, and social has the role to shape customer experience with mobile banking. The findings revealed that utilitarian and hedonic values play a significant role, while social value contributes as a minor driver. The study implies that future research should look at consumer ecosystems from a variety of perspectives. Lipkin and Heinonen (2022) propose examining the customer ecosystem from the perspective of customer experience, posing questions such as how a customer ecosystem constructed through strategic relationships affects customer engagement. Komulainen and Saraniemi (2019) emphasize the importance of conducting research on the use of mobile banking in quantitative data analysis, taking into account the widespread adoption of mobile banking applications and the broader dimensions of customer experience. Lähteenmäki et al. (2022) encourage the study of exploring a dynamic service ecosystem and its profound meaning, which ensures adaptability and value-capturing challenges affect radically new digital service entities and ecosystem actor roles. This study seeks to address the research gap in banking ecosystems by integrating multi-dimensional customer value within customer ecosystems as a catalyst for engagement. This research methodology modifies and expands upon the framework established by Lähteenmäki et al. (2022), highlighting the interaction among the value creation sphere, value creation ecosystem, and service process integration in the digitalization of financial services. The utilization of the framework in banking super apps is still inadequately examined. Moreover, this study challenges the adaptation the framework into a quantitative method, as proposed by Lähteenmäki et al. (2022), for future research.

This research is pertinent due to the Indonesia Financial Service Authority's (OJK) policy outlined in their Blueprint for Digital Transformation in Banking, which has prompted banks to establish strategic alliances with digital partners to enhance customer interactions and improve their overall experience within a new digital business model. One of the most innovative projects is the launch of a Super App Mobile Banking platform, which is intended to capitalize on digital economic potential (OJK, 2020).

This study aims to investigate how the ecosystem capabilities of banks in fostering customer value innovation, through the integration of multi-dimensional values, facilitate the development of customer ecosystem as a novel business model to enhance customer engagement in super app services. This approach will challenge

the traditional mechanism that arranges direct integration from muti-dimensional values to develop customer engagement. Therefore, this study attempts to address the research questions (RQ) as follows:
RQ1: How can banking super apps effectively integrate utilitarian, hedonic, and social values to establish a continuous customer engagement?
RQ2: How does the customer ecosystem innovation mediate the relationship between multi-dimensional values and customer engagement in banking super apps?
RQ3: What factors in the customer ecosystem affecting super app mobile banking should be considered by banks?
The implementation of this research is highly relevant to the changes banking strategies in Indonesia, which are currently strengthening mobile banking into super apps by maximizing the customer ecosystem and technology capabilities to fill the customer needs.
The authors organizes the research into seven main sections. In section 2, the authors elucidates several pertinent theories and concepts that fundamentally underscore the main concerns of this research. Section 3 explores the conceptual framework of the research as well as builds hypotheses that imply the relationship among variables observed. Subsequently, Section 4 delves into this implementation of this research, detailing the methods used. Section 5 shows the results and empirical findings from the research organized in data structures. Section 6 delves into discussion of interrelationship among construct variables, which align with the research questions and hypotheses. This part also cover theoretical and managerial implications. The last section highlights the conclusions, including limitation as well as recommendations of this research.

2. LITERATURE REVIEW

2.1. Business Ecosystem

Recently, corporate strategy management has focused on the business ecosystem, emphasizing the interdependence between organizations and activities related to business ideas, business models, platforms, cooperation, diverse markets, technology, networks, value chains, and value networks that create strong awareness and attention to value creation and value capture (Adner, 2017).
Barykin et al. (2020) investigated the influence of the digital technological revolution, which dramatically affects economic and societal advancement, resulting in rapid and fundamental changes in people's life. The construction of a digital ecosystem is thought to be extremely likely to function as an intermediate for the evolution of a business ecosystem, facilitating the transformation of the traditional economy by creating new marketplaces for goods and services. According to Senyo et al. (2019), digital business ecosystem is an extension of Moore's (1993) business ecosystem, wherein digital technology assumes a pivotal role. The emergence of corporate ecosystems was driven by cross-industry operations similar to biological ecosystems. The business ecosystem illustrates general organizational interdependence, but the digital business ecosystem emphasizes the significance of digital technology's centrality. Barykin et al. (2020) characterizing the digital ecosystem as an autonomous and sustainable organizational framework reliant on digital platforms, which facilitates an independent information milieu and allows ecosystem partners to engage without robust connections. The use of digital platforms has offered substantial advantages for enterprises seeking to expand their operations inside the ecosystem without extensive oversight of Business to Business (B2B) or Business to Consumer (B2C) interactions. Whiles, Subramaniam (2020) defining the digital ecosystem as a system characterized by interdependence arising from data connectivity and technological drive. The digital ecosystem presents competitive strategy implications for enterprises in ecosystem management, specifically: 1) the value creation domain, 2) the competitive landscape, and 3) the rise of digital monopoly power.

2.2. Ecosystem Capability

The management of an organization's dynamic capabilities includes innovation capabilities that will enable the organization to exploit changes in digital innovation and its tendency to create viable business models, enhance the operational effectiveness of the organization, and initiate the company to deliver the latest forms of products and services according to consumer needs (Naqshbandi and Jasimuddin, 2022). Attention to

innovation capabilities will lead the company to the highest level of competitive advantage, business growth, and long-term organizational success (Moradi et al., 2021).

The study results by Shang and Chiu (2023) encouraged further research in explaining how banks drive dynamic capability to build ecosystems with third parties and competitors. Research conducted by Abdurrahman et al. (2024) indicates that ecosystem competence positively influences innovation. Furthermore, Kohtamäki et al. (2019) underscore that an organization's capacity to manage an ecosystem signifies its dynamic capacities in collaborating with strategic partners to deliver innovative, unique, digital-based business models.

Based on the framework of digital economy and prosperity, digitalization compels enterprises to develop platforms and ecosystems that facilitate extensive transactions (Kotler et al., 2021). Digital technology enables firms to innovate in customer experience and business models, facilitating the fulfillment of evolving consumer expectations, enhancing consumer purchasing intent, and fostering superior value creation. Moreover, Kotler et al. (2021) explains that the ability in managing digital platforms and ecosystems become the main resource for the dynamic capabilities of companies to change the way they do business through connectivity with different parties, including companies, consumers, and other stakeholders through seamless communication and transactions. In addition to dynamic capabilities, companies require ecosystem capabilities to guarantee a high level of proficiency in customer management, partner relationships, and the application of best governance principles (Subramaniam, 2020; Priyono and Hidayat, 2024; Koch et al., 2022).

2.3. Customer Ecosystem

Lipkin and Heinonen (2022) explain the concept of the customer ecosystem, which is formed by several actors, including the customer, primary providers, other providers, other customers, family, relatives, and other parties who play a significant role in shaping the customer experience. The role of each actor contributes differently to the customer's overall experience. Lipkin and Heinonen (2022) categorize customer ecosystems into three classifications based on the roles andcontributions of actors influencing primary customers: 1) individual-driven customer ecosystem, 2) brand-driven customer ecosystem, and 3) socially-driven customer ecosystem. Lipkin and Heinonen (2022) assert that the contributions of primary customers, through their performance and enhancements, will influence the development of customer experiences within the customer ecosystem. The primary customers emerge as the predominant agents. In a brand-driven ecosystem, the primary provider's contribution is significant and maintains a relatively close relationship with the main customer. In a brand-driven customer ecosystem, the primary customer assesses and contrasts the main provider with alternative providers regarding their service offerings, particularly to guarantee the receipt of the most current and superior service. Simultaneously, the social-driven customer ecosystem represents a collective framework that facilitates primary customers in engaging with a network of associated entities that dominate the ecosystem, including peers, family members, and other influential parties affecting the primary customers. Moreover, Matkovskaya et al., (2022) emphasizes that as banks take on the role of "orchestrators" within ecosystems, they unlock new opportunities by assuming management responsibilities that necessitate the development of advanced, forward-looking competencies. This transition establishes the foundation for the article's aim: to analyze the characteristics and future potential of banking ecosystems. Furthermore, it seeks to present a paradigm that promotes incentive and technological advancements inside these ecosystems, allowing banks to establish a basis for enduring competitive advantages. The study of Accenture (Grizelj, 2019) revealed that the key to effective banking in managing ecosystems that connect directly with customers is to establish the proper business model. Banks must create new capacities to manage operational ecosystems through a variety of means, including serving as the key orchestrator of a marketplace, participating in third-party ecosystems, and implementing an open banking platform concept. Banks must address three major factors: the ecosystem of essential partners, business architecture, and technology. Successful management of the customer ecosystem will allow banks to better understand and address customer demands, facilitating customer acquisition and retention through value propositions, proactivity, and trust. A customer-centric

strategy to managing ecosystems will help banks to improve revenue, minimize customer attrition, and optimize customer engagement.

2.4. Value proposition and Customer Value Creation

Kotler et al. (2017) explaining a value proposition with a strong differentiating effect must emphasize customer value and differentiation from competition. This can include high-quality products, great service, fun experiences, and competitive price. Chandler and Lusch (2015) argues that the value proposition can invite all stakeholders involved in the offer, including customers, suppliers, distributors, sellers, other purchasers, and others. Chandler and Lusch (2015) assert that customers consistently assess the quality of their interactions with mobile banking products and services on both emotional and cognitive levels, leading to outcomes such as satisfaction, loyalty, commitment, performance, purchasing behavior, knowledge sharing, and advocacy. Banking is very eager to understand and meet the needs of customers accurately and sustainably as part of its acquisition and retention efforts. Conversely, banking encounters a substantial barrier in delivering a customer environment that dynamically aligns with user needs in relation to mobile banking services.

In the context of current financial digitalization, Lähteenmäki et al. (2022) identify three main processes of change in defining and conceptualizing customer value creation: (1) changes in customer value, (2) changes in the customer value ecosystem, and (3) changes in the integration process. The digitalization process has given customers control over interactions and value shifts. Changes in the customer value ecosystem have made customers crucial to value creation. Digitalization places customers at the center of the ecosystem and orchestrates ecosystem resources, allowing them to be more active in defining customer value. Other service providers, family, relatives, and other social aspects affect customer value building, which must be considered. Customers have their own environment.

According to Rachinger et al. (2019), within the framework of digitalization, both the value proposition and the position within the value network influence the perceived opportunities for business model innovation through digitalization. Furthermore, the organizational capabilities and employee competencies were recognized as forthcoming issues that both industries will encounter.

3. Conceptual Framework

This research will focus on analyzing the impact of customer ecosystem characteristics on the degree of interaction and customer involvement in the sustainable utilization of mobile banking super apps, and whether this can improve banking performance.

Based on Lähteenmäki et al. (2022) framework of the three core changes in evolution of customer value creation, this study will explore how the platform super app that is embedded with customer ecosystems evolves by integrating various customer values. The study framework will incorporate ecosystem integration based on utilitarian, hedonic, and social customer values. These values align with the customer's expectations and needs, which in turn affect the customer's ecosystem perspective. The framework enables users to connect with super applications based on their values by incorporating these value categories. These values signify enhancements in emotional fulfillment, social connectivity, and practical advantages.

The conceptual framework (Figure 1) shows fundamentally structured in a three-step process to explore customer value process integration within a Customer Facing Ecosystem (CFE) as an innovation platform of super apps mobile banking and how their role in affecting Customer Engagement (CE). Within this framework, the CFE variable serves as an intervening variable that introduces a novel approach to integrating customer values in order to influence customer engagement. This approach challenges the direct integration of values, allowing for multi-dimensional values to influence customer engagement.

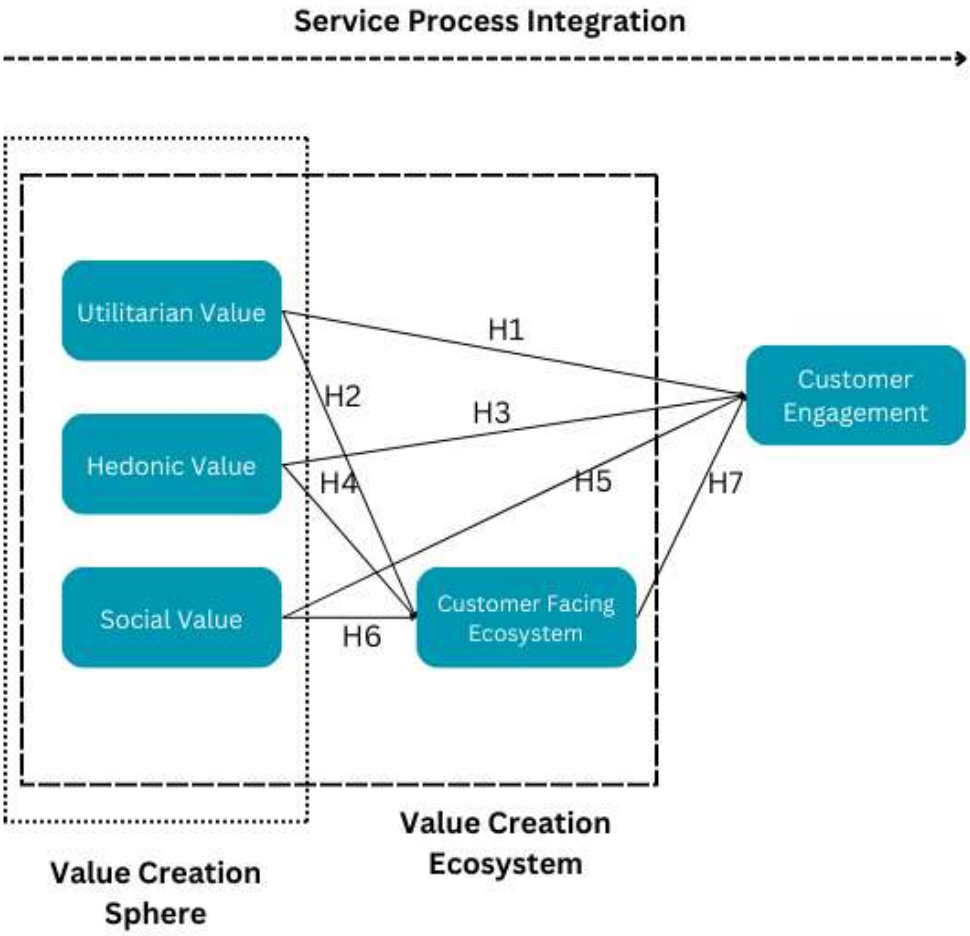


Figure 1. Conceptual Framework

The framework describes the relationship between customer value integration and engagement within a digital ecosystem. The framework provides a structured approach to analyzing how customer-centric ecosystems enhance engagement.

In this field of research, the authors addresses the aforementioned issues by developing a conceptual framework based on at study by Lähteenmäki et al. (2022) on the consequences of the evolution of value creation as follows:

a. From the standpoint of change in value creation, evolution has confirmed that customers have emerged as the key mediators of value formation.

b. Service providers must leverage the customer ecosystem as the main way to effectively comprehend their needs in the digitization of services. The customer ecosystem is highly dynamic; thus, the focus of service digitalization must involve an interpersonal connection between the customer and the service provider.

c. The digitalization of banking services accelerates the integration process in two ways: the transformation of the system into a customer ecosystem and the process of value generation. The assumption is that customers desire the engagement of service providers (banks) in all aspects of their lives and business operations.

3.1. Value Creation Sphere

According to a study by Priyono and Hidayat (2024), the digital business ecosystem enables its participants to redesign value propositions align with their new needs. This is achieved by accommodating opinions, comments, and feedback that are beneficially for modifications of products and services. In the context of the value creation sphere, the focus has shifted to costumer arenas to identify new value needs (Lähteenmäki et al., 2022). The customer ecosystem is starting to innovate by integrating different values that can meet diverse customer expectations and adapt to their evolving needs.

Research by Komulainen and Saraniemi (2019) reveals a strong relationship between customer experience and the creation of customer value in interacting with mobile banking services, both during the process, the outcome, and the situational use of customer experience. Furthermore, it is explained that customer interactions create different utilitarian, emotional, and social values in various dimensions of customer experience, whether past, present, future, or subsequent imagination that should be provided in mobile banking services.

Fasnacht (2021) explains that the delivery of value in financial services will be conducted in a dramatically different manner through ecosystems, which are a collection of coherent digital services. Different strategies are employed by incumbents, innovators, and firms that are not affiliated with the financial sector. Nevertheless, it is the ecosystem that enables them to generate value that no single firm could independently generate. The system is transformed into a constellation of value as a result of the high connectivity and open interactions of all actors. It is imperative that each market participant concentrate on providing a specific added value and acting as a trusted intermediary between individual participants in the innovation ecosystem.

In this research, value creation sphere indicating value-driven approach which reflects the decision for assessing and forming the value is fundamentally drived by the customer. Customer value identified are utilitarian, hedonic, and social values (Komulainen and Saraniemi, 2019). Consequently, in accordance with the conceptual framework, the study utilizes these values as independent variables to affect the customer ecosystem, which serves as mediating variable for customer engagement.

3.1.1. Integrations of Utilitarian Value

According to Komulainen and Saraniemi (2019), utilitarian value refers to the fundamental aspects that enhance functionality of customer interactions with mobile banking services, such as ease of use, real-time operations, real-time operations, replacing other services, and consumption behavior. Other research highlights the utilitarian value in terms of perceived ease of use and perceived usefulness (Carranza et al., 2021; Mostafa, 2020; Windasari et al., 2022). These indicators have the potential to explain the innovation in the customer ecosystem values, particularly as banks strives to improve functionality of super apps. Utilitarian value as a dependent variable in the model promotes a foundational element that enhances the reliability of the ecosystem.

Functioning quality, perceived value, and utility value collectively have a favorable impact on customer interactions with mobile banking (Mbama and Ezepue, 2018). Whiles, N. Sharma (2024) explained that pragmatic and ease of use experience affect continued use intention of customers. Matkovskaya et al. (2022) assert that bank that cultivate a distinctive ecosystem with perpetually enhanced innovations in technology will be positioned to offer more functionally unique products and services. Therefore, we develop hypotheses that:

H1. : Utilitarian Value (UV) positively influences Customer Engagement (CEG)

H2. : Utilitarian Value (UV) positively influences Customer Facing Ecosystem (CFE)

3.1.2. Integration of Hedonic Value

The integration hedonic values in the customer ecosystem emphasizes how to deliver the emotional and experiential customer in interacting with a mobile app. Akdim et al. (2022) posit that customer satisfaction is closely linked to aspects of enjoyment. In the framework of integration, hedonic values as a dependent variable attempt to improve emotional bounding, which in turn leads customers to optimize mobile app services for pleasure and satisfaction, not only for practical purposes.

Previous studies have often employed the hedonic value variable, or emotional value, to affect customer interaction with mobile applications. This encompasses various indicators, including aesthetic appeal, personal emotional connection, perceived security (Komulainen and Saraniemi, 2019), attributes of digital banking applications (Windasari et al., 2022), usage security level (Shankar and Jebarajakirthy, 2019), and features that may be pleasurable or enjoyable (Mostafa, 2020). Moreover, N. Sharma (2024) established a positive correlation between emotional and sensory experiences and satisfaction in mobile application usage. Lipkin and Heinonen (2022) research indicates that within the customer ecosystem, the emotional value impacting customer interactions with a product or service is determined by the strength and superiority of the brand, accompanied by diverse physical representations that reflect the customer's emotions as the optimal and most modern expression of the product or service. Lähteenmäki et al. (2022) showed there are numerous variable indicators that impact customers in the ecosystem, including the capacity of technological innovation to facilitate (seamlessly) and streamline (fluently) the transactions of customers' additional requirements, thereby reflecting the emotional value of the customers. Therefore, we develop hypotheses that:

H3. : Hedonic Value (HV) positively influences Customer Engagement (CEG)

H4. : Hedonic Value (HV) positively influences Customer Facing Ecosystem (CFE)

3.1.3. Integration of Social Value

In the framework of the customer value sphere, the integration of social value as a dependent variable provides a new arena of connectedness that encourages customers to feel a sense of community, belonging, and recognition. The customer ecosystem integrates these features that drive social interactions. The utilization of mobile banking applications is progressively influencing individuals socially and their interactions with their surroundings. Komulainen and Saraniemi (2019) research reveals various social values that impact customers' interactions with mobile banking applications, including self-identity, social standing, and technological innovation relative to peers. Windasari et al. (2022) and Mortimer et al. (2015) indicate that social influence impacts users' engagement with digital banking. Palamidovska-Sterjadovska et al. (2024) showed that social value, which was indicated by being evaluated by others affected customers when they interacted with mobile banking.

The customer's social context, including friends, family, and relatives, significantly enhances interactions with the offerings offered by the main service providers (Lipkin and Heinonen, 2022). The social-based consumer ecosystem is manifested in the connectedness and ownership that shape customer interactions. The primary customer will consistently correlate with the significance of social status and the regularity of posts across diverse social media platforms that represent the consumers' identities.

Lähteenmäki et al. (2022) highlight the influence of digitalization on the social framework of the customer ecosystem, wherein customer value is generated within the social context shaped by family and relatives. Therefore, we develop hypotheses that:

H5. : Social Value (SV) positively influences Customer Engagement (CEG)

H6. : Social Value (SV) positively influences Customer Facing Ecosystem (CFE)

3.2. Value Creation Ecosystem

Fujitsu (2018) posits that within the framework of digital transformation in financial institutions establishing digital ecosystem, more sophisticated digital transformation processes will invite numerous companies across different industries to into banking industry. These new entrants will replace conventional banking services by integrating novel value into their operational business process.

The study conducted by Lipkin and Heinonen (2022) elucidates the ways in which the many roles that actors play within the ecosystem could impact and enhance the overall consumer experience. In relation to the conceptual framework, the customer-facing ecosystem plays as a mediating variable for customer engagement. This viewpoint serves as a depiction of the customer ecosystem, designating roles to particular participants through a human-centered methodology that prioritizes the customer in the study. Consequently, customers can be seen as individuals (value units) as well as members of collectives such as families, communities, and organizations in their lives.

The value creation in the customer ecosystem refers to providing a multi-dimensional engagement that fulfils customer needs from a functional, emotional, and social perspective. This integration can evolve based on customer feedback and preferences to maintain alignment with customer expectations and interests. Lähteenmäki et al. (2022) underscore the framework that digitalization allows the customer's digital ecosystem to engage in continuous evolution as the resources required for value creation evolve. Consequently, the role of actors in value creation may evolve accordingly.

Research by Lipkin and Heinonen (2022) identifies the following indications that will affect customer interactions within the digital ecosystem: 1) Customer or user as a unit of value, 2) Experience, sharing, and customer expectations in past, present, and future interactions, 3) Other customers utilizing the same service as peer customers, 4) The existence of social interactions among peers both in-person and on social media, 5) Family and relatives of the customer who exert mutual influence through diverse experiences and contacts via physical or social media, 6) Additional influential entities, 7) The primary service provider (bank) delivering products and services aligned with customer expectations, 8) Other service providers (bank affiliates) inside the digital ecosystem, and 9) Customer device. Therefore, we develop hypothesis that:

H7. : Customer Facing Ecosystem (CFE) positively influences Customer Engagement (CE)

3.3. Innovation of Customer-Facing Ecosystem for Engagement

The competitive advantage of firms is contingent upon the robustness of the ecosystem in which they function. Banks with global ambitions should actively pursue ecosystems that allow them to engage as early members in the value creation process. Engage with established ecosystems and integrate organizational capabilities and services as a supplier to foster innovation (Fasnacht, 2021).

According to an Accenture study (Grizelj, 2019), the existence of a financial ecosystem offers banks a lot of possibilities to play around with innovative services that cross boundaries of the conventional banking sector. This entails incorporating different actors in the banking operational sphere and providing customer with the novel experiences. Matkovskaya et al. (2022) emphasize that suppliers, innovative customers, and public entities, who are optimally involved in its operation, contribute significantly to the reliability of the banking ecosystem.

The conceptual framework (figure 1) outlines a service process integration flow that demonstrates innovation in the customer ecosystem, incorporating with utilitarian, hedonic, and social values to improve a holistic customer engagement as an outcome of value integration. In this study, customer engagement acts as a dependent variable. Viglia et al. (2023) explains customer engagement ecompasses three dimensions of engagement: behavioral, cognitive, and emotional. Behavioral engagement refers to the actions and activities of focal customers' engagement objects, which may affect other customers. Hollebeek et al. (2022) revealed that cognitive engagement elucidates the extent of customer's thought and mindsets through interaction. While, emotional engagement suggests creative interactions with customer. These three-dimensional engagements determine the different types of interactions, such as cooperation, collaboration, and co-creation. In the cycle of engagements, customers contribute to co-creation by providing feedback, explicitly or implicitly, to enhance the features of ecosystems for fostering sustained engagement.

Lähteenmäki et al. (2022) argue that changes in the customer value ecosystem forced the integration of service processes through the digitization, resulting a cohesive service across the ecosystem by customer or other actors. Furthermore, Lipkin and Heinonen (2022) note that controlling the customer ecosystem is an important strategy for businesses to better understand their customers, particularly how they select and interact with products and services. The customer ecosystem view on molding the customer experience is a revolutionary method that will drive businesses to investigate consumer activities, value propositions, and involvement.

Mostafa (2020) noted that the level of quality of mobile banking services significantly impacts customer interactions and fosters the creation of customer value. This will enhance customer engagement by accommodating various aspects, such as feedback, the inclination to advocate the service, initiatives to assist others users, patterns of customer behavior in utilizing the service, the accessibility of information, and the

level of customer tolerance. Shankar & Jebarajakirthy, (2019) explains that the valence of electronic word of mouth (EWOM) positively influences the customer in interacting with mobile banking. According to (Lim & Rasul, 2022), platform-related factors, such as perceived enjoyment, perceived risk, perceived trust, and performance expectancy affected customer engagement when interacting with social media, Social-related and value related factors, such as social influence and social value, drive engagement. Furthermore, the outcomes of these factors establish brand loyalty, advocacy, intimacy, self connection, and attachtment.

4. METHODOLOGY

4.1. Research Method and Samples

The research employs a quantitative method (Creswell & Creswell, 2018) among users of mobile banking apps to investigate customer engagement of super apps services in Indonesia, driven by the strong commitments made by many banks to integrate customer ecosystems within super apps, and the recent interaction of significant number of new users. This research is an explanatory study that aims to investigate the causal relationship between the integration of customer value and customer engagement through the mediation of the customer ecosystem.

The research poll was disseminated online in major Indonesian cities from early September to early October, 2024. The authors seek to diversify respondents' locations to reflect samples based on demographic factors. Population defined in this research were all the customers of any banks (users) in Indonesia who have already actively interacted with mobile banking applications services.

This research used a probability sampling technique. Ferdinand (2020) asserts that probability sampling is a strategy that ensures each element or member of the population has an equal chance of being selected as a sample. This study employs the Simple Random Sampling technique, taking into account the extensive costumers base and the uniform characteristics of the population. The number of respondents collected was 400 samples, which came from the province of South Sulawesi 215 (53.8%), North Sumatra 41 (10.3%), Jakarta 39 (9.8%), West Jawa 34 (8.5%), South East Sulawesi 34 (8.5%), West Sulawesi 13 (3,3%), Central Jawa 7 (1.8%), Central Kalimantan 7 (1.8%), Maluku 6 (1.5%), Bali 2 (0,5%), West Sumatra 2 (0.5%), Jogyakarta 1 (0.3%), and Papua 1 (0.3%).

The research employs online questionnaires to gather the primary data from the respondents. The design of questionnaires includes two sections. The first section focuses on sociodemographic characteristics of respondents, such as the possession of mobile apps, their motives and reasons for transacting and engaging, their preference of specific transactions and features, and their choices for mobile app bank. The second section includes questions related to the five variables defined in this study. The questions employ a Likert scale, ranging from 1 to 5, where 1 represents strong disagreement and 5 represents strong agreement.

4.2. Sample Structures and Preferences

Table 1 describes the sociodemographic aspects of respondents and their preferences for using mobile banking app services. The research employs a total of 400 samples, which consist of males (52%), and females (48%). 54% of the respondents fall within the 17-35 age range, 45% fall within the 36-55 age range, and 3.5% exceed the age 55. The majority of users (65.8%) are employed by state-owned companies, followed by national or multinational companies (23.8%), and others (10.4%).

The user experience with mobile banking app services has been ongoing for a long time. Data shows a significant majority (94.4%) has taken advantage of mobile banking app services for more than three years. This figure corresponds to the number of mobile apps they have used, where 65.4% using 2-5 applications, 17.8% using more than 5 applications, and 16.8% using just 1 application. The majority of respondents select super app mobile banking services from the top 4 mobile banks in Indonesia.

Table 1. Sample Distributions

		Frequency	Percentage
Age (range)	17-35 yo	208	52.0
	36-55 yo	178	44.5
	> 55 yo	14	3.5
Gender	Male	208	52.0
	Female	192	48.0
Occupations	State Owned Company Employees	263	65.8
	Government Employees	16	4.0
	National/Multinational Employees	95	23.8
	Others	16	6.4
Duration of mobile app usage	>5 years	333	83.3
	>3 to < 5 years	44	11.0
	>1 to < 3 years	23	5.7
Number of mobile app used	>5 mobile apps	71	17.8
	2-5 mobile apps	262	65.4
	1 mobile apps	67	18.8
Mobile app choice's (the answer > 1 choice)	Wondr BNI	320	80.0
	MyBCA	181	45.3
	Livin Mandiri	135	33.8
	BRImo	86	21.5
	Others	187	46.8
The goals of the user actively in the mobile app (the answer > 1 choice)	Financial Transactions	376	94.0
	Ease of digital services	312	78.0
	Managing and controlling finances	167	41.8
	Banking service security	162	40.5
	Non financial transactions	119	29.8
	Others	112	18.3
Features mobile app use more often (the answer > 1 choice)	Transfer funds	386	96.5
	Payments	338	84.5
	Top up	294	73.5
	Purchases from banking partners	181	45.3
	Others (investment, open new account, loans, etc)	151	37.8
Considerations for using mobile app (the answers > 1 choice)	Service needs alignment	345	86.3
	Quality of products and services	254	63.5
	Transaction experiences	184	46.0
	The presence of banking partners	155	38.8
	Marketing program influences	92	23.0
	Family, friends and communities	58	14.5

	Others (Social media and rewards)	109	27.3

The preference of user in utilizing mobile apps implies new perceptions of responses and motives as banks strategy developed to enhance and deliver new platforms of customer value suit customer needs. The majority of users' goals when using mobile apps are still primarily focused on functional and experiential drives, but a growing number of users (29.8%) are also expressing interest in non-financial transactions. Concerning features of services, users are now paying attention to purchasing non-financial products from banking partners (45.3%), while functional features remain dominantly as favorite features. Considerations for using mobile apps become an interesting result in this study showed that users are now concerned about the presence of banking partner services (38.8%), and at the same time, users realize that the customer values of functional, experiential, and socially connected become a part of their drivers to engage with mobile apps. However, fundamentally, the majority of users still prioritize the alignment of service needs (86.3%), quality of services (63.5%), and transaction experiences (46.0%).

4.3. Research Variables

In alignment with the conceptual framework illustrated in Figure 1, the research has defined the indicator variables to explain the latent variables (Table 2). Based on the conceptual framework, we assume that those indicators can ideally explain their respective latent variables. We will then examine the developed structural model for its reliability, validity, and relevance to the dependent variable.

Table 2. Operational Variable

No	Variable	Label	Indicator	References
1	Utilitarian Value	UV1	Ease of use	Mbama & Ezepue, 2018; Mostafa, 2020; Carranza et al., 2021; Komulainen & Saraniemi, 2019; Windasari et al., 2022; N. Sharma, 2024.
		UV2	Real-time operations	
		UV3	Replacing another service	
		UV4	Consumption behavior	
2	Hedonic Value	HV1	Visuality	Shankar & Jebarajakirthy, 2019; Komulainen & Saraniemi, 2019; Mostafa, 2020; Windasari et al., 2022; Lähteenmäki et al., 2022; N. Sharma, 2024.
		HV2	Delight property	
		HV3	Personal emotional	
		HV4	Sense of security	
3	Social Value	SV1	Social status	Komulainen & Saraniemi, 2019; Lipkin & Heinonen, 2022;
		SV2	Pioneer of technology application	
		SV3	Self identity	

				Windasari et al., 2022.
4	Customer Facing Ecosystem	CFE1	Customer as a value unit	Lipkin & Heinonen, 2022); Palamidovska-Sterjadovska et al., 2024; Lähteenmäki et al., 2022.
		CFE2	Experience, sharing, and expectation of the past, present, and future	
		CFE3	Other customers (peers)	
		CFE4	Social interactions among peers	
		CFE5	Family and relative	
		CFE6	Other parties or strangers	
		CFE7	Focal provider or banks	
		CFE8	Other service providers or bank partners	
		CFE9	Mobile banking application of other banks	
5	Customer Engagement	CEG1	Trust in the product service process	Mostafa, 2020; Fasnacht, 2021; Matkovskaya et al., 2022; Lähteenmäki et al., 2022; S. K. Sharma & Sharma, 2019; Shankar & Jebarajakirthy, 2019.
		CEG2	Satisfaction with the quality of products/services	
		CEG3	Commitment	
		CEG4	Advocacy	
		CEG5	Deligth and inner pleasure	
		CEG6	Social and reward facilities	
		CEG7	Loyality by electronic word of mouth (EWOM)	

5. RESULTS

5.1. Measurement Model

The research utilizes Smart-PLS to implement Partial Least Square (PLS)-Structural Equation Model (SEM) data analysis. PLS-SEM is a statistical modeling technique that has recently evolved to perform a causal-predictive analysis (Hair et al., 2021). Moreover, PLS-SEM will examine two theories in developing the research path model: first, measurement theory, which analyzes indicators to explain constructs, second, structural theory, which explain how these constructs are related to each other in the structural model. Measurement theory demonstrates the reliability and validity of the indicators in explaining their respective variable construct.

Intially, the data in Table 3 indicated that three indicators, i.e., consumer behavior (UV4), personal emotion (HV3), and mobile banking apps of other banks (CFE9), failed to elucidated their respective constructs due to outer loading values below 0.7. Therefore, we eliminated these three indicators from the measuring model.

Table 3. Unclassified Indicators Based on Outer Loading Values

Variable	Label	Indicators	Outer Loading Value	Remarks
Customer Facing Ecosystem	CFE9	Mobile banking other banks	0.655	Not Classified
Hedonic Value	HV3	Personal emotion	0.698	Not Classified
Utilitarian Value	UV4	Consumer behavior	0.101	Not Classified

The preliminary measurement of this study verfies the absence of collinearity among the model's indicators. Hair et al. (2021) suggests using the variance inflation factor (VIF) to estimate the collinearity degree, with a

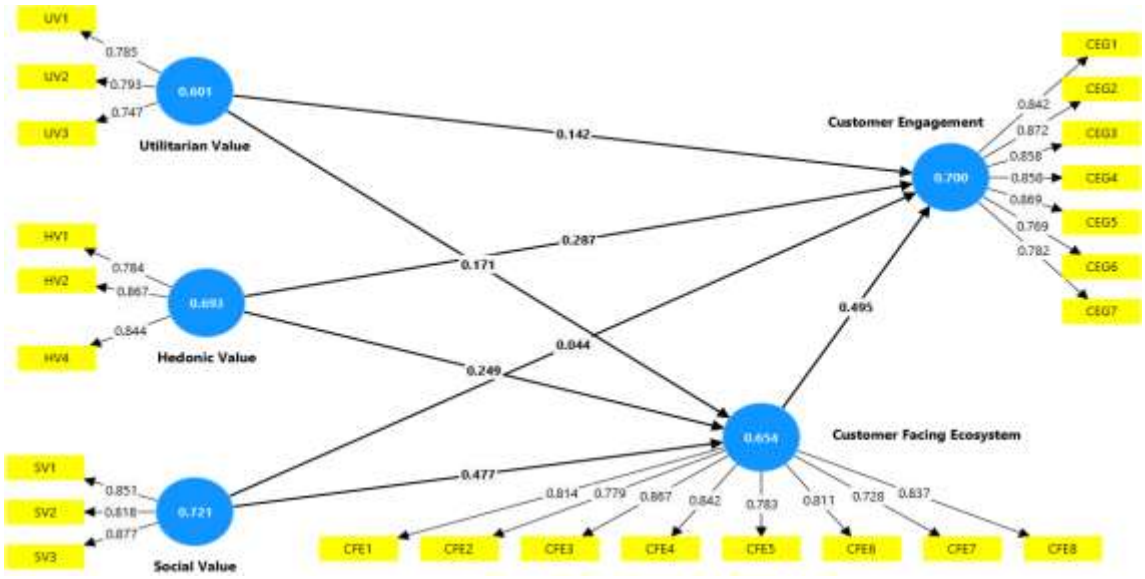
value less than 5 indicating low multicollinearity. Table 4 shows VIF values; all the indicators are less than 5. Moreover, the outer loading values of all indicators also demonstrate strong reliability, with their ranges exceeding 0.5. By measuring theses two statistical controll, we have genuinely verified the study's model againts common method bias (CMB) issues.

Table 4. Outer Loadings and VIF

	Outer Loadings	VIF
CEG1 <- Customer Engagement	0.842	3.019
CEG2 <- Customer Engagement	0.872	4.013
CEG3 <- Customer Engagement	0.858	3.198
CEG4 <- Customer Engagement	0.858	2.887
CEG5 <- Customer Engagement	0.869	3.057
CEG6 <- Customer Engagement	0.769	2.087
CEG7 <- Customer Engagement	0.782	2.129
CFE1 <- Customer Facing Ecosystem	0.814	2.757
CFE2 <- Customer Facing Ecosystem	0.779	2.682
CFE3 <- Customer Facing Ecosystem	0.867	3.444
CFE4 <- Customer Facing Ecosystem	0.842	3.032
CFE5 <- Customer Facing Ecosystem	0.783	3.122
CFE6 <- Customer Facing Ecosystem	0.811	3.325
CFE7 <- Customer Facing Ecosystem	0.728	1.863
CFE8 <- Customer Facing Ecosystem	0.837	2.779
HV1 <- Hedonic Value	0.784	1.570
HV2 <- Hedonic Value	0.867	1.820
HV4 <- Hedonic Value	0.844	1.563

SV1 <- Social Value	0.851	2.151
SV2 <- Social Value	0.818	1.450
SV3 <- Social Value	0.877	2.255
UV1 <- Utilitarian Value	0.785	1.354
UV2 <- Utilitarian Value	0.793	1.325
UV3 <- Utilitarian Value	0.747	1.244

Figure 2. PLS Path Model result from smart PLS



The measurement model's highlight was described by a path model in Figure 2. It suggests that all indicators have outer loading values greater than 0.7 and possess robust measures or high reliability in explaining their respective constructs. The model fit reveals that the CFE variable, with an R^2 value 0.654, explains 65.4% of customer ecosystem through utilitarian, hedonic, and social values. A high R^2 implies that emotional, social, and functional benefits will create a robust framework for the ecosystem. Whiles, on the other path of relationship, the customer ecosystem and three of dimensional values (utilitarian, hedonic, and social values) can explains 70.0% of the variance in customer engagement, according to R^2 value 0.700 for the CEG variable. These two R^2 values indicate a medium explanatory power of model fit.

The model's convergent validity reveals that all latent variables have average variance extracted (AVE) values greater than 0.5 (Table 5), indicating a relationship between all indicators and their respective constructs. This figure aligns with the resultant outer loadings values, which greater than 0.7. Composite Reliability (rho_c) values also indicate all variables have a value greater than 0.7, which emphasizes the reliability of the indicators to support their constructs. Based on Crondbac'h Alpha and rho_a, all variables have values greater than 0.7, except the utilitarian value variable, which has value 0.668 or just 0.32 below to meet the minimum value 0.7. However, the AVE and rho_c values of the variable of utilitarian value exceed the minimum

threshold values, suggesting all indicators within the construct remain reliable and valid to contribute in measuring the utilitarian value in the developed model (Hair et al., 2021).

Table 5. Cronbach's Alpha, Composite Reliability, AVE Values

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Customer Engagement	0.928	0.928	0.942	0.700
Customer Facing Ecosystem	0.924	0.926	0.938	0.654
Hedonic Value	0.780	0.795	0.871	0.693
Social Value	0.807	0.811	0.886	0.721
Utilitarian Value	0.668	0.669	0.819	0.601

Table 6 and 7 presents the result of this study, which uses two approaches in determining the discriminant validity of the model. The Fornell-larckel criterion checks by ensuring that the square root of AVE of each construct is higher than the correlations between the construct and any other construct (Fornell & Larcker, 1981). Table 6 shows that all the variables meet the discriminant validity criteria, as indicated by bold square highlights of their AVE values.

Table 6. Discriminant Validity: Fornell-larckel Criterion

	Customer Engagement	Customer Facing Ecosystem	Hedonic Value	Social Value	Utilitarian Value
Customer Engagement	**0.837**				
Customer Facing Ecosystem	0.786	**0.809**			
Hedonic Value	0.722	0.629	**0.832**		
Social Value	0.608	0.692	0.545	**0.849**	
Utilitarian Value	0.645	0.566	0.703	0.463	**0.775**

Table 7. Discriminant Validity (Heterotrait-Monotrait/HTMT ratio)

	Customer Engagement	Customer Facing Ecosystem	Hedonic Value	Social Value	Utilitarian Value
Customer Engagement					
Customer Facing Ecosystem	0.844				
Hedonic Value	0.838	0.725			
Social Value	0.692	0.799	0.665		
Utilitarian Value	0.817	0.717	0.973	0.620	

The Heterotrait-Monotrait Ratio or HTMT Ratio assesses the correlation between constructs in relation to the correlation within each construct, establishing a specific upper limit value, which is significantly defined

with a maximum value below 1 (Henseler et al., 2016). Table 7 illustrates all the variables possess HTMT ratio values below 1, signifying each construct's capacity to correlate with respective measure relative to other constructs.

5.2. Structural Model

Henseler et al. (2016) highlights the importance of measuring the structural model when determining the approximate model fit, as this will allow for a review of any substantial discrepancies between the model-implied and the empirical correlation matrix. The standardized root mean square residual (SRMR), which quantifies the discrepancy between two matrices of the model-implied and empirical correlation matrices, is the sole approximate model fit criterion utilized in the PLS path modeling. A SRMR value of signifies a perfect model fit. Nonetheless, the recent study indicates a correctly model can provide a SRMR value of 0.06 or greater (Henseler et al., 2016). Dijkstra (2010) emphasizes that the SRMR values less than 0.1 are still deemed acceptable, indicating that the model still fits. (Hair et al., 2021) explains that the model is considered to have a good fit with the data if the SRMR value ≤ 0.08. Table 7 illustrates that SRMR values of this study that compare essentials fit indices between a saturated model and an estimated model. The SRMR value for the saturated model is 0.074, which has same value with the estimated model of 0.074. This model is excellently suited to the data, such that introducing theoretical limitations does not substantially diminish its fit. It also indicates a robust model fit by permitting all potential relationships between variables without limitations.

Table 8. SRMR Value

Measure	Saturated Model	Estimated Model
SRMR	0.074	0.074

Hair et al. (2021) and Henseler et al. (2016) emphazises the importance of structural model assesstment by evaluating the model's predictive power. The Q^2 predict assesses the model's predictive relevance both at the construct and indicator levels. The research findings indicate that Q^2 effectively predict of all indicators, with both of CEG and CFE constructs showing a values greater than zero (Table 9), This confirms that the model demonstrates robust predictive relevance across all indicators and the constructs. According to Hair et al. (2021), it is advisable to assess the model's predictive power through PLS predict, which measures the prediction errors linked to each indicators of specific endogenous construct or the root mean square error (RMSE). Subsequently, all RMSE value indicators must be compared to the linier regression model's benchmark value. When all indicators in the PLS-SEM analysis have lower RMSE values than the LM values, it means that the model has high predictive power. The results of this research show that the majority of indicators PLS RMSE values of CEG and CFE variables have less prediction errors than LM RMSE, implying that the model has medium predictive potential (Table 9).

Table 9. Predictive Model Evaluation

Indicators	Q^2 Predict	PLS RMSE	LM RMSE
CEG1	0.393	0.451	0.444
CEG2	0.431	0.408	0.406
CEG3	0.449	0.421	0.424
CEG4	0.407	0.476	0.481
CEG5	0.431	0.421	0.419
CEG6	0.427	0.576	0.580
CEG7	0.375	0.567	0.572
CFE1	0.430	0.509	0.514
CFE2	0.408	0.507	0.507

CFE3	0.411	0.568	0.563
CFE4	0.388	0.661	0.666
CFE5	0.342	0.761	0.758
CFE6	0.313	0.747	0.749
CFE7	0.306	0.562	0.566
CFE8	0.341	0.571	0.584

5.3. Hypotheses Testing

Hair et al. (2021) assert that the evaluation of the significance level of indicator weights relies on the bootstrapping procedure, which facilitates the derivation of standard errors from the data without requiring any distributional assumptions. The bootstrapping technique generates t-values to ascertain whether the coefficients are significantly different from zero, thereafter comparing them to the crucial values from the standard normal distribution. By assumming a significance level at 5%, a t-value greater than 1.96 (two-tailed test) indicates statistical significance for indicator weigth. Criteria for significance level of 1% (α= 0.01) and 10% (α= 0.1). To support the significance level, path coefficient values can statistically underscore the strength of the direct effect of the developed path. Hair et al. (2021) explain that the path coefficient should range between -1 and +1, where -1 indicates a strong negative correlations, and +1 suggests a strong positive correlation. Values greater than +/-1 are prohibited. We classify values around 0.5 or above as having a great impact size, values around 0.3 as having medium impact sizes, and values around or less than 0.1 as having small impact sizes.

Table 9 shows the results of how adding different kinds of customer values directly to customer engagement and how they affect customer engagement through innovations in the customer ecosystem. The research reveals that, fundamentally, the efforts to integrate different types of customer value within the customer ecosystem have significantly impacted customer engagement. On the other hand, the integration of multidimensional values directly into customer engagement has only been impacted by utilitarian value and hedonic value. The influence of social value on customer engagement is insignificant.

A t-statistic of 3.059 and a p-value of 0.002 indicate that the utilitarian value exerts a direct influence on consumer engagement through the utility of super applications. Furthermore, this value is regarded as influential to the consumer ecosystem, exhibiting a t-statistic of 2.851 and a p-value of 0.004. It pertains to the functional advantages of super apps, encompassing efficiency (real-time operations), practicality (user-friendliness), and reliability. Nonetheless, the route coefficient values for utilitarian value are rather low, indicating that utilitarian value serves primarily as a fundamental driver in generating customer engagement. Divergent perspectives on hedonic and social value affect customer interactions both in the customer ecosystem and customer engagement. When integrating within the customer ecosystem, hedonic value's experiential element boosts emotional engagement by increasing ecosystem use delight and satisfaction. Social value builds community and social interactions to boost social engagement. Hedonic value and, especially, social value have a statistically bigger impact on the customer ecosystem. This is shown by t-statistics of 3.912 and 7.141, as well as p-values of 0.000 and 0.000 for each. The two values have a medium-direct effect on the customer ecosystem compared to the utilitarian value, as shown by their path coefficient values of 0.249 and 0.477. These figures indicate the strong influence of social value on the customer ecosystem in enhancing customer interactions with super apps. On the contrary to its influence on customer engagement directly, social value is statistically insignificant to affected customer engagement with a p-value of 0.412. This indicates the rejection of H5's hypothesis. Hedonic value is significantly affecting customer engagement directly with a medium effect, as indicated by its p-value of 0.000 and path coefficient value of 0.287.

Table 10. Hypotheses Result

Hypotheses	Path	Path Co.	T-statistic	P-value	Result
H1	Utilitarian Value → Customer Engagement	0.142	3.059	0.002	Significant*
H2	Utilitarian Value → Customer Facing Ecosystem	0.171	2.851	0.004	Significant*
H3	Hedonic Value → Customer Engagement	0.287	5.417	0.000	Significant*
H4	Hedonic Value → Customer Facing Ecosystem	0.249	3.912	0.000	Significant*
H5	Social Value → Customer Engagement	0.044	0.821	0.412	Insignificant**
H6	Social Value → Customer Facing Ecosystem	0.477	9.959	0.000	Significant*
H7	Customer Facing Ecosystem → Customer Engagement	0.495	9.219	0.000	Significant*

Note: *) Significant at: $p < 0.001$; **) insignificant at: $p > 0.05$

Innovation within the customer ecosystem of super apps aligns with the integration of a value creation ecosystem to address diverse customer expectation and evolving needs, as well as adapting the relevance concerns of the customer ecosystem in the digital landscape. In the role of mediating from customer value to customer engagement, customer ecosystem plays a siginificant role, indicated by a t-statistic value of 9.219 and a p-value of 0.000. Moreover, customer ecosystem significantly demonstrates a major effects to customer engagement, as indicated by path coefficient of 0.495.

6. DISCUSSION

This research introduces an advanced framework identifying the three key transformations in value creation for the integrating service processes through digitalization inside banking ecosystems. The study offers a unique insights into the advancement of super apps in Indonesia, a swiftly digitizing emerging market. The Indonesia Financial Service Authority (OJK) and banks are now strategically optimizing the digital economic opportunities through banking super apps.

The study underscored the importance of banking super apps as platforms for fostering customer ecosystem innovation by integrating multi-dimensional values within a customer-centric ecosystem. Issues on the RQ1 highlight the two key changes in value creation sphere and value creation ecosystem. The research findings reveals that customers fundamentally define their own set of relevant values. In utilizing super apps, the customers derived more values for emotional satisfaction (hedonic value) and social connections (social value), alongside the practical benefits (utilitarian value). These figures emphasize previous research (Komulainen & Saraniemi, 2019; Carranza et al., 2021; Mostafa, 2020; Windasari et al., 2022; N. Sharma, 2024; Lipkin & Heinonen, 2022; Palamidovska-Sterjadovska et al., 2024; Lähteenmäki et al., 2022).

The research emphasizes a novel insights into the dynamics customer interactions in defining relevant values in utlizing super apps in Indonesia. It highlights that hedonic and social value significantly influence the consumer ecosystem, implying that users are increasingly amenable to experiential and social connections while utilizing the super app. Factors like as visual appeal, enjoyment, human emotion, social standing, and identity are regarded as dynamic forces that promote customer engagement in ecosystems. This outcome illustrates a more sophisticated degree of interactions than the other studies conducted by Komulainen & Saraniemi (2019); Carranza et al. (2021); Krisnamurti et al. (2022); and Mostafa (2020), which mostly emphasized utilitarian value dimensions.

This research encourages for the development of a customer-facing ecosystem to enhance customer engagement with super apps, enabling banks to implement advanced strategies for optimizing customer experiences. The integration of many values within the customer ecosystem highlights the presence of super apps with new ecosystems, enabling customers to assess their emotional engagement and social relationships. Regarding RQ1, banks need to possess a comprehensive understanding of the diverse hierarchies of customer needs. To align with the customer ecosystem innovation concern, based on this study, banks should be focussed effectively on managing hedonic and social value as the better indicators drivers for ecosystem feedback, as they enabling to capture customer sentiments, preferences, and engagement behaviour.

Hedonic and social value significantly improve ecosystems by promoting emotionally satisfying and socially enriching interactions, suggesting a desire for traits that are personally meaningful. Hedonic worth encompasses traits that enhance the pleasure obtained from interactions. Social value fosters peer interactions and recognitions, which enhance relational value within ecosystems.

In strengthening super apps in relation to RQ2, banks must be involved in interpersonal connections with customers, accommodating ecosystem with continuous evolution and improvements in value creation. Innovation of value integration should ideally allow ecosystems to be part of sustainable engagement of customers' lifestyle platforms. This study shows that the integration of various values of engagement significantly enhances customer ecosystem. This figure underscores the significance of banks' adaptability and personalization in delivering values that align with customer voices and preferences. The ecosystem factors in this research are statistically strong and accurately represent their construct. Based on these indicators, banks should strategically focus on their existences as focal provider and their strategic partnership with other service provider to foster the ecosystem.

Banks' reputation and capability in managing ecosystems, collaborating with strategic partners, and acting as orchestrators significantly contribute to leveraging value proposition within ecosystems, thereby enabling them to achieve competitive advantages (Matkovskaya et al., 2022; Fasnacht, 2021; Kohtamäki et al., 2019; Subramaniam, 2020). Banks should also contemplate the dynamics of the ecosystem, emphasizing the social interconnectedness of customers as a value unit, which encompasses sharing, friends, family, relatives, strangers, and moments of engagement.

The preferences data exposed that the aforementioned ecosystem factors align with the preferences of mostly respondents to use more than one application, as they assess the bank's reputation and capability in managing their super apps. Therefore, most of the respondents are choose super apps services from the top-ranked bank in Indonesia. Furthermore, the respondents have now already realized the importance of transacting in non-financials matters, as they consider the presences of banking partners within super apps services.

Innovation of ecosystem within super apps that equipped with financial and non financial transactions from banking partners, statistically, has a strong significant impact on customer engagement, allowing to answer RQ3. The research indicates that the ecosystem provides a reliable explanation for the factors influencing customer engagement. Significant evidence suggests hedonic and social value enhance the ecosystem, thereby playing a role as emotional and social engagements. Moreover, the customer ecosystem significantly mediates the process of integrating different values as a driver for influencing customer engagement. Their service process of value integration transformed the innovative ecosystem, catering to the divers needs of each individual customer value.

The study shows that the indicators provide significant insight into consumer engagement factors. The study identified two key indicators: trust and satisfaction with the quality of the product/service process, which are critical for ensuring continuing customer engagement with super apps. These figures correspond with the forthcoming challenge of ecosystem capacity to guarantee dependable business operations and new products (Matkovskaya et al., 2022), thereby reinforcing consumer commitment, advocacy, and loyalty. Furthermore, the novel items effectively enhance pleasurable advantages and offer incentives via social and reward mechanisms, signifying a well-managed ecosystem. The preferences data indicated that most respondents have

utilized super apps for more than five years, emphasizing the importance of service needs alignment and the quality of products and services offered by these apps.

6.1. Theoretical Implications

The research findings reflect a substantial contribution to an extensive understanding of the significance customer value integration within customer ecosystems and customer engagement, addressed in multiple approaches. First, super apps, as digital financial services have emerged in response to changes in customer value sphere. They empower the customer to be at the centre of value creation and control, enabling them to identify new value needs. Empirically, in the value integration process, hedonistic and social values play dominant roles in influencing ecosystem interactions. The previous study mostly indicated a focus on utilitarian and hedonic value, relating to their context from a customer experiences perspective (Komulainen & Saraniemi, 2019; Carranza et al., 2021).

Secondly, the customer ecosystem, represent ecosystem capability of financial provider to innovate in super apps. This study introduced a novel approach to exploring ecosystems, serving as a central platform for integrating diverse customer value within super apps and incorporating innovation for a sustainable, evolving value. Most earlier research was rarely used to investigate the role of customer ecosystem in value creation context. This study is among the first to examine banking super apps as platforms for enhancing customer ecosystems, thereby contributing to the body of knowledge on platform-based ecosystems. The study provides a lens for analyzing specialized ecosystems of banking super apps. It highlights expanding the scope of research from general ecosystems to specialized financial ecosystems. Furthermore, the study highlighted that customer engagement arises from value co-creation inside ecosystems. Research of Lipkin & Heinonen (2022) concentrated on examining the function of ecosystem actors in shaping the customer experiences.

Thirdly, within the research framework of three core changes value integration, ecosystem facilitate customer value creation and enhancing customer engagement, serving as a sustainable innovation that offers an area and resources for sensing, adapting, and transforming ecosystem in accordance with evolving customer needs. This study has delineated the evolution of customer value creation in accordance with prior research of Lähteenmäki et al. (2022), while also elucidating the critical role of ecosystems in offering a novel, comprehensive business model that enhancing dynamic interactions through holistic driver engagement, emphasizing the exploration of profound emotional and social connection. Moreover, the research provides an advanced quantitative method in contrast to the Lähteenmäki et al. (2022) framework, which utilized a qualitative method.

Finally, this research applies a three core changes framework to a unique context of emerging market, particularly Indonesia, where banking super apps are gainning momentum. This validates the applicability of the framework approach to underrepresented contexts by offering a global perspective.

6.2. Managerial Implications

This study emphasizes banks' ecosystem capability to strategically foster and strengthen the super apps, thereby establishing sustanaible competitive advantages. Consequently, the study provides many implementation option that could improve banks' effectiveness in advancing digitalization. First, research findings established that customer ecosystem within super apps positions itself as a new business model for value integration framework, encouraging banks to leverage mutli-dimensional customer value effectively. This value-driven strategy lets an innovative ecosystem meet a wide range of customer needs and encourages them to stay involved. Therefore, banks must invest considerable effort in fostering robust emotional and social connections, as these elements contribute to a distinctive customer ecosystem related to lifestyle platforms that engage with customers on multiple dimensions. Moreover, enhancing emotional and social aspects enable banks to establish unique ecosystem in the market, serving as essential components of customers' live goals. On the other hand, managing utilitarian value with lower contributions remains relevant as baseline requirement for reliable ecosystems.

Secondly, ecosystem capability should be arranged responsively to the changes of customer needs. The effectiveness of super apps as an ecosystem platform heavily depends on the sustainable strategic partnership

between banks and third parties. In order to expand the ecosystem, banks must manage all available opportunities and resources to establish a collaborative network. This includes identifying strategic partners in ancillary industries such as e-commerce, insurance, real estate, travel, athletic events, and entertainment, as well as other service providers who support the digitalization of financial services. Banks can generate additional revenue by collaborating with others on cross-selling, collaborative promotions, and affiliate programs inside ecosystems.

Finally, to support a scalable platform development in accommodating customer journey, banks strategically are requested should established super apps in the long term investment for providing the reliable digital infrastructure, alongside their capability for providing big analytics from value-data driven approach. The innovative ecosystem requires a platform that can adapt to dynamics of customer needs and integrates new services quickly. Investment in a scalable technology includes artificial intelegence (AI), cloud infrastructure, modular architecture, and platforms. This will support the process integration of new partners and services rapidly. The development of super app systems preserving banks' competitive edge in the ever-changing industry. Furthermore, banks have to create a consumer feedback monitoring system if they are to properly complement a data-driven approach and enable ongoing development. This means ensuring the quality of data analytics, therefore allowing banks to quickly spot suitable new products meeting consumer expectations.

7. CONCLUSIONS

The financial sectors, including banks, are currently engaged in a race to develop their ecosystem capabilities as the new business model. In response to digital banking transformation, particularly in Indonesia, numerous banks have been strategically enhancing their mobile banking app to be the super app, leveraging their customer ecosystem for growth, development, and performances. This approach has encouraged many practitioners and researchers to investigate how banks established their digital capabilities in driving customer ecosystem as a platforms from various aspects of implementations.

This research modifies and expands the framework developed by Lähteenmäki et al. (2022) to investigate three primary transformations occuring in value creation sphere, customer ecosystem, and the integration of service processes within banking super apps to transform customer engagement. The study offers a distinctive perspective through the application of a quantitative method. The study also conducted in Indonesia, a rapidly digitizing emerging market where numerous banks are making significant efforts to develop banking super apps.

This study has established the significant role of customer ecosystem as a central platform of innovation, mediating the integrations of multi-dimensional values, specifically hedonic and social value, which serves as primary drivers influencing customer engagement. This research stands out as one of the initial explorations into banking super apps as pivotal platforms for enriching customer ecosystems, which contributing to the valuable insights of the existing literature on platform-based ecosystems. It emphasizes broadening the research focus from general ecosystems to targeted financial ecosystems. This outcome also establishes a novel approach for banks to expand their business model through super app by innovating customer ecosystems, which enables banks to build a strategic partnership with third parties to establish a digital collaborative network continuously.

Empirical measurements within the Indonesian banking sector indicate that, utilitarian value serves as driver of transactional engagement, positively influencing customer ecosystem and customer engagement, however with a minor contribution. Nonethless, the practical value continues to be significant in maintaining the reliable operations of ecosystem. Hedonic and social value greatly influence customer ecosystem, acting as the ecosystem differentiation. This outcome establishes a novel perspective on value integration innovation within ecosystems, indicating that development should prioritize experiential and social interconnectedness as dominant drivers of interactions. These statistics suggested distinct concerns compared to the previous study, which revealed a substantial portion of utilitarian and hedonic value in the perspective of customer experiences.

The study framework demonstrated that service process integration fosters continuous innovations for sustainable engagement. This role proposes an ecosystem capabilities for sensing, adapting, and transforming novel business operations and models within super apps, accommodating a wide range of values and services suited to customers needs. Consequently, banks ought to create a scalable platform development for super app by investing in digital infrastructure to enhance customer journey, while also incorporating advanced data analytics to understand of customer behavior more profoundly.

The study highlighted limitations in analyzing customer ecosystem that influences customer engagement. The super apps have evolved as a widely applied digital business model within the banking industry. Numerous banks and various non-banking business sectors have started incorporating customer ecosystem into their customers management practices. Consequently, we recommend conducting research in different industries and countries to acquire more insight of how organizations cultivate their digital ecosystem capability. Secondly, the study relies on the quantitative method to evaluate research ideas. For future reseacrh, we recommend implementing a mixed-method approach that integrates qualitative and quatitative methods to provide a more comprehensive understanding of research's concerns.

For future research, we recommend investigating the role of strategic partnership with third parties in cultivating ecosystems, emphazising whether they function as orchestrator or participant. This approach indicates that the outcomes in elucidating how banks or organizations develop the innovative ecosystem are contigent upon the dynamic shifts of customer needs. The domains of value creation in the ecosystem are contigent upon its actors, which will facilitate an in-depth understanding of each actor's contributions.

Ethical Statement: The research did not require ethical review or approval as it utilizes publicy accessible information and data gathered from areas where privacy expectations are minimal.

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CRedit authorship contribution statement

Jusran Buraera: Conceptualization, Software, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Visualization. **Dian Anggraece Sigit Parawansa, Muhammad Asdar, and Andi Nur Bau Massepe Mappanyompa**: Methodology, Validation, Resources, Supervision, Writing - review and editing.

Jusran Buraera. Is a student of the Doctoral Program of Management at Faculty of Economics and Business of Hasanuddin University, Makassar, South Sulawesi, Indonesia. He is currently preparing for the final stage of his program. He was a banker in a state-owned banking company at the middle management level for 28 years before he retired in 2023. During executing his responsibilities at the bank, the author focused on the prospective expansion of banking ecosystem in the business area. ORCID ID: 0009-0009-8243-4921. Address: Perumahan Bukit Baruga, Jl. Mentarang No. 19, Antang, Makassar 90234, South of Sulawesi, Indonesia. Email: jusran.buraera279@gmail.com

Dian Aggraece Sigit Parawansa, Ph.D. Is a professor of management science at department of management of the faculty of economics and business of Hasanuddin University, Makassar, South Sulawesi, Indonesia. She completed her doctoral degree from Universiti Utara Malaysia, Kedah, Malaysia, in 2013. She has published more than 10 papers in international journals and also has written five books in her area of expertise, specifically management science. ORCID ID: 0000-0003-1996-0725. Email: dianparawansa@fe.unhas.ac.id ; dianparawansa62@gmail.com.

Muhammad Asdar, Dr. Is a professor of economics and management science at department of management of the faculty of economics and business of Hasanuddin University, Makassar, South Sulawesi, Indonesia. He finished his doctoral degree from Hasanuddin University, Makassar, South Sulawesi, in 2005. He has published papers in international journals and also has written books in his area of expertise, specifically economics and management science. ORCID ID: 0009-0007-6840-3438. Email: muh.asdar@fe.unhas.ac.id

Andi Nur Bau Massepe Mappanyompa, Dr. Is an associate professor of management science at department of management of the faculty of economics and business of Hasanuddin University, Makassar, South Sulawesi, Indonesia. He finished his doctoral degree from Hasanuddin University, Makassar, South Sulawesi, in 2013. He has published papers in international journals and also written book in his area of expertise, specifically management science. ORCID ID: 0000-0002-1693-8955. Email: baumaseppe@fe.unhas.ac.id

Appendix A. Construct Measurement Instrument

Variables	Code	Items	Sources
Utilitarian Value	UV1	Mobile banking apps are easy to use in a few simple steps	Carranza et al. (2021)
	UV2	Mobile banking apps transactions are conducted in real time	Komulainen & Saraniemi (2019)
	UV3	I think mobile banking apps is substituting offline bank services	
	UV4	I think mobile banking apps encourages consumption behavior	
Hedonic Value	HV1	Visualization makes the mobile banking product interface easy to use	Komulainen & Saraniemi (2019)
	HV2	I find mobile banking apps convenient and pleasant	Akdim et al. (2022)
	HV3	Mobile banking apps emotionally appeal to me	Komulainen & Saraniemi (2019)
	HV4	I think mobile banking apps makes transactions secure	Shankar & Jebarajakirthy (2019)
Social Value	SV1	I think mobile banking apps influences my social status	Windasari et al. (2022)
	SV2	I think using mobile banking apps demonstrates my tech proficiency	Komulainen & Saraniemi (2019)
	SV3	I believe that actively using mobile banking apps represent my identity	
Customer Facing Ecosystem	CFE1	I think mobile banking apps prioritizes all customer needs, including non financial needs offered by bank partners'	Lipkin & Heinonen (2022); Lähteenmäki et al. (2022)
	CFE2	I suggest mobile banking apps consider customers feedback past, current, and future, including bank partner offers for non financial services	Lipkin & Heinonen (2022); Lähteenmäki et al. (2022)
	CFE3	I often consider how other customers like me use mobile banking, especially new non financial services from bank partners	Lipkin & Heinonen (2022)
	CFE4	Social interactions with fellow customers influence my increased utilization mobile banking services, particulary those offered by banks' partner	Lipkin & Heinonen (2022)
	CFE5	Family and relatives encourage my use of mobile banking services for attractive bank offers such as for purchasing food and beverages, transportation tickets, sports and music performances, etc.	Lähteenmäki et al. (2022)
	CFE6	The presence of other entities representing the bank on diverse social media platforms affects my utilization of	Lipkin & Heinonen (2022)

		mibile banking services for attractives deals from the bank's partners	
	CFE7	The reputation of the bank offering mobile banking services greatly impacts my interest in appealing non financial offers from bank's pertners	Lipkin & Heinonen (2022)
	CFE8	The reputation and reliability of the bank partner granting interesting non financial services strongly impact my decision to utilize mobile banking apps	Lipkin & Heinonen (2022)
	CFE9	Utilizing mobile banking apps from various bank is essetials to access appealing non financial services offers from their partners	Lipkin & Heinonen (2022)
Customer Engagement	CEG1	My decision to use mobile banking apps is based on my trust in the service process	Matkovskaya et al. (2022)
	CEG2	I am satisfied with mobile banking services due to the quality products and services offered	Mostafa (2020)
	CEG3	I am commited to continue to use mobile banking apps to suit with my financial and non financial demands, and I eagerly await the app's latest advancements and offerings	Mostafa (2020)
	CEG4	I consistently advise others to utilize mobile banking services to address their financial and non financial requirements	Mostafa (2020)
	CEG5	I derived pleasure and satisfaction from utilizing mobile banking services to fulfill my financial and non financial requirements	Lim & Rasul (2022)
	CEG6	I appreciate the various social benefits and incentives offered by the bank through mobile banking apps	Lim & Rasul (2022)
	CEG7	I consistently utilize the mobile banking apps of a specific bank and frequently share the outstanding features of that application with my family, realtives, and friends through social media and digital messages	Shankar & Jebarajakirthy, (2019)

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