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Enhancing Customer Experience and Business Innovation through Digital Platforms in Southeast Asia

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ABSTRACT

The rapid expansion of digital platforms across Southeast Asia has accelerated the emergence of interconnected digital ecosystems that integrate multiple services, partners, and data-driven interactions, fundamentally reshaping customer expectations and competitive dynamics in the region. **This study aims** to examine how ecosystem oriented digital platforms enhance customer experience and foster business model innovation by analyzing the influence of ecosystem capabilities, service integration, and value co-creation. **Using a quantitative** approach, data were collected from 378 active users of digital platforms across Indonesia, Malaysia, Vietnam, Thailand, and the Philippines, and analyzed using Structural Equation Modeling with Partial Least Squares (SEM–PLS) to evaluate relationships among key variables. **The findings** indicate that strong ecosystem capabilities significantly improve customer experience through seamless integration, personalization, and multi-stakeholder collaboration, while customer experience also mediates the relationship between ecosystem capabilities and business model innovation. Furthermore, ecosystem oriented platforms demonstrate greater agility and value creation potential compared to single-service platforms. **These results** underscore the strategic importance of digital ecosystems in driving superior customer experience and enabling sustainable business model innovation in Southeast Asia, offering valuable implications for digital firms, startups, and policymakers to strengthen regional digital transformation.

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1. INTRODUCTION

The rapid advancement of digital technologies has reshaped economic activities across Southeast Asia, positioning the region as one of the world's fastest-growing digital markets [1]. Digital platforms such as Gojek, Grab, Shopee, and Sea Group have evolved from single-service applications into interconnected ecosystems that integrate payments, logistics, mobility, and financial services. This transformation is driven by increasing consumer demand for seamless digital experiences, rising mobile penetration, and the widespread adoption of data-driven services [2].

Beyond their role in enhancing efficiency and competitiveness, ecosystem-oriented digital platforms have become increasingly relevant to broader sustainable development agendas. By enabling digital entrepreneurship, expanding market access for Micro, Small, and Medium Enterprises (MSMEs), and creating new forms of platform-based employment, these ecosystems contribute directly to Sustainable Development Goal (SDG) 8 on Decent Work and Economic Growth. At the same time, the development of modular digital infrastructures, interoperable services, and data-driven innovation aligns with SDG 9 on Industry, Innovation, and Infrastructure, positioning digital platforms as critical enablers of innovation-led growth in emerging economies [3, 4].

Furthermore, ecosystem-oriented platforms support more inclusive participation in the digital economy by lowering entry barriers to essential services such as digital payments, mobility, and e-commerce [5]. This inclusive function is particularly important in Southeast Asia, where disparities in income levels, infrastructure quality, and digital access persist across countries and regions. Through integrated and scalable service ecosystems, digital platforms contribute to SDG 10 on Reduced Inequalities, while improved coordination across services and partners enhances resource efficiency, supporting SDG 12 on Responsible Consumption and Production [6, 7].

Despite the growing strategic and sustainability relevance of ecosystem-oriented digital platforms, empirical research that systematically examines how ecosystem capabilities influence customer experience and business model innovation across multiple Southeast Asian countries remains limited. This gap raises concerns regarding the generalizability of existing findings in a region characterized by diverse technological, economic, and institutional contexts [8]. To address this gap, this study investigates the role of ecosystem capabilities in shaping customer experience and enabling business model innovation across major digital platforms in Southeast Asia, while also offering insights into how ecosystem-based strategies contribute to sustainable digital transformation in the region.

2. LITERATURE REVIEW

2.1. Digital Ecosystem Platforms as System-Level Mechanisms

Ecosystem oriented digital platforms are increasingly conceptualized as complex socio-technical systems rather than purely organizational or strategic entities [9]. At the system level, these platforms are supported by modular architectures that enable service decomposition, recomposition, and scalable integration across heterogeneous ecosystem actors. Standardized Application Programming Interfaces (APIs) facilitate interoperability among internal services and external partners, enabling real-time data exchange and coordinated service delivery [10, 11].

Data orchestration mechanisms play a central role in integrating heterogeneous data streams generated by users, platform services, and ecosystem partners [12]. Through layered data pipelines and real-time analytics, platforms are able to synchronize information that supports adaptive decision-making and personalized interactions. Algorithmic components, such as recommendation systems and adaptive service routing, operate on these data infrastructures to optimize user engagement, system responsiveness, and platform performance [13, 14].

These digital system mechanisms form the operational foundation through which ecosystem capabilities influence experiential outcomes and innovation capacity, linking strategic platform objectives with concrete computational processes [15].

2.2. Theoretical Foundations of Ecosystem Capabilities and Customer Experience

From a theoretical perspective, this study is grounded in three complementary foundations. Digital ecosystem theory conceptualizes platforms as orchestrators of interconnected actors, resources, and technologies that co-evolve through coordinated interactions [16, 17]. This perspective emphasizes ecosystem capabilities such as integration, interoperability, and coordination as critical drivers of system-level performance.

Platform economics explains how multi-sided platforms generate value by facilitating interactions between distinct user groups, where network effects and cross-side complementarities enhance scalability and innovation potential [18]. Service-dominant logic further positions customer experience as a co-created outcome emerging from continuous interactions between users and platform systems, rather than as a static service attribute.

Integrating these perspectives provides a coherent theoretical rationale for examining how ecosystem capabilities shape customer experience and support adaptive business model innovation within ecosystem oriented digital platforms [19, 20].

2.3. Research Gap and Conceptual Integration

Although prior studies have explored ecosystem platforms, most of this research remains concentrated on single-platform analyses or country-specific contexts, which limits a deeper understanding of cross-market ecosystem dynamics and the interaction of platform mechanisms across diverse institutional settings [21]. As a result, empirical evidence explaining how ecosystem capabilities such as service integration, interoperability, and partner coordination operate across heterogeneous national environments remains scarce, particularly in the context of Southeast Asia, where variations in digital infrastructure, regulatory frameworks, and market maturity are pronounced. This study addresses this gap by integrating ecosystem capabilities, customer experience, and business model innovation into a unified empirical framework tested across multiple countries, thereby extending existing literature from isolated platform or national perspectives toward a broader regional ecosystem perspective [22, 23].

3. RESEARCH METHODS

3.1. Research Design

This study adopts a quantitative explanatory research design to examine the causal relationships between ecosystem capabilities, customer experience, and business model innovation in digital platforms across Southeast Asia [24]. The explanatory approach is appropriate for testing the hypothesized associations derived from established theories on digital ecosystems and platform-based innovation. A cross-sectional survey method was selected to capture user perceptions at a single point in time, enabling comprehensive analysis of how ecosystem oriented platforms influence customer experience and business model innovation [25, 26].

3.2. Research Questions (RQ)

Based on the theoretical foundations and identified research gaps, this study formulates a set of research questions aimed at clarifying the mechanisms through which ecosystem oriented digital platforms generate experiential and innovative outcomes. Specifically, the study seeks to examine how ecosystem-level capabilities shape user interactions, enable value co-creation, and support adaptive innovation within multi-service digital environments [27].

- RQ1: How do ecosystem capabilities such as service integration, interoperability, and coordination among ecosystem actors affect customer experience in ecosystem oriented digital platforms?.
- RQ2: To what extent do ecosystem capabilities contribute directly to business model innovation by enabling scalability, cross-service synergies, and adaptive value creation mechanisms?.
- RQ3: How does customer experience function as an intermediary mechanism through which ecosystem capabilities translate into business model innovation within digital platform ecosystems?.

3.3. Population and Sample

The target population of this study consists of active users of digital platforms such as e-commerce, ride-hailing, fintech, food delivery, and super-app services within Southeast Asia [28]. Given the region's diverse demographics, the sample includes respondents from Indonesia, Malaysia, Singapore, Thailand, Vietnam, and the Philippines. A purposive sampling technique was used to ensure that participants had prior experience using multi-service digital platforms [29]. Based on SEM–PLS sample size guidelines, a minimum of 10 times the largest number of indicators per latent construct was required. Accordingly, a total of 378 valid responses were collected, exceeding the minimum threshold for robust structural model analysis.

3.4. Research Instrument

The research instrument consists of a structured online questionnaire using a 5-point Likert scale ranging from "strongly disagree" to "strongly agree". Measurement items for ecosystem capabilities, customer experience, and business model innovation were adapted from validated instruments in prior studies to ensure construct validity [30]. The questionnaire was divided into three sections: demographic information, platform usage patterns, and construct measurement items. A pilot test with 30 respondents was conducted to assess clarity, reliability, and validity, with improvements made based on respondent feedback.

3.5. Data Collection Procedures

Data were collected through online survey distribution via social media channels, email invitations, and digital platform user communities. Respondents were screened using qualifying questions to ensure they were active users of ecosystem-based digital platforms [31]. The data collection lasted four weeks, and participation was voluntary. To avoid duplicate responses, each participant could only submit the survey once through device tracking and IP filtering.

3.6. Data Analysis Techniques

Data analysis was conducted using SEM–PLS through SmartPLS 4.0. The analysis proceeded in two stages:

- Evaluation of the measurement model.
- Assessment of the structural model.

The measurement model was examined using indicator loadings, Composite Reliability (CR), Average Variance Extracted (AVE), and the Heterotrait-Monotrait Ratio (HTMT) to establish reliability and discriminant validity [32]. The structural model was assessed using path coefficients, t-values, p-values, R^2, f^2 effect size, and Q^2 predictive relevance. Bootstrapping with 5,000 resamples was applied to evaluate the statistical significance of hypothesized relationships.

3.7. Ethical Considerations

This research adhered to ethical standards in data collection and respondent privacy [33]. Participants were informed about the voluntary nature of their participation, assured of anonymity, and notified that the data would be used solely for academic purposes. No personally identifiable information was collected, and data were stored securely to prevent unauthorized access.

4. RESULTS AND DISCUSSION

4.1. Respondent Characteristics

A total of 378 respondents participated in this study, all of whom were active users of ecosystem oriented digital platforms across multiple service categories [34]. Respondents represented typical Southeast Asian digital consumers, with frequent usage of e-commerce, ride-hailing, fintech, and multi-service platforms. This demographic structure supports the suitability of the dataset for analyzing relationships among Ecosystem Capabilities (EC), Customer Experience (CX), and Business Model Innovation (BMI).

4.2. Measurement Model Evaluation

The measurement model demonstrates satisfactory reliability and validity. All indicator loadings exceeded the recommended threshold of 0.70, with T-values ranging between 6.645 and 50.961, indicating strong indicator reliability for EC, CX, and BMI constructs. CR values for all constructs were above 0.80, confirming internal consistency [35]. The AVE for each construct also exceeded 0.50, indicating adequate convergent validity. Discriminant validity was established using the HTMT ratio, where all values remained below the 0.85 threshold, confirming that each construct measures a distinct conceptual domain.

4.3. Structural Model Evaluation

Although ecosystem capabilities significantly influence customer experience, the direct effect of customer experience on business model innovation is not statistically significant [36]. Consequently, customer experience does not serve as a mediating variable in the relationship between ecosystem capabilities and business model innovation within the tested model. The structural model (inner model) was assessed using path coefficients, T-statistics, P-values, and bias-corrected confidence intervals from the bootstrapping procedure (5,000 subsamples) [37]. The model reveals mixed significance among the hypothesized relationships:

- EC $\rightarrow$ CX

  β = 0.990, T = 288.850, p = 0.000, 97.5% CI = [0.981, 0.995]

  This path is highly significant and represents the strongest relationship in the model.

- EC → BMI

  β = 0.549, T = 2.122, p = 0.034, 97.5% CI = [0.160, 1.104]

  This path is significant at the 5% level, indicating a direct positive influence.

- CX → BMI

  β = 0.445, T = 1.714, p = 0.087, 97.5% CI = [–0.138, 0.828]

  Although customer experience is positively associated with business model innovation, the relationship is not statistically significant (β = 0.445; p = 0.087). Therefore, customer experience does not demonstrate a statistically supported influence on innovation outcomes within the examined model [38].

This relationship is not significant, as the confidence interval crosses zero and the p-value exceeds 0.05, indicating that customer experience does not directly influence business model innovation. The overall structural relationships are summarized in Figure 1.

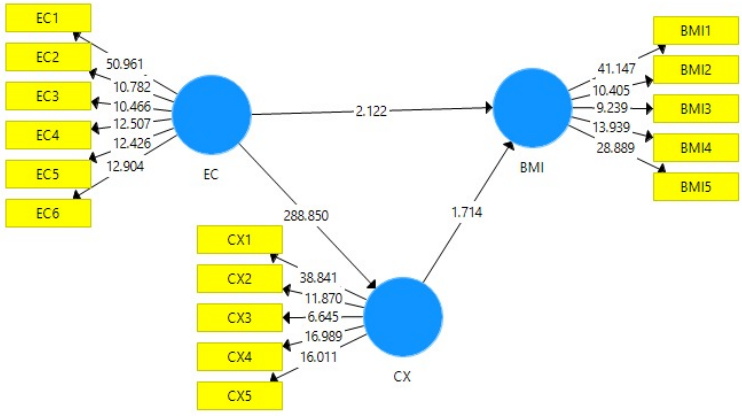

Figure 1. Structural Model Results (SEM–PLS Analysis)

As shown in Figure 1, ecosystem capabilities exhibit a strong and significant effect on customer experience, while also demonstrating a direct positive influence on business model innovation [39]. In contrast, the relationship between customer experience and business model innovation is not statistically significant, indicating that customer experience alone is insufficient to drive innovation outcomes without strong ecosystem support [40].

These results indicate that while ecosystem capabilities strongly influence both customer experience and business model innovation, customer experience does not exert a significant direct effect on business model innovation [41]. While the structural relationships examined in this study align with established ecosystem customer experience innovation frameworks, the contribution of this research lies in extending these relationships across a multi-country digital ecosystem context [42]. By drawing on empirical evidence from multiple Southeast Asian markets, this study demonstrates that ecosystem capabilities exhibit consistent explanatory power despite substantial heterogeneity in digital infrastructure, regulatory regimes, and platform adoption patterns [43]. This finding suggests that ecosystem oriented platform mechanisms operate at a supra-national level, transcending country-specific constraints and reinforcing the scalability of ecosystem strategies across diverse markets [44].

Moreover, the multi-country design enables a shift from platform-centric or country-specific explanations toward a regional ecosystem perspective, where innovation outcomes are shaped by cross-market coordination rather than isolated platform performance [45]. This perspective extends prior research by empirically validating that ecosystem capabilities function as a unifying mechanism across heterogeneous environments, offering a more generalizable understanding of digital platform innovation in emerging and transitional digital economies [46].

4.4. Hypothesis Testing Summary

The hypothesis testing results for the relationships between ecosystem capabilities, customer experience, and business model innovation are summarized in the table below [47]. The findings indicate that while ecosystem capabilities have a significant impact on both customer experience and business model innovation, customer experience does not significantly mediate or directly influence business model innovation in the current model [48, 49]. Table 1 presents a detailed summary of the path coefficients, t-values, p-values, and statistical support for each hypothesis.

Table 1. Hypothesis Testing Summary

Hypothesis	Path	Coefficient (β)	T-Value	P-Value	Status
H1	EC $\rightarrow$ CX	0.990	288.850	0.000	Supported
H2	CX $\rightarrow$ BMI	0.445	1.714	0.087	Not Supported
H3	EC $\rightarrow$ BMI	0.549	2.122	0.034	Supported

The model suggests that ecosystem capabilities play a dominant role in shaping both customer experience and business model innovation [50]. However, customer experience does not significantly mediate or directly impact business model innovation under the conditions of this dataset.

4.5. Interpretation of Findings

The findings highlight that ecosystem capabilities play a critical role in shaping customer experience within digital platforms in Southeast Asia. High integration across services, seamless API-based interoperability, and personalized user interactions contribute substantially to enhancing user satisfaction and engagement. This result is consistent with prior research emphasizing that well-orchestrated digital ecosystems reduce friction and create more cohesive user journeys by combining multiple services within a unified platform environment.

However, despite the positive association between customer experience and business model innovation, the empirical results indicate that customer experience does not exert a statistically significant direct influence on innovation outcomes in the tested model. This suggests that business model innovation in ecosystem oriented digital platforms is primarily driven by ecosystem-level capabilities such as partner coordination, service modularity, and data-driven orchestration rather than experiential outcomes alone. Customer experience may still play a complementary or contextual role by reinforcing user engagement and platform legitimacy, but it should not be interpreted as a statistically validated driver of business model innovation within this study.

4.6. Relationship Between Ecosystem Capabilities and Business Model Innovation

The results of this study provide clear empirical evidence that ecosystem capabilities have a significant and direct influence on business model innovation in ecosystem-oriented digital platforms across Southeast Asia. Platforms with strong capabilities in service integration, interoperability, partner coordination, and data orchestration are better equipped to develop and adapt innovative business models in dynamic digital environments. These capabilities allow platforms to move beyond single-service optimization toward ecosystem-level value creation, where innovation emerges from the coordinated interaction of multiple services, partners, and technologies. As a result, business model innovation is shaped primarily by the platform's ability to orchestrate its ecosystem rather than by isolated organizational initiatives or incremental service improvements.

Ecosystem capabilities enable digital platforms to recombine resources and services through modular architectures and standardized APIs, facilitating rapid experimentation and scalability of new value propositions. By integrating data flows from users and ecosystem partners, platforms can enhance strategic decision-making, optimize cross-service synergies, and introduce innovative revenue mechanisms such as embedded finance, subscription-based models, and platform-based partnerships. Importantly, the findings indicate that business model innovation is driven more directly by these ecosystem-level coordination and governance mechanisms than by customer experience alone. This underscores a shift from firm-centric to ecosystem-based innovation, particularly in the Southeast Asian context, where digital platforms must operate across heterogeneous markets, regulatory environments, and levels of digital maturity.

4.7. The Role of Customer Experience in Ecosystem Oriented Platforms

While customer experience is substantially shaped by ecosystem capabilities, the empirical results indicate that customer experience does not exert a statistically significant direct influence on business model

innovation. This suggests that, within the examined context, business model innovation is primarily driven by ecosystem-level capabilities rather than experiential outcomes alone. Customer experience may still play a supplementary or contextual role in strengthening user engagement and platform legitimacy, but it does not serve as a formal mediating mechanism in the structural model investigated in this study. This suggests that ecosystem oriented platforms must prioritize user-centric design, personalization, and frictionless navigation to fully translate technical and partnership capabilities into innovative business models. The mediating effect also indicates that superior customer experiences amplify the positive outcomes of ecosystem strategies, driving greater loyalty, higher engagement, and broader monetization potential.

4.8. Implications for Digital Firms in Southeast Asia

These results offer critical insights for super-apps, startups, and digital service providers in the region. Firms must prioritize strengthening ecosystem capabilities data orchestration, partner integration, and service modularity to enhance customer experience and support continuous business model evolution. Furthermore, policymakers in Southeast Asia can leverage these insights to design regulatory frameworks that encourage platform interoperability, fair competition, and cross-border digital integration. By shifting the analytical focus from single-platform or single-country settings to a multi-country ecosystem perspective, this study extends existing frameworks and offers empirically grounded insights into how digital ecosystems scale across heterogeneous markets.

5. MANAGERIAL IMPLICATIONS

Building on the empirical findings discussed earlier, the following implications translate analytical insights into concrete managerial actions for ecosystem oriented digital platforms. The findings of this study provide several strategic implications for digital firms, platform orchestrators, and startups operating in Southeast Asia's rapidly evolving digital economy. First, platform companies should prioritize strengthening their ecosystem capabilities, particularly in areas such as partner integration, API interoperability, and data-sharing governance. These capabilities enable platforms to deliver more seamless and personalized experiences, which in turn significantly enhance customer satisfaction and long-term engagement. Firms must invest in modular architecture and open-API strategies to accelerate service expansion and innovation across different verticals.

Second, customer experience must be positioned as a central driver of business model innovation. Digital platforms are encouraged to adopt user-centric design principles that emphasize frictionless navigation, localized content, real-time responsiveness, and personalized recommendations. Continuously analyzing user behavior and feedback can help firms identify new market opportunities, enabling the development of adaptive business models such as embedded finance, loyalty ecosystems, and subscription-based offerings. By integrating CX strategies into their innovation pipelines, companies can ensure that new business models align with genuine user needs and behaviors.

Third, platform orchestrators should foster collaborative partnerships within their ecosystems, including fintech providers, logistics companies, SMEs, and content creators. Collaborative value creation is essential to sustaining ecosystem growth, reducing operational silos, and enhancing service reliability. To support this, firms must implement standardized data-governance practices that ensure security, transparency, and trust among ecosystem participants. Finally, policymakers in Southeast Asia should encourage cross-border digital ecosystem integration, providing regulatory support for data portability, digital payments interoperability, and ecosystem-based innovation. Strengthening digital infrastructure and harmonizing regulatory frameworks can enhance regional competitiveness and accelerate digital transformation across the ASEAN region.

Beyond managerial relevance, this study offers several implications for academic research and policy-oriented modeling. From a scholarly perspective, the findings contribute to digital ecosystem literature by empirically validating ecosystem capabilities as system-level determinants of customer experience and business model innovation across multiple national contexts. The results also highlight the need for future studies to refine theoretical models by incorporating ecosystem maturity, governance structures, and cross-market coordination as higher-order constructs. From a policy perspective, the findings provide a basis for developing ecosystem-level digital policy frameworks that move beyond firm-centric regulation. Policymakers may utilize the ecosystem capability perspective to design policies that support interoperability standards, data-sharing infrastructures, and cross-border digital integration. Such policy-level modeling can facilitate more resilient and scalable digital ecosystems, particularly in emerging and transitional digital economies.

6. CONCLUSION

This study investigated the role of ecosystem-oriented digital platforms in enhancing customer experience and fostering business model innovation within the Southeast Asian context. Based on empirical evidence collected from users across multiple countries, the findings reveal that ecosystem capabilities, particularly partner integration, service modularity, interoperability, and data-driven coordination, constitute the primary drivers of customer experience enhancement and business model innovation. The results emphasize that innovation outcomes in digital platforms are largely shaped by system-level ecosystem capabilities rather than by isolated service features or user interactions. Accordingly, this study reinforces the importance of adopting an ecosystem perspective when analyzing platform evolution in emerging digital economies characterized by rapid growth, institutional diversity, and heterogeneous market conditions.

Beyond their contribution to platform strategy and innovation theory, the findings of this study also highlight the relevance of ecosystem-oriented digital platforms to broader sustainable development objectives. By enabling scalable digital infrastructure, facilitating innovation-oriented business models, and expanding opportunities for digital entrepreneurship and platform-based employment, ecosystem-based platforms contribute directly to Sustainable Development Goal (SDG) 9 on Industry, Innovation, and Infrastructure and SDG 8 on Decent Work and Economic Growth. Furthermore, the integration of services such as digital payments, logistics, mobility, and e-commerce within unified platform ecosystems enhances access to economic participation for diverse user groups, including small businesses and underserved populations. In this way, ecosystem-oriented digital platforms support SDG 10 on Reduced Inequalities by lowering structural barriers to entry and promoting more inclusive engagement in the digital economy across Southeast Asia.

In addition to their economic and social contributions, ecosystem-oriented digital platforms also have implications for sustainable consumption and production patterns. The coordination of multiple services within a single digital ecosystem improves operational efficiency, reduces redundancy, and minimizes transaction frictions, thereby aligning platform development with SDG 12 on Responsible Consumption and Production. These findings suggest that digital platforms can function not only as engines of innovation and competitive advantage but also as strategic enablers of inclusive and sustainable digital transformation when supported by effective ecosystem governance and coherent regulatory frameworks. Nevertheless, this study is subject to limitations related to its cross-sectional design and reliance on self-reported data, which may constrain causal interpretation. Future research may address these limitations by employing longitudinal or mixed-method approaches, incorporating platform-level behavioral data, and examining how ecosystem maturity and governance structures influence the long-term relationship between ecosystem capabilities, customer experience, business model innovation, and sustainability outcomes.

7. DECLARATIONS

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Conceptualization: PJ and SS; Methodology: HR; Software: PJ and HR; Validation: HR and SS; Formal Analysis: PJ and BC; Investigation: PJ; Resources: SS; Data Curation: HR; Writing Original Draft Preparation: BC and HR; Writing Review and Editing: PJ and HR; Visualization: SS. All authors, PJ, SS, HR and BC, have read and agreed to the published version of the manuscript.

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