



Project Prioritization Using Fuzzy AHP (FAHP) And 4c Diamond Marketing Model In Digital Wallet Application Development

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Article History:

Submitted: 21-07-2025

Accepted: 28-07-2025

Published: 02-08-2025

Keywords:

Fuzzy Analytic Hierarchy Process; 4C Diamond Model; Project Prioritization; Digital Wallet.

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ABSTRACT

The rapid growth of digital wallet applications in the financial technology sector has created increasing complexity in strategic decision-making for development project prioritization. This research addresses the challenge of systematically evaluating and prioritizing multiple development projects by implementing the Fuzzy Analytic Hierarchy Process (FAHP) method combined with the 4C diamond model framework. The study focuses on a digital wallet application development case, where ten projects were evaluated against four main criteria: Customer, Company, Competitor, and Change, along with their respective sub-criteria. The methodology employs triangular fuzzy numbers to handle uncertainty and subjectivity inherent in expert judgments, while the 4C diamond model provides a comprehensive framework for strategic analysis. Data collection was conducted through structured interviews with industry experts and stakeholders involved in digital wallet development. The FAHP method was applied to calculate criteria weights and project scores, followed by comprehensive sensitivity analysis to validate the prioritization model's robustness. Results demonstrate that customer-centric factors dominate the decision-making process with the highest weight of 0.425, followed by company considerations (0.323), change adaptability (0.206), and competitive factors (0.046). The final prioritization identified five top-priority projects based on their strategic alignment and value potential. Sensitivity analysis confirmed the model's stability, with $\pm 10\%$ weight variations showing minimal impact on ranking consistency. The research contributes to technology project management by providing a structured, quantitative approach to strategic decision-making in digital financial services. The proposed framework demonstrates applicability beyond digital wallet development, serving as a replicable model for multi-criteria decision-making in technology project prioritization.

INTRODUCTION

The rapid advancement of internet technology has fundamentally transformed various sectors, with the financial services industry experiencing particularly significant disruption through the emergence of financial technology (fintech) solutions. According to the Indonesian Internet Service Providers Association (APJII, 2024), internet penetration in Indonesia reached 78.19% in 2023, representing 215.6 million connected users out of a total population of 275.8 million, demonstrating a 1.17% increase from the previous year. This widespread digital adoption has created unprecedented opportunities for financial innovation, particularly in the development of digital payment solutions. Fintech, defined by the International Monetary Fund and World Bank (2019) as "technological progress that transforms the provision of financial services by driving the development of new business models, applications, processes, and product innovations," has revolutionized how financial services are delivered and accessed across emerging markets. The evolution of fintech can be traced back to 1886, as noted by Arner, Barberis, and Ross (2017), with the development of communication devices such as telegraphs and advanced transportation systems that facilitated global financial information transfer, culminating in the establishment of the first electronic fund transfer systems.

Digital wallets have emerged as a dominant force within Indonesia's fintech ecosystem, representing the most preferred payment method for online transactions. Recent data from Kredivo and Katadata (2024) indicates that 74.1% of respondents utilize digital wallets for online shopping during March-April 2024, demonstrating their market dominance in the digital payment landscape. The competitive environment is characterized by intense rivalry among major platforms, with Gopay commanding 71% user adoption, OVO at 70%, Dana at 61%, and ShopeePay at 60% according to Insight Asia (2022). This market fragmentation, where 61% of users employ multiple digital wallet applications simultaneously, creates both opportunities and challenges for service providers. The phenomenon indicates that users select platforms based on specific features and services offered by each provider, suggesting a tendency for users to switch between applications according to their needs and the services available from digital wallet providers.





Despite the remarkable growth and adoption of digital wallet applications, significant challenges persist in the strategic decision-making processes governing development project prioritization within fintech organizations. Traditional prioritization methodologies in digital wallet development often rely on simplified frameworks that primarily consider internal factors such as revenue impact and development effort, following conventional impact-effort matrices. However, this approach neglects critical external variables including competitive dynamics, regulatory changes, technological evolution, and socio-cultural factors that significantly influence project success in the dynamic fintech environment. The absence of systematic frameworks that integrate both internal capabilities and external market forces creates suboptimal resource allocation decisions, potentially compromising competitive advantage and market responsiveness. Furthermore, many organizations lack standardized prioritization frameworks based on comprehensive analytical methods, leading to subjective decision-making processes that may not adequately reflect market realities or strategic imperatives.

The complexity of multi-criteria decision-making in technology project prioritization necessitates sophisticated analytical methodologies that can systematically integrate diverse strategic factors while handling uncertainty and subjective expert judgments. The 4C diamond model, enhanced by Hermawan Kartajaya from Kenichi Ohmae's original 3C framework, provides a comprehensive strategic analysis framework encompassing Company, Competitor, Customer, and Change dimensions (Kotler and Hooi, 2021). This model offers a holistic perspective for evaluating strategic initiatives by incorporating internal capabilities alongside external market forces. The integration of Multi-Criteria Decision Making (MCDM) methodologies, particularly the Fuzzy Analytic Hierarchy Process (FAHP), can address the inherent uncertainty and subjectivity in expert judgments while maintaining mathematical rigor in the decision-making process. Such integrated approaches enable organizations to consider multiple strategic dimensions simultaneously, providing more robust foundations for project prioritization decisions.

This research aims to address the identified gap by developing a comprehensive project prioritization framework that integrates the 4C diamond model with FAHP methodology for digital wallet application development. The primary objectives include utilizing the 4C diamond model to identify and analyze relevant strategic variables in application development project prioritization processes, implementing FAHP methodology to provide systematic assessment of various criteria relevant to project prioritization, and developing a structured and comprehensive prioritization method that considers both internal and external factors. The methodology will enable organizations to conduct measurable and comprehensive evaluations while considering the relative weights of established criteria, thereby facilitating more informed and strategically aligned decision-making processes in highly competitive fintech markets.

The anticipated contributions of this research extend to both theoretical advancement and practical application in the fintech industry. The study is expected to contribute to application development literature, particularly in digital wallet prioritization through the integration of FAHP and 4C diamond model methodologies. For practitioners, the research outcomes will serve as valuable insights for digital wallet application developers in determining development project prioritization strategies that consider comprehensive strategic factors. Additionally, the research will provide a replicable framework for technology project prioritization that can be adapted across various organizational contexts, while contributing to the advancement of project selection research utilizing FAHP and 4C diamond model frameworks. These contributions will enhance both theoretical understanding and practical application of strategic decision-making in technology project management within competitive digital financial services markets.

LITERATURE REVIEW

4C Diamond Marketing Model

Adding a critical fourth component, Change, the 4C Diamond model represents an advancement in strategic business analysis frameworks from Kenichi Ohmae's original 3C model (Company, Competitor, Customer). Introduced by Hermawan Kartajaya, this advancement offers a comprehensive analytical framework addressing the flaws of traditional approaches whereby companies often focus on discrete viewpoints, including consumer demands, competitor actions, or internal strengths, without recognizing the networked character of business interactions (Kotler and Hooi, 2021). Knowing that external variables like economic fluctuations might alter competitive environments, consumer purchasing power, and company strategic plans concurrently, this model places Change at the top of the diamond to emphasize its great influence on all other elements.

As shown in Figure 1, the model's architecture purposely positions the Competitor and Customer categories on opposite ends of the diamond, hence demonstrating their distinct yet connected contributions in producing and providing value. Kotler and Hooi (2021) view rivals as "value providers" who work to provide better value propositions to consumers; customers act as "value demanders," setting the standards and needs for market products. Three main elements comprise the analysis of competitors: broad market environment information including market structure and positioning strategies; levels of competitive aggressiveness shown via strategic energy and tactical adaptability; and competitive capabilities including tangible assets (financial resources, infrastructure) as well as intangible assets (technological know-how, brand reputation, and capacity to innovate).

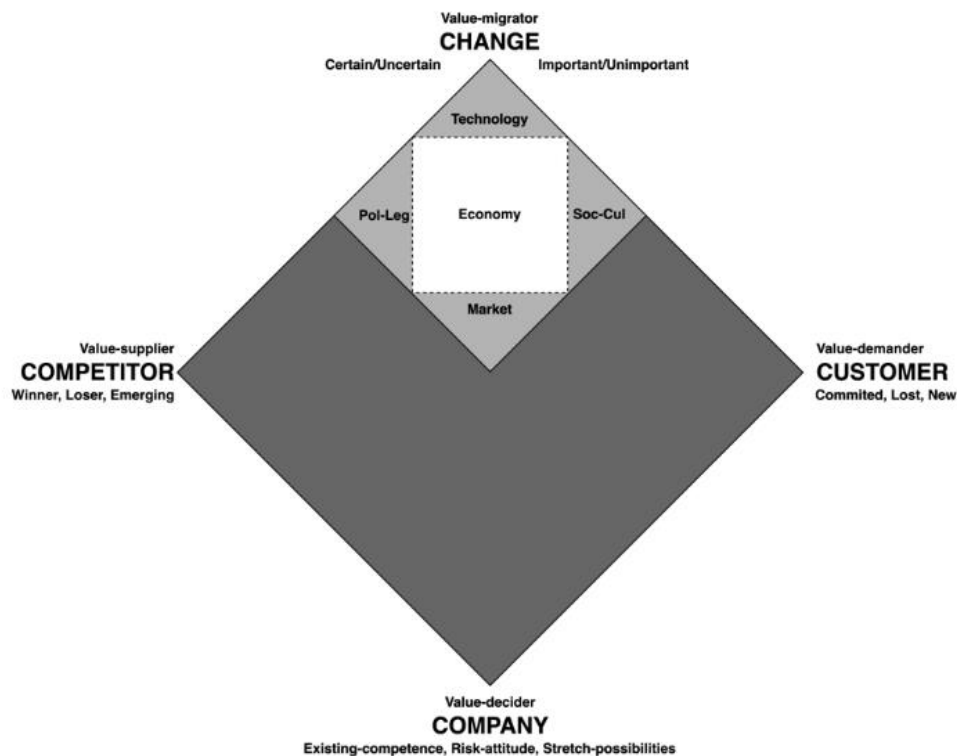


Figure 1. 4C Diamond Marketing Model
Source: Kotler and Hooi, 2021

The Change dimension combines five environmental forces—technology, political-legal, socioeconomic-cultural, market, and economic—that together shape corporate dynamics through what Kotler and Hooi (2021) call as "value shifts," in which outside changes permanently alter the seen worth of goods and services in the market.

Analytic Hierarchy Process

A fundamental technique used for decision-making, the Analytic Hierarchy Process (AHP) seeks to combine both logical and intuitive components while selecting the top possibilities from a range of possibilities judged against several criteria. While considering changes in judgment and providing advice on how to improve consistency (Saaty and Vargas, 2012), AHP lets decision-makers execute simple pairwise comparisons that make the foundation for setting general priorities for various categories. This approach distinguishes itself for its methodical handling of difficult decision-making situations in which numerous conflicting objectives must be assessed and balanced by means of a rigorous comparison method.

Designing hierarchical systems in decision-making is a creative exercise that calls for careful choice of appropriate items to integrate into the hierarchy. This entails careful examination of environmental problems, selecting pertinent themes and characteristics, and determining stakeholders (Saaty and Vargas, 2012). The major objective in the AHP hierarchical arrangement is at the top followed by several criteria and sub-criteria levels; comparisons of options occur at the lowest level depending on the established criteria (Saaty, 2008). Alternatives are the choices evaluated to satisfy the general objectives; criteria are the features or qualities influencing decision-making that offer benchmarks for evaluating alternatives.

Decision Problem Structure

Establishing a decision-making hierarchy is a process that requires creativity, as it involves selecting the appropriate elements to include in the hierarchical structure. It is equally important to consider the problem environment, identify relevant issues or attributes, and define the involved stakeholders (Saaty & Vargas, 2012). The AHP hierarchical structure is illustrated in Figure 2.3.

Criteria are factors or attributes that influence the decision-making process. They represent the standards used to evaluate alternatives. On the other hand, alternatives are the various available options being assessed to achieve the overall objective. In AHP, criteria are organized hierarchically, beginning with the overall goal at the top, followed by multiple levels of criteria and sub-criteria, and finally, the alternatives are compared at the lowest level based on these criteria (Saaty, 2008).

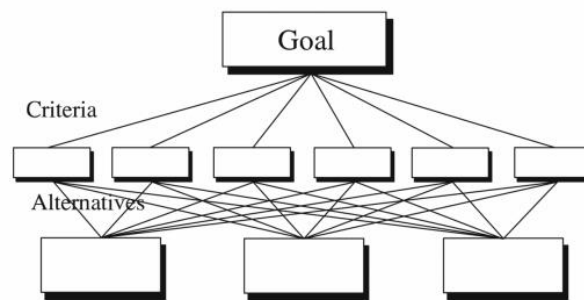


Figure 2. AHP Hierarchy Structure
Source: Saaty, 2008

AHP Stages

According to Saaty (2008), there are several stages in the AHP process that must be followed to establish priorities in decision-making:

1. Defining the problem and determining the required information.
2. Structuring the decision hierarchy, starting from the top with the decision goal, followed by the criteria, and ending with the lowest-level elements, which typically consist of a set of alternatives.
3. Constructing a set of pairwise comparison matrices, where each element in the upper level is used to compare the elements in the level below it.
4. Using the priorities derived from the comparisons to weigh the priorities in the level below. This process is repeated for each element. The weighted values of the lower-level elements are then aggregated to obtain global priorities. This balancing and aggregation process continues until the final priorities for the alternatives at the bottom level are determined.

Pairwise Comparison Scale

Pairwise comparisons are conducted by assigning numerical scales that indicate the degree to which one element is more important or dominant than another element in relation to the criteria or attributes being compared (Saaty, 2008). The pairwise comparison scale defined by Saaty can be observed in

Table 1.

Table 1. The fundamental scale of absolute numbers

Intensity of importance	Definition	Explanation
1	Equally importance	Two activities contribute equally to the objective
3	Moderately more important	Experience and judgement slightly favor one activity over another
5	Strongly more important	Experience and judgement strongly favor one activity over another
7	Very Strongly more important	An activity is favored very strongly over another; its dominance demonstrated in practice
9	Extremely important	The evidence favoring one activity over another is of the highest possible order of affirmation
2,4,6,8	Intermediate values between two adjacent judgment values	When compromise is required

Source: Saaty, 1988

Consistency Ratio

Numerical assessments derived from individual subjective preferences inevitably introduce bias into the final value matrix that cannot be completely avoided. To test the extent to which this bias can be tolerated, AHP calculates the consistency ratio (CR) by comparing the consistency index (CI) of the target matrix (containing the weightings) with the random consistency index (RI) of a random matrix. A random matrix is one in which assessments are entered randomly, thus expected to be non-uniform. Specifically, RI represents the average CI from 500 randomly selected populations according to Saaty (2012). The RI values established by Saaty can be observed in Table 2.

Table 2. Random Consistency Index

N	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49

Source: Saaty and Vargas, 2012





Fuzzy AHP and Triangular

Fuzzy AHP (FAHP) represents an advancement of traditional AHP methodology, specifically designed to address deficiencies in managing uncertainty and ambiguity within decision-making processes. While traditional AHP has been extensively utilized for handling qualitative and quantitative criteria in MCDM, FAHP is considered superior in addressing situations where decision-maker judgments or preferences are subjective and unclear (Chang, 1996). In numerous cases, decision-makers frequently experience difficulties in making accurate assessments due to insufficient information, uncertainty, or problem complexity. FAHP employs fuzzy logic concepts to represent these uncertain judgments as fuzzy numbers, enabling decision-makers to express their preferences in more flexible and realistic manners, thereby enhancing decision accuracy and generating improved priorities in uncertain situations compared to traditional AHP.

Table 3. FAHP Linguistic Scale

Linguistic Scale for Equal Importance	AHP Scale	Skala TFN (l, m, u)
Equal importance	1	(1.0, 1.0, 3.0)
Slightly more important	3	(1.0, 3.0, 5.0)
Quite more important	5	(3.0, 5.0, 7.0)
Much more important	7	(5.0, 7.0, 9.0)
Absolutely more important	9	(7.0, 9.0, 9.0)

Source: Sehra, Brar, and Kaur, 2016

Fuzzy logic addresses AHP limitations where certain data or numerical values cannot be determined precisely or accurately due to uncertainty and ambiguity. Triangular Fuzzy Numbers (TFN) constitute number sets containing lower, middle, and upper values for MCDM criteria assessments. Generally, TFN " x " can be written as $(x - \alpha, x, x + \beta)$, where α and α represent lower and upper ranges, respectively, creating assessments that form specific ranges (Syamal & Pal, 2007). In FAHP, expert assessments are represented as value ranges rather than single definitive values (Sehra, Brar, & Kaur, 2012).

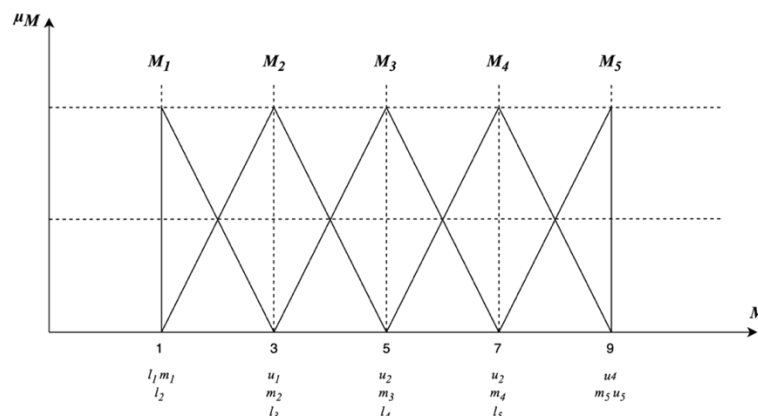


Figure 3. Triangular Fuzzy Number
Source: Processed by Researcher, 2025

The Saaty scale can be modified using TFN as presented in Table 3, which demonstrates the linguistic scale transformation into fuzzy number representations. Based on Table 3, fuzzy scale sets can be illustrated in Figure 3, which depicts TFN forms representing linguistic preference values through three points: lower (l), middle (m), and upper (u) values. Figure 3 demonstrates that each scale forms triangular shapes with intersections between adjacent scales, indicating that significance values are not absolute but may be relative in nature. This triangular representation allows for more nuanced expression of human judgment while maintaining mathematical rigor in the decision-making process.

METHOD

Project Criteria

In the initial data processing phase of this study, establishing product criteria was a crucial step that would support the prioritization process for the digital wallet application development project. These criteria served as the foundation for developing the FAHP hierarchy. The process of determining product criteria involved two main steps: a literature review and interviews with key informants within the digital wallet application.



Table 4. Criteria and Sub-criteria Used in Research

No.	Criteria	Sub-criteria	Notation	Explanation
1	Change	Technology	C1.1	Assessing changing technology trends that could potentially impact the development of new features or products within an application. This involves identifying emerging technologies that can support innovation, security, and system efficiency.
2		Socio-cultural	C1.2	Assessing changes in social and cultural patterns of society.
3		Political-legal	C1.3	Assessing the implications of changes in political and legal regulations on the operation of digital wallet applications. This includes aspects of data protection, security, and fintech-related regulations.
4		Market	C1.4	Identifying changing market conditions, such as demand trends and competition, which can determine the need to develop features that are more competitive and in line with market dynamics.
5	Competitor	Feature/product innovation	C2.1	Look at the feature or product innovations owned by competitor applications, especially superior features that can attract user interest, and assess whether similar or better innovations need to be adopted.
6		Capability	C2.2	Assessing competitors' technological capabilities and resources, which allows competitors to be faster in developing new products or services.
7		Aggressiveness	C2.3	Assess the aggressiveness of competitors in introducing new features, promotions, or market expansion.
8	Customer		C3	Assess customer preferences, needs, and satisfaction with the application.
9	Company	Coverage	C4.1	Assessing coverage (offering various solutions/services to users)
10		Innovate	C4.2	Assess the level of innovation (creating something truly unique in the market)
11		Unit Economics	C4.3	Assessing economic value (revenue, cost, and transaction)

Source: Processed by Researcher, 2025

Table 4 are the criteria and sub-criteria compiled for this research with elements in the 4C diamond model. In the literature study, the product criteria used as a reference in this research are based on the 4C diamond model, each component explains aspects that influence the success of product development.

AHP Model

The hierarchical levels utilized in questionnaire development for this study encompass comparisons between criteria/sub-criteria and comparisons between projects within criteria/sub-criteria, as illustrated in Figure 4. The research modeling incorporates four vertical hierarchical levels for criteria and sub-criteria evaluation. Level 1 represents the primary objective to be achieved, Level 2 comprises the main criteria, Level 3 contains the sub-criteria, and Level 4 encompasses the development projects. Notably, the customer criterion does not possess sub-criteria, thereby establishing direct relationships with the development projects. This hierarchical framework provides a systematic structure for comprehensive evaluation and prioritization of development initiatives within the digital wallet application context.

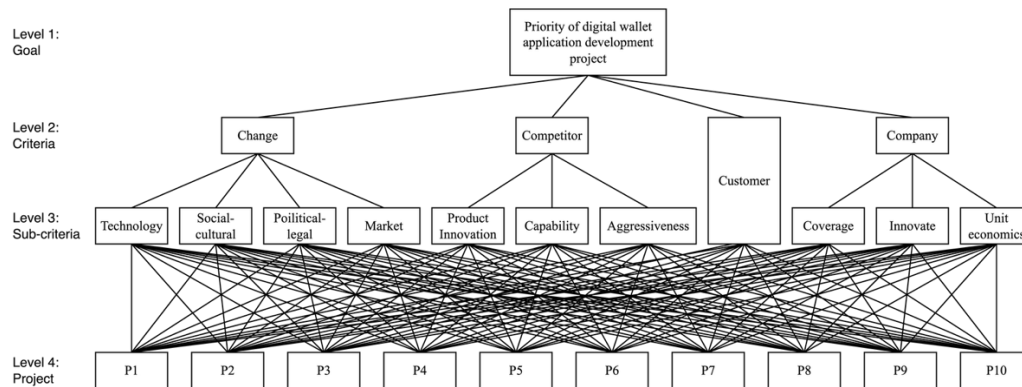


Figure 4. Problem Hierarchy Structure
Source: Processed by Researcher, 2025

This research employs a five-point linguistic scale adapted from Saaty's fundamental scale as shown on Table 5 for conducting pairwise comparisons within the AHP framework. The assessment scale utilized ranges from equal importance to absolutely more important, providing decision-makers with sufficient granularity to express their preferences while maintaining simplicity in evaluation processes. To address the inherent uncertainty in subjective judgments, the traditional AHP scale has been enhanced through integration with TFN, enabling more flexible and realistic representation of expert opinions.

Table 5. Rating Scale

Linguistic Scale	Scale	AHP Scale	TFN
Equal importance	1	1	(1, 1, 3)
Slightly more important	2	3	(1, 3, 5)
Quite more important	3	5	(3, 5, 7)
Much more important	4	7	(5, 7, 9)
Absolutely more important	5	9	(7, 9, 9)

Source: Processed by Researcher, 2025

RESULT

Digital Payment Business Landscape

The digital payment business landscape in Indonesia presents a dynamic and rapidly evolving ecosystem characterized by significant growth across multiple dimensions. This comprehensive analysis examines the current market conditions through the lens of the 4C diamond model, focusing on Change, Competitor, and Customer factors that shape the strategic environment for digital wallet development and deployment.

Change Landscape

The change dimension reveals profound transformations across technological, socio-cultural, political-legal, and market aspects that collectively drive the digital payment revolution in Indonesia. From a market perspective, the fintech payment sector has demonstrated remarkable growth, with fintech payments capturing 75.9% market share by 2019 (Bank Indonesia, 2019). Electronic money transactions have shown exponential increases from 25.5 million transactions valued at Rp253.37 billion in January 2015 to 1.29 billion transactions worth Rp68.081 trillion by January 2025 (Bank Indonesia, 2025). This represents a compound annual growth rate that reflects the massive shift toward digital transactions, particularly accelerating since 2017. The data indicates that electronic money has evolved from a niche payment method to a mainstream financial instrument, with peer-to-peer transfers reaching 438 million monthly transactions valued at over Rp47 trillion by early 2025 (Bank Indonesia, 2025).

Socio-cultural factors present both opportunities and challenges for digital payment adoption. With 60% of Indonesia's population residing in urban areas (BPS RI, 2020) and 79.50% internet penetration covering 221.5 million users (APJII, 2024), the foundation for digital payment adoption is solid. However, significant disparities exist, with 48% of adults remaining unbanked according to the World Bank's Global Findex Database 2021, representing approximately 100 million people who could benefit from digital financial inclusion. The demographic distribution shows that younger generations (ages 12-27) comprise 34.40% of internet users, followed by the 28-43 age group at 30.62% (APJII, 2024), indicating strong potential for digital payment adoption among economically active populations. Educational distribution reveals that users with secondary education backgrounds dominate internet usage, while urban-rural disparities show 69.49% of internet users concentrated in urban areas compared to 30.51% in rural regions (APJII, 2024).





The political-legal landscape has been shaped by progressive regulatory frameworks, particularly Bank Indonesia's Blueprint SPI 2025, which establishes five strategic visions supporting digital financial integration while maintaining monetary policy effectiveness and financial stability (Bank Indonesia, 2019). The comprehensive regulatory structure encompasses multiple laws and regulations, from electronic transaction frameworks to specific fintech operational guidelines, creating a supportive yet controlled environment for digital payment innovation. This regulatory clarity has enabled sustainable growth while ensuring consumer protection and systemic stability.

Technological advancement represents perhaps the most transformative change factor, with artificial intelligence revolutionizing financial services through improved operational processes from back-office to customer interactions (World Economic Forum, 2025). Blockchain technology offers enhanced security, transparency, and data integrity through decentralized validation processes and cryptographic encryption (Zan, 2024). The anticipated opening of NFC access on iPhones globally, following the European Union's approval in July 2024 and subsequent global expansion in August 2024 (Juniper Research, 2025), could significantly alter competitive dynamics by enabling non-OEM digital wallets to offer contactless payments across all major device ecosystems. Virtual card adoption for business expense management is projected to account for 4% of global B2B transaction value by 2025 (Juniper Research, 2025), while behavioral biometrics integration provides continuous authentication capabilities that enhance security without compromising user experience (Juniper Research, 2025).

Competitor Landscape

The competitor analysis reveals a concentrated industry structure with several key characteristics that define the competitive environment. Geographically, 94.7% of fintech companies in Indonesia are headquartered in the Greater Jakarta area (Jabodetabek) (AFTECH, 2024), reflecting the concentration of technological infrastructure, talent, and market access in the nation's capital region. This geographic concentration creates both advantages in terms of ecosystem development and potential challenges related to regional market penetration and service distribution. Surabaya shows significant growth as the second-largest fintech hub, increasing from 1.3% to 2.29%, while other regions like Yogyakarta experienced decline from 1.3% to 0.76% (AFTECH, 2024).

Operational maturity within the fintech sector shows a relatively young industry, with 59.5% of companies operating for 6-10 years and 26% in their early stages of 0-5 years (AFTECH, 2024). This distribution indicates an industry in active growth and transformation phases, where established players are scaling operations while new entrants continue to emerge with innovative solutions. The concentration of companies in growth phases suggests intense competition for market share and customer acquisition, driving rapid innovation cycles and aggressive market strategies.

Human resource patterns reflect the competitive dynamics and growth requirements of the industry. Approximately 55% of fintech companies employ fewer than 50 people, while 25.9% have scaled beyond 100 employees (AFTECH, 2024), indicating varied organizational maturity levels. The gender distribution shows male dominance in marketing (81%) and information technology (75%) roles, while female participation is higher in financial literacy (65%) functions (AFTECH, 2024). Priority hiring needs focus on product development (23.6%), business development (22.9%), and sales/marketing (20.7%) (AFTECH, 2024), reflecting the industry's emphasis on innovation, market expansion, and customer acquisition capabilities.

The competitive intensity is evident in the market share distribution among major digital wallet providers, where multiple platforms compete for user loyalty. The market demonstrates characteristics described by Porter (1985) regarding competitive advantage, where sustainable differentiation becomes crucial for long-term success. With 61% of users employing multiple digital wallet applications simultaneously, the market demonstrates low switching costs and high competitive pressure. This multi-platform usage pattern indicates that competitive advantage relies heavily on unique value propositions, ecosystem integration, and superior user experience rather than exclusive customer relationships.

Customer Landscape

The customer landscape presents significant opportunities driven by Indonesia's large and young population base. With a projected population of 284.44 million in 2025, including substantial representation across productive age groups, the market foundation for digital payment adoption is robust (BPS, 2020). The concentration of 44.71 million people in the 25-34 age group and 44.26 million in the 15-24 age group represents the core demographic for digital payment services, combining technological proficiency with increasing economic activity.

International visitor dynamics add another customer dimension, with an estimated 13.9 million foreign tourists expected in 2025 (BPS, 2025). This influx creates opportunities for digital payment providers to capture cross-border transaction volumes and demonstrate the convenience of digital payments to international users who may subsequently recommend or continue using Indonesian digital payment solutions in their home markets.

The customer adoption patterns revealed in transaction data demonstrate evolving usage behaviors, from initial top-up activities reaching over 500 million monthly transactions valued at Rp124 trillion to sophisticated peer-to-peer transfers and merchant payments (Bank Indonesia, 2025). The dramatic growth in transfer transactions suggests that





customers view digital wallets not merely as payment instruments but as comprehensive financial management tools. Interestingly, cash withdrawal transactions have declined from peaks during the pandemic, indicating successful behavior modification toward cashless transactions and increased confidence in digital payment acceptance networks.

The substantial unbanked population represents both a challenge and an opportunity, as digital wallets can serve as entry points to formal financial services for previously underserved segments, aligning with the resource-based view theory where valuable and rare resources create competitive advantages (Barney, 1991). The mobile phone penetration exceeding 352 million subscribers (BPS, 2024) creates the technological foundation necessary for widespread digital payment adoption, even among populations without traditional banking relationships. This convergence of high mobile penetration and significant unbanked populations positions digital payments as potential catalysts for financial inclusion rather than merely convenient alternatives to existing banking services.

Company Landscape

The company landscape analysis examines the organizational foundation and strategic priorities of a digital wallet service provider in Indonesia, providing insight into the internal capabilities and corporate objectives that drive development initiatives. Understanding the company's mission, strategic focus areas, and operational principles is essential for establishing the framework within which project prioritization decisions are made. This research utilizes one of Indonesia's digital wallet companies as the case study object to analyze how organizational strategy influences development priorities.

The digital wallet service provider under study has established a comprehensive mission for 2024 centered on improving the financial health of Indonesian society through innovative technology utilization. This mission statement reflects the organization's commitment to combining technological advancement with social impact, positioning the company as both a commercial enterprise and a catalyst for financial inclusion in Indonesia. The mission encompasses a holistic approach to financial services that extends beyond traditional payment processing to encompass broader financial wellness objectives.

The strategic direction embedded within this mission demonstrates the company's understanding of its role within the Indonesian digital financial ecosystem. By focusing on financial health rather than merely transaction facilitation, the organization positions itself as a comprehensive financial partner for its users, requiring the development of diverse capabilities and service offerings that address multiple aspects of personal financial management.

Company Strategic Mission

The company's strategic framework is built upon three core pillars that guide operational priorities and development initiatives, as outlined in Table 6.

Table 6. Company Strategic Missions

Providing healthier financial lives for Indonesian society using innovative technology.			
<i>Coverage</i>	<i>Ownership</i>	<i>Innovate</i>	<i>Unit Economics</i>
Offering various solutions/services.	Every employee understands and has a sense of ownership towards the product and company.	Creating something truly unique in the market.	Understanding economic value metrics to increase revenue or reduce costs.

Source: Processed by Researcher, 2025

Coverage Strategy

The coverage dimension emphasizes the organization's commitment to "offering various solutions/services" that comprehensively address user financial needs. This strategic focus requires the company to develop and maintain a diverse portfolio of financial services that extend beyond basic payment functionality. The coverage approach necessitates continuous expansion of service offerings, integration capabilities with external financial systems, and development of solutions that serve different user segments and use cases.

This comprehensive service approach requires significant organizational capabilities in product development, partnership management, and systems integration. The coverage strategy influences resource allocation by prioritizing initiatives that broaden the company's service ecosystem and enhance its position as a one-stop financial platform for users across various demographic and economic segments.

Innovate

The innovation dimension focuses on "creating something truly unique in the market," emphasizing the company's commitment to differentiation through distinctive product and service development. This strategic priority reflects the organization's recognition that sustainable competitive advantage in the dynamic fintech landscape requires continuous innovation and market-leading capabilities.





Innovation excellence demands significant investment in research and development, technology infrastructure, and talent acquisition. The innovation focus shapes project prioritization by favoring initiatives that introduce novel features, leverage emerging technologies, or create entirely new service categories that distinguish the company from competitors. This strategic emphasis requires the organization to maintain awareness of technological trends, user behavior evolution, and market gaps that present opportunities for innovative solutions.

Unit Economics

The unit economics dimension emphasizes "understanding economic value metrics to increase revenue or reduce costs," ensuring that innovation and expansion efforts are grounded in sound financial principles. This strategic focus requires deep analytical capabilities and data-driven decision-making processes that evaluate the financial impact of development initiatives.

Unit economics optimization influences project prioritization by requiring clear demonstration of financial viability, whether through direct revenue generation, cost reduction, or long-term value creation. This emphasis ensures that the company's growth and innovation initiatives contribute to sustainable business model development and long-term organizational viability.

Weighting between Criteria and Sub-criteria

Following the calculation of weights and consistency for criteria and sub-criteria, the data was compiled and analyzed using the FAHP methodology. The weighting results for the main criteria on Figure 5 demonstrate varying levels of importance in supporting project prioritization in digital wallet. Customer criterion achieved the highest weight of 0.425, reflecting the critical importance of understanding user needs and experiences as the primary focus in development projects. Company criterion obtained a weight of 0.323, indicating that contributions to corporate objectives and efficiency represent significant considerations in the decision-making process.

Change criterion received a weight of 0.206, demonstrating the importance of adaptability to market or technological changes, while Competitor criterion obtained the lowest weight of 0.046, suggesting that competitive pressures are considered less urgent compared to other criteria. All criteria assessments passed the consistency test with $CR \leq 0.1$, validating the weighting results for priority analysis application.

No.	Criteria	Weight	CR
1	C1	0,206	0,043
2	C2	0,046	
3	C3	0,425	
4	C4	0,323	

Figure 5. Weight and Consistency of Criteria
Source: Processed by Researcher, 2025

Within the Change criterion on Figure 6, Political-legal sub-criteria achieved the highest weight of 0.447, indicating the significant role of political and legal factors in project prioritization decisions for digital wallet applications. Market sub-criteria obtained a weight of 0.339, demonstrating the important role of market aspects in determining development project priorities. Social-cultural sub-criteria received a weight of 0.125, while Technology sub-criteria obtained the lowest weight of 0.089, suggesting that technological factors are considered relatively less influential compared to other sub-criteria within the change dimension.

No.	Sub-criteria	Weight	CR
1	C1.1	0,089	0,021
2	C1.2	0,125	
3	C1.3	0,447	
4	C1.4	0,339	

Figure 6. Weight and Consistency of Sub-criteria of Change
Source: Processed by Researcher, 2025

The weighting analysis for Competitor sub-criteria on Figure 7 reveals that Innovation/product features sub-criteria dominate with the highest weight of 0.527, emphasizing the crucial importance of innovative offerings from competitors in strategic analysis. Capabilities sub-criteria obtained a weight of 0.346, reflecting the significance of competitor abilities in technology, human resources, and business strategy execution. Aggressiveness sub-criteria received the lowest weight of 0.127, indicating that competitor aggressiveness in marketing strategies and market penetration is considered less significant, though still important for market dynamics consideration.



No.	Sub-criteria	Weight	CR
1	C4.1	0,309	0,023
2	C4.2	0,073	
3	C4.3	0,618	

Figure 7. Weight and Consistency of Sub-criteria of Competitor
Source: Processed by Researcher, 2025

The Company criterion sub-criteria weighting on Figure 8 demonstrates clear prioritization in corporate strategic focus. Unit economics sub-criteria achieved the highest weight of 0.618, confirming that financial efficiency represents the primary priority in application development decision-making. Coverage sub-criteria obtained a weight of 0.309, reflecting the importance of service capability to reach broad markets in supporting corporate strategic objectives. Innovate sub-criteria received the lowest weight of 0.073, indicating that while innovation remains important for competitive advantage, its influence is relatively smaller compared to financial efficiency and market coverage considerations.

No.	Sub-criteria	Weight	CR
1	C4.1	0,309	0,023
2	C4.2	0,073	
3	C4.3	0,618	

Figure 8. Weight and Consistency of Sub-criteria of Company
Source: Processed by Researcher, 2025

Comparison Results between Projects

The final comparison results between projects on Figure 9 demonstrate the ultimate prioritization of each development project. The final project values were calculated using the sum product between project scores and criteria weights, providing a comprehensive ranking system for strategic decision-making. The FAHP methodology results reveal a clear rank among the ten evaluated projects. Project P7 achieved the highest position with a final score of 0.2683, demonstrating superior performance across three of four criteria (competitor, customer, and company) and ranking third in the change criterion. This indicates the project's significant strategic potential based on customer needs relevance, competitive strength, and alignment with industry dynamics. Project P1 secured the second position with a score of 0.1689, followed by Project P10 in third place with a score of 0.1227.

The complete ranking sequence shows Project P5 (0.0955), Project P6 (0.0834), Project P4 (0.0613), Project P9 (0.0588), Project P2 (0.0515), and Project P8 (0.0362) in descending order. Projects with the lowest scores, particularly P2 (0.0515) and P8 (0.0362), reflect lower development priorities compared to other projects and may require reassessment regarding their necessity and development urgency. This prioritization framework provides strategic guidance for resource allocation and project implementation sequencing in the digital wallet application development roadmap.

Project	C1 Score	C2 Score	C3 Score	C4 Score	Final Score	Rank
P1	0,0398	0,0062	0,0817	0,0411	0,1689	2
P2	0,0256	0,0061	0,0125	0,0074	0,0515	9
P3	0,0107	0,0044	0,0326	0,0250	0,0727	5
P4	0,0290	0,0040	0,0096	0,0186	0,0613	7
P5	0,0271	0,0025	0,0354	0,0306	0,0955	4
P6	0,0134	0,0029	0,0249	0,0222	0,0634	6
P7	0,0280	0,0067	0,1402	0,0934	0,2683	1
P8	0,0058	0,0064	0,0116	0,0124	0,0362	10
P9	0,0100	0,0031	0,0189	0,0276	0,0595	8
P10	0,0161	0,0040	0,0577	0,0449	0,1227	3

Figure 9. Results of project prioritization using FAHP
Source: Processed by Researcher, 2025

Sensitivity Analysis

To ensure accuracy, stability, and reliability of the project prioritization results obtained through the FAHP method, sensitivity analysis was conducted on the criteria and sub-criteria weights used in the decision-making process. This sensitivity testing is crucial for understanding the extent to which weight value changes affect the final project priority results and for assessing the robustness and consistency of the FAHP model when facing potential assessment variations in practice. The testing involved gradually changing each criterion and sub-criterion weight by $\pm 10\%$ from the initial values, then observing changes in final values and project rankings.



Sensitivity Analysis of Project Priorities at Criteria Level

The sensitivity analysis results at the criteria level on Figure 10 demonstrate patterns of consistency and variation in project priority rankings when weights for change, competitor, customer, and company criteria are adjusted by $\pm 10\%$. Project P7 consistently maintains the top position across all weight change scenarios, indicating its highly significant strategic value that remains unaffected by changes in main criteria focus. Other projects such as P1, P10, P5, and P3 also show ranking stability in positions two through five, suggesting these projects are highly relevant for priority development.

However, variations occur in mid-ranking projects, particularly P4 and P6. These projects experience ranking changes when weights for change and customer criteria are adjusted, indicating their development priority heavily depends on the company's perspective toward external change factors and customer needs. This occurs because these projects have small value differences. Meanwhile, other projects like P8 and P2 remain in lower rankings, showing that their development urgency is relatively low across various weight scenarios.

Project	Basis	C1		C2		C3		C4	
		10%	-10%	10%	-10%	10%	-10%	10%	-10%
P1	2	2	2	2	2	2	2	2	2
P2	9	9	9	9	9	9	9	9	9
P3	5	5	5	5	5	5	5	5	5
P4	7	7	8	7	7	7	6	7	6
P5	4	4	4	4	4	4	4	4	4
P6	6	6	6	6	6	6	7	6	7
P7	1	1	1	1	1	1	1	1	1
P8	10	10	10	10	10	10	10	10	10
P9	8	8	7	8	8	8	8	8	8
P10	3	3	3	3	3	3	3	3	3

Figure 10. Project Priority Changes in Criteria Level Sensitivity Tests

Source: Processed by Researcher, 2025

Sensitivity Analysis of Project Priorities at Change Sub-criteria Level

Based on the sensitivity analysis of change sub-criteria (technology, social-cultural, political-legal, and market) on Figure 11, weight variations of approximately $\pm 10\%$ for each sub-criterion do not significantly affect the priority ranking of most projects. Project P7 remains at the top ranking across all scenarios, demonstrating its exceptionally high importance and strategic value even when focus changes occur in technology, social-cultural, political-legal, or market aspects.

Other projects such as P1, P2, P3, P5, P6, P8, and P10 also show stable rankings across nearly all sub-criteria weight change scenarios. This indicates that these projects' development priorities are not significantly influenced by changes in one particular aspect of the change criterion. Minor changes occur in mid-ranking projects, such as P4 and P9, where small ranking shifts may occur under specific scenarios, particularly when political-legal weights are reduced by 10%, indicating sensitivity to regulatory or policy changes affecting the industry.

Project	Basis	C1.1		C1.2		C1.3		C1.4	
		10%	-10%	10%	-10%	10%	-10%	10%	-10%
P1	2	2	2	2	2	2	2	2	2
P2	9	9	9	9	9	9	9	9	9
P3	5	5	5	5	5	5	5	5	5
P4	7	7	7	7	7	7	8	7	7
P5	4	4	4	4	4	4	4	4	4
P6	6	6	6	6	6	6	6	6	6
P7	1	1	1	1	1	1	1	1	1
P8	10	10	10	10	10	10	10	10	10
P9	8	8	8	8	8	8	7	8	8
P10	3	3	3	3	3	3	3	3	3

Figure 11. Project Priority Changes in Change Sub-criteria Level Sensitivity Test

Source: Processed by Researcher, 2025

Sensitivity Analysis of Project Priorities at Competitor Sub-criteria Level

The sensitivity analysis for competitor sub-criteria on Figure 12 reveals that weight adjustments of approximately $\pm 10\%$ across the three sub-criteria (innovation/product features, capabilities, aggressiveness) do not bring significant impact to the project priority rankings. All projects maintain their original rankings across all weight variation scenarios, demonstrating remarkable stability in the prioritization framework.



Project	Basis	C2.1		C2.2		C2.3	
		10%	-10%	10%	-10%	10%	-10%
P1	2	2	2	2	2	2	2
P2	9	9	9	9	9	9	9
P3	5	5	5	5	5	5	5
P4	7	7	7	7	7	7	7
P5	4	4	4	4	4	4	4
P6	6	6	6	6	6	6	6
P7	1	1	1	1	1	1	1
P8	10	10	10	10	10	10	10
P9	8	8	8	8	8	8	8
P10	3	3	3	3	3	3	3

Figure 12. Project Priority Changes in Competitor Sub-criteria Level Sensitivity Test
Source: Processed by Researcher, 2025

This resilience indicates that project priority evaluation is sufficiently robust against changes in competitor factor focus. This provides greater confidence for decision-makers that the established priority rankings are strong and not easily influenced by changes in context or strategy when facing competition. The results show that within the competitor context, the FAHP model used has good resistance to weight changes, making it reliable for supporting strategic decision-making processes.

Sensitivity Analysis of Project Priorities at Company Sub-criteria Level

The sensitivity analysis results for company sub-criteria on Figure 13 demonstrate consistent stability patterns in project priority rankings. No ranking changes occur across all analyzed projects despite $\pm 10\%$ adjustments to the three sub-criteria weights (coverage, innovate, unit economics). This stability indicates that project priority assessments are unaffected by changes in emphasis on various aspects within the company criterion.

The stability shows that established project priorities are based on strong foundations resistant to internal company strategy adjustments. This reflects maturity in the prioritization process conducted, where project assessments are not influenced by excessive emphasis on any single internal company aspect. Decision-makers can make priority decisions with high confidence, as project priority rankings will remain consistent despite shifts in focus on internal company aspects.

Project	Basis	C4.1		C4.2		C4.3	
		10%	-10%	10%	-10%	10%	-10%
P1	2	2	2	2	2	2	2
P2	9	9	9	9	9	9	9
P3	5	5	5	5	5	5	5
P4	7	7	7	7	7	7	7
P5	4	4	4	4	4	4	4
P6	6	6	6	6	6	6	6
P7	1	1	1	1	1	1	1
P8	10	10	10	10	10	10	10
P9	8	8	8	8	8	8	8
P10	3	3	3	3	3	3	3

Figure 13. Project Priority Changes in Company Sub-criteria Level Sensitivity Test
Source: Processed by Researcher, 2025

Overall Sensitivity Analysis Assessment

The comprehensive sensitivity analysis across all criteria and sub-criteria levels demonstrates the robustness and reliability of the FAHP methodology applied in this research. The model shows exceptional stability with Project P7 consistently maintaining the top priority position across all scenarios, indicating its fundamental strategic importance that transcends specific criterion emphases. The majority of projects maintain stable rankings, providing confidence in resource allocation decisions for priority development initiatives.

The analysis reveals that while most projects show remarkable stability, some mid-tier projects (P4 and P6) demonstrate sensitivity to specific criteria adjustments, particularly in change and customer dimensions. This sensitivity provides valuable insights for decision-makers, highlighting the need for deeper evaluation when external environmental changes or customer need shifts occur. Overall, the FAHP model with the 4C diamond approach proves to be a reliable and robust tool for strategic decision-making in digital wallet application development prioritization, capable of maintaining consistency while accommodating strategic flexibility when significant market or regulatory changes occur.



DISCUSSIONS

This research presents a comprehensive strategic project prioritization framework for digital wallet application development by integrating the 4C diamond model with Fuzzy Analytic Hierarchy Process (FAHP) methodology. The study reveals several critical findings that contribute significantly to both theoretical advancement and practical application in fintech project management. The FAHP analysis demonstrates that Customer emerges as the most critical criterion with a weight of 0.425, followed by Company (0.323), Change (0.206), and Competitor (0.046). This prioritization hierarchy indicates that customer-centric considerations should dominate strategic decision-making processes in digital wallet development, aligning with contemporary market dynamics where user experience and satisfaction drive competitive advantage. Within the sub-criteria analysis, Political-legal factors achieved the highest weight (0.447) within the Change dimension, reflecting the critical importance of regulatory compliance and policy alignment in Indonesia's fintech landscape. The prominence of Unit Economics (0.618) within Company criteria confirms that financial sustainability remains paramount for long-term viability, while Innovation/product features dominate Competitor sub-criteria with a weight of 0.527.

The project prioritization results reveal clear ranking preferences, with Project P7 achieving the highest priority score (0.2683), followed by Project P1 (0.1689) and Project P10 (0.1227). The sensitivity analysis demonstrates exceptional robustness across all scenarios, with Project P7 consistently maintaining top priority regardless of weight adjustments, indicating its fundamental strategic importance that transcends specific criterion emphases. The integration of the 4C diamond model with FAHP methodology represents a significant theoretical advancement in multi-criteria decision-making for technology project prioritization. This research extends existing literature by providing a structured approach that systematically incorporates external market forces alongside internal organizational capabilities, addressing limitations in traditional prioritization methods that often focus primarily on internal metrics. The study contributes to strategic management theory by demonstrating how external environmental factors can be quantitatively integrated with internal organizational priorities to create comprehensive decision-making frameworks.

The findings provide substantial practical value for digital wallet service providers and fintech companies operating in emerging markets. The prioritization framework offers managers a systematic approach to resource allocation that balances multiple strategic considerations while maintaining quantitative rigor. The emphasis on customer-centricity validates current industry trends toward user experience optimization, while the prominence of political-legal factors provides actionable guidance for fintech companies operating in regulated environments. The framework's robustness, demonstrated through comprehensive sensitivity analysis, ensures that strategic decisions remain valid despite changing market conditions or shifting organizational priorities. The research addresses critical challenges facing the Indonesian digital payment industry, where transaction volumes have grown exponentially from 25.5 million to over 1.29 billion transactions within a decade. The customer-centric prioritization aligns with market realities where low switching costs and high competitive pressure require sustained focus on user value creation. The framework's emphasis on innovation within competitor analysis reflects the industry's need for continuous differentiation in a rapidly evolving technological landscape, while the focus on unit economics resonates with industry maturation trends where companies increasingly balance growth objectives with profitability requirements.

The study provides valuable insights for fintech development in emerging markets characterized by similar dynamics to Indonesia, including high mobile penetration, significant unbanked populations, and supportive regulatory environments. The framework's consideration of socio-cultural factors offers guidance for companies seeking to address financial inclusion challenges in diverse market contexts, while the emphasis on political-legal considerations reflects the reality that emerging market fintech companies must navigate complex regulatory landscapes while contributing to national financial inclusion objectives.

While this study provides valuable contributions, the research focuses on a single market context and one company case study, which may limit generalizability to other markets or organizational structures. The dynamic nature of the fintech industry suggests that criterion weights and project priorities may evolve over time, requiring periodic framework reassessment. Future research could validate the framework across multiple markets and company types, explore integration with data-driven approaches such as machine learning algorithms, and incorporate real-time market data to enhance the framework's predictive capabilities and strategic relevance.

CONCLUSION

Based on the results of the analysis and discussion in the previous chapter, and referring to the problem formulation in this study, several key conclusions can be drawn from the prioritization strategy for application development projects using the FAHP method with the 4C diamond model criteria on the digital wallet application.

The 4C diamond model and the FAHP can be adopted as method to setting priorities in application development projects, allowing companies to better consider various strategic aspects. This method systematically makes decisions and considers various relevant factors. With its ability to overcome data uncertainty and subjectivity in decision-making through triangular fuzzy numbers integration, this method provides a more structured and reliable approach to setting project priorities based on predetermined criteria. The methodology successfully addresses the complexity of multi-criteria decision-making in technology project prioritization by providing quantitative support for traditionally



subjective decisions.

The weighting results demonstrate a clear strategic hierarchy where the customer criterion achieves the highest weighting of 0.425, followed by company (0.323), change (0.206), and competitor (0.046). This indicates that customer needs and preferences are the most dominant factors to consider in the development of digital wallet application projects, reflecting a customer-centric approach that aligns with modern digital service development principles. Within the sub-criteria analysis, political-legal factors dominate the change dimension (0.447), innovation/product features lead competitor considerations (0.527), and unit economics prevail in company assessments (0.618). These findings highlight the critical importance of regulatory compliance, differentiation strategy, and financial sustainability in digital financial services development.

Based on the FAHP calculations, the top five priority projects are P7, P1, P10, P5, and P3 respectively. These projects are recommended for development first because they demonstrate higher strategic value and stronger alignment across multiple criteria compared to other projects, providing optimal resource allocation guidance. The research demonstrates that successful digital wallet development requires balancing customer value creation, internal capability optimization, regulatory compliance, and competitive positioning rather than focusing on single-dimension optimization.

The sensitivity analysis results reveal that variations in criteria weights of $\pm 10\%$ do not significantly impact the project priority order, especially for the top-tier projects. This indicates that the prioritization model developed using the 4C diamond model and the FAHP method has sufficient stability and robustness, allowing the prioritization results to remain consistent despite small changes in criteria weights. This strengthens the validity and reliability of the model in strategic decision-making for digital wallet application development projects. The integration of fuzzy logic enhances the framework's capability to handle uncertainty inherent in expert judgments while maintaining mathematical rigor.

Even if a project has a low priority weight, this doesn't mean it should be discontinued. Adjusting the strategy or adopting a more market-relevant approach can increase the project's value. To support more adaptive decision-making, regular evaluations of criteria weights and project effectiveness should be conducted. Furthermore, the FAHP method will be more optimal when supported by a technology-based system to improve the efficiency and accuracy of the prioritization process, enabling dynamic prioritization frameworks that can adapt to changing market conditions and stakeholder requirements.

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