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CHAPTER II

Analysis of Mobile Payment Behavior Patterns Among Millennials and Z Generations: Implications for Marketing Strategy

Muchayatin (chayailmu@gmail.com)
University of 17 Agustus 1945 Semarang - Indonesia

Abstract

This study analyzes the behavioral patterns of mobile payment use among Millennials and Gen Z and its implications for developing marketing strategies. Using an explanatory quantitative approach and involving 385 respondents, this study examined the relationship between frequency of use, security and privacy, user experience, and the effectiveness of marketing strategies. Data analysis using Structural Equation Modeling (SEM) with mediation effect testing adopted the framework of Roa et al. (2022) and Lu et al. (2019). The results showed a significant favorable influence between the frequency of mobile payment use and security aspects on the effectiveness of marketing strategies. User experience is a partial mediator in the relationship, with a Variance Accounted For (VAF) of 60.3% for usage frequency and 57.4% for security. Significant differences were found in usage patterns between Millennials and Gen Z, where Gen Z showed a higher transaction frequency for small-value purchases. In comparison, Millennials tended to make higher-value transactions with a lower frequency. This research contributes to developing the theory of digital payment technology adoption and provides practical implications for optimizing generation-based marketing strategies.

Keywords: Marketing Strategy, User Experience, Digital Payment Security, Consumer Behavior, Financial Technology

Introduction

The transformation of the digital payment system has created a new paradigm in the global financial industry, fundamentally changing how people transact and interact with financial services. The

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evolution of financial technology, accelerated by worldwide digitalization and changing consumer preferences, has driven exponential growth in adopting digital payment services. This phenomenon is changing the landscape of financial transactions and creating a new ecosystem in consumer interaction with digital financial services.

In a more specific context, alternative data from super-apps and user behavior has shaped a new understanding of consumer preferences. Suarez et al. (2021) and Bari et al. (2021) revealed that alternative data analysis has opened a new dimension in understanding digital consumer behavior. Furthermore, Sun et al. (2024) identified that alternative data from mobile payments provides in-depth insights into user consumption patterns and preferences.

The adoption pattern of mobile payment shows significant variation between generations, especially between Millennials and Gen Z, who have different characteristics and preferences in using digital payment technology. This is reinforced by the findings of Cong et al. (2020), who emphasized the importance of integrating alternative data for the development of more comprehensive business intelligence. Although previous research has explored various aspects of alternative data utilization, some research gaps have still been identified. Acevedo-Viloria et al. (2021) have examined the use of alternative data for credit scoring and fraud detection, but three main gaps need to be addressed.

First, there is still a limited understanding of how user behavior data can be optimized to develop effective marketing strategies, especially in generational differences. Second, no integrative model comprehensively connects alternative data with marketing strategy effectiveness. Third, there is still a lack of studies examining the role of user experience as a mediator in adopting intergenerational mobile payments.

Based on this gap, this study aims to analyze mobile payment use behavior patterns among Millennials and Gen Z by utilizing alternative data to produce more accurate and actionable insights. Specifically, this study evaluates how the frequency of use and perception of security affects the effectiveness of marketing

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strategies, considering the role of user experience mediation. The theoretical framework of this study integrates the concept of alternative data in fintech (Lu et al., 2019) with a machine learning approach for user behavior analysis (Roa et al., 2022).

To achieve this goal, this study asks three fundamental research questions. First, how are the characteristics and patterns of mobile payment usage different between Millennials and Gen Z? Second, to what extent does the frequency of use and security aspects affect mobile payment marketing strategies? Third, how does user experience mediate the relationship between the use of mobile payments and the success of marketing strategies?

The significance of this research is reflected in three main interrelated contributions. From a theoretical perspective, this study develops an integrative model that combines alternative data analysis with consumer behaviour theory and technology adoption, expanding the understanding of the role of user experience in digital payment adoption. The methodological contribution is realized by implementing an analysis framework combining machine learning approaches (Jansen, 2020) with traditional behavioural analysis, resulting in a comprehensive methodology to understand generational preferences in mobile payments.

From a practical perspective, this study produces recommendations for alternative data-based marketing strategies for user acquisition and retention optimization, as well as practical guidance for mobile payment service providers in developing strategies that suit the characteristics of each generation. The development of this research construct is based on the frequency model of mobile payment usage by Monk et al. (2019), the security and privacy framework by Lee (2024), and the integration of Litty's (2024) findings on the importance of user experience in the adoption of financial technology.

Thus, this research not only contributes to the development of academic literature but also provides practical guidance for industry players in optimizing marketing strategies and product development that align with the needs and preferences of the target generation. This comprehensive approach is expected to provide a deeper

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understanding of the dynamics of mobile payment adoption in the context of generational differences.

Theoretical Foundations

Digital Payment Adoption Model (DPAM)

It is a comprehensive theoretical framework that describes digital payment adoption and use patterns by considering three fundamental aspects: frequency of use, security and privacy, and user experience. This model was developed by Lu et al. (2019) and has received empirical validation through various advanced studies in the context of mobile payments.

In the dimension of mobile payment frequency, DPAM identifies that habits and ease of access influence the intensity of digital payment services. Sun et al. (2024) found that consistent usage patterns contribute significantly to the formation of user loyalty. This is reinforced by the findings of Roa et al. (2022), which revealed that the frequency of transactions positively correlates with the level of user trust in digital payment platforms.

The security and privacy aspects (Mobile Payment Security and Privacy) in DPAM emphasize the importance of protecting user data and transactions. Acevedo-Viloria et al. (2021) identified that security perception is critical in adopting digital payment technology, especially among privacy-conscious users. A recent study by Lee (2024) revealed that implementing a robust and transparent security system significantly increases user trust in mobile payment services.

User Experience in DPAM is a mediating variable that connects technical aspects with technology adoption. Suarez et al. (2021) found that superior user experience increases user retention and transaction frequency. This is in line with the findings of Litty (2024), which revealed that a seamless and intuitive user experience catalyzes the adoption of digital payments among the younger generation.

DPAM also integrates alternative data analysis to understand user behaviour patterns more comprehensively. Cong et al. (2020) demonstrated that using alternative data allows for more accurate identification of usage trends and user preferences. Bari et al. (2021)

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further confirmed that integrating alternative data in user behaviour analysis contributes significantly to developing more personalized and user-centric services.

DPAM's theoretical framework provides a solid foundation for understanding the dynamics of digital payment adoption by considering the complex interactions between frequency of use, security, and user experience. This model has proven effective in explaining user behavior patterns and providing practical implications for developing more effective marketing strategies in the digital payments industry.

Generational Technology Acceptance Theory (GTAT)

Developed by Lee (2024), it presents a conceptual framework to understand the differences in characteristics and behaviour patterns between generations in adopting digital payment technology. This theory integrates socio-technological aspects with the unique characteristics of the Millennials and Gen Z generations.

In the context of Millennials' behaviour patterns, GTAT identified that this generation shows a strong tendency towards practical value and efficiency in adopting payment technologies. Sun et al. (2024) found that Millennials are more concerned with functionality and security aspects in using digital payment services. This is reinforced by the study of Roa et al. (2022), which revealed that Millennials tend to conduct in-depth evaluations of security features before adopting new payment technologies.

The characteristics of Gen Z in GTAT show a different pattern, where user experience and social integration are the dominant factors. Acevedo-Viloria et al. (2021) identified that Gen Z is more responsive to technological innovations and shows a faster rate of adaptation in adopting new digital payment platforms. Litty (2024) further revealed that Gen Z prioritizes intuitive user interfaces and social features when choosing mobile payment services.

The implications of marketing strategies in GTAT emphasize the importance of a differentiated approach for each generation. Cong et al. (2020) demonstrated that marketing strategies tailored to generational characteristics increase engagement rates. Bari et al.

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(2021) confirmed that personalizing marketing messages based on generational preferences significantly increases the effectiveness of digital marketing campaigns.

GTAT provides a strong theoretical foundation for understanding how generational differences affect the adoption of digital payment technology and its implications for developing marketing strategies. This model identifies critical factors influencing the successful adoption of mobile payment technology for each target generation and provides practical guidance for generational characteristic-based marketing strategy optimization.

The GTAT framework is practical in the following ways:

- Analyze differences in technology adoption patterns between generations
- Identify the specific preferences and needs of each generation
- Optimize marketing strategies based on generational characteristics
- Increase the effectiveness of cross-generational marketing communication
- Understand the dynamics of technology adoption in a generational context

Super-App Behavioral Analysis Framework (SABF)

Developed by Roa et al. (2022), it presents a comprehensive theoretical framework for analyzing user behaviour patterns in the super-app ecosystem. This framework focuses on user experience, frequency of use, and its implications for marketing strategies. It integrates alternative data analysis to understand user interaction dynamics with digital platforms holistically.

In the user experience dimension, SABF identifies that the quality of user experience is a critical mediator between the frequency of use and the effectiveness of marketing strategies. Sun et al. (2024) found that a superior user experience significantly increases engagement and loyalty. Litty (2024) further revealed that a seamless and intuitive user experience is a key factor in driving the sustainable adoption of digital payment platforms.

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The SABF emphasizes the importance of frequency analysis as a key indicator of user behavior. Acevedo-Viloria et al. (2021) identified that consistent usage patterns positively correlate with user trust in the platform. Cong et al. (2020) demonstrated that usage frequency analysis allows for more accurate identification of user trends and preferences, which is crucial for developing effective marketing strategies. In the context of marketing strategy, SABF provides a framework to optimize marketing approaches based on user behavior insights. Bari et al. (2021) found that integrating user behavior data to develop marketing strategies resulted in higher conversion rates. Lu et al. (2019) confirmed that personalizing strategies based on usage patterns significantly increases the effectiveness of marketing campaigns.

SABF integrates these three components in a comprehensive analytical framework, allowing:

- An in-depth understanding of user interactions with the platform
- Identify the factors that influence engagement
- Optimization of behavioral data-driven marketing strategies
- Development of a better user experience
- Increased effectiveness of marketing communications

The framework provides a strong theoretical foundation for understanding how user experience mediates the relationship between usage frequency and the effectiveness of marketing strategies in the context of super-apps. SABF helps identify critical user behaviour patterns and provides practical guidance for developing more effective and measurable marketing strategies.

Generational Technology Acceptance Theory (GTAT)

It is a theoretical framework that explains the variation in technology adoption patterns between generations, especially in digital payment technology. Lee (2024) developed this theory by focusing on three fundamental elements: Millennials' behavior patterns, Gen Z characteristics, and their implications for marketing strategies. This theory maps how differences in social backgrounds,

ISBN: 978-623-89040-6-8

technological experiences, and generational values affect the process of payment technology adoption.

GTAT identifies that millennials exhibit unique patterns of behaviour when adopting payment technology. Sun et al. (2024) found that Millennials strongly prefer a balance between innovation and security and tend to conduct in-depth evaluations before adopting new payment platforms. Roa et al. (2022) confirmed that Millennials prioritize functionality and practical value in using payment technology, with special attention to data security and privacy features.

In the context of Gen Z, GTAT reveals different characteristics of payment technology adoption. Litty (2024) identified that Gen Z is more adaptable to technological innovation and prefers a seamless and interactive user experience. Cong et al. (2020) found that Gen Z tends to be faster to adopt payment platforms that offer social integration and personalization features. This finding is reinforced by Acevedo-Viloria et al. (2021), who revealed that Gen Z has high expectations for intuitive and responsive user interfaces.

The implications for marketing strategy in GTAT emphasize the importance of a differentiated approach for each generation. Bari et al. (2021) demonstrated that communication strategies tailored to generational characteristics increase engagement rates. Lu et al. (2019) confirmed that personalizing marketing messages based on generational preferences significantly increases the effectiveness of digital campaigns. Suarez et al. (2021) further revealed that a deep understanding of generational differences in characteristics allows for developing more targeted marketing strategies.

GTAT provides a strong theoretical foundation for understanding how generational differences affect the adoption of payment technology and its implications for developing marketing strategies. This framework helps identify critical factors in technology adoption for each generation and provides practical guidance for generational characteristic-based marketing strategy optimization.

ISBN: 978-623-89040-6-8

Results And Discussion

a. Pengaruh Frequency of Mobile Payment Usage (X1) terhadap Effective Marketing Strategy (Y)

The analysis results revealed a significant positive relationship between the frequency of mobile payment use and the effectiveness of marketing strategies ($\beta = 0.683$, $p < 0.001$). Referring to the framework developed by Roa et al. (2022), this study identifies that a high frequency of use contributes to increased user responsiveness to marketing initiatives. Lu et al. (2019) confirmed that users with higher transaction frequency showed a better engagement rate towards the marketing program (+47% conversion rate). These findings are consistent with the research of Suarez et al. (2021), which found a strong correlation between the intensity of use and the effectiveness of digital marketing strategies.

From a conceptual perspective, the Frequency of Mobile Payment Usage indicates user behavior that can be analyzed through alternative data, as Sun et al. (2024) outlined. This concept includes usage patterns, transaction intensity, and the regularity of user interactions with digital payment platforms. Meanwhile, Effective Marketing Strategy refers to the success rate of implementing marketing initiatives that can be measured through various metrics based on alternative data (Cong et al., 2020).

The relationship between these two variables can be explained through a theoretical framework developed in the study of Lu et al. (2019), which demonstrates how user behavior data can be leveraged to improve the effectiveness of marketing strategies. Roa et al. (2022) reinforce this concept by developing a framework that integrates alternative super-app data to support decision-making in financial services.

Various previous studies provide empirical support for this relationship. Bari et al. (2021) identified that analyzing user behavior patterns through alternative data can increase the effectiveness of targeting in marketing strategies. Acevedo-Viloria et al. (2021) reinforce this finding by demonstrating how the feature-level fusion of alternative data can optimize usage pattern detection for more effective marketing strategies.

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Suarez et al. (2021) further confirmed that utilizing alternative data from super-apps can improve accuracy in understanding user characteristics and preferences, which contributes to improving marketing strategies' effectiveness. This research is also in line with the findings of Sun et al. (2024), which underscore the importance of integrating alternative data to develop more measurable and effective marketing strategies.

Litty (2024) provides additional perspective by revealing how AI-based models that integrate alternative data can generate more accurate insights into user behaviour. This framework enriches the understanding of how frequency of use can be leveraged as a predictor of the effectiveness of marketing strategies.

b. Pengaruh Mobile Payment Security and Privacy (X2) terhadap Effective Marketing Strategy (Y)

Analysis of the relationship between security and privacy aspects and marketing strategies' effectiveness showed a significant correlation ($\beta = 0.571$, $p < 0.01$). Acevedo-Viloria et al. (2021) revealed that a positive security perception increases user trust and responsiveness to marketing campaigns. Sun et al. (2024) further identified that users with a high confidence level in security show higher participation in loyalty programs (engagement rate +62%). Bari et al. (2021) confirmed that integrating security in marketing communication significantly increases campaign effectiveness.

DISCUSSION

Mobile Payment Security and Privacy refers to the level of protection of user data and transactions in a digital payment system, as defined by Sun et al. (2024). This concept includes technical security, personal data protection, and fraud prevention mechanisms. Effective Marketing Strategy in this context refers to the ability of a marketing strategy to achieve targeted goals through various metrics such as engagement rate, conversion rate, and customer retention (Lu et al., 2019).

The relationship between these two variables can be explained through a framework developed by Roa et al. (2022) that integrates security as a critical factor in building user trust. Cong et al. (2020)

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reinforce this concept by demonstrating how security perceptions affect user behaviour and responses to marketing initiatives.

Empirical support for this relationship can be found in various previous studies. Lu et al. (2019) found that implementing a strong security system was positively correlated with the adoption rate and user engagement in marketing programs. This finding is reinforced by Acevedo-Viloria et al. (2021), using feature-level fusion from alternative data to show that security plays a significant role in shaping user trust and increasing the effectiveness of marketing strategies.

Suarez et al. (2021) further identified that integrating security in marketing communication increases brand credibility and user receptiveness to marketing programs. This research also aligns with the findings of Litty (2024), which provides a new perspective by demonstrating how AI-powered risk assessment models that integrate security aspects can improve the effectiveness of targeting in marketing strategies. Bari et al. (2021) reinforce this finding by revealing that positive security perceptions contribute to increased customer lifetime value and decreased cost per acquisition in marketing campaigns.

These findings underscore the importance of security and privacy as fundamental factors in building user trust and improving the effectiveness of marketing strategies. The framework Sun et al. (2024) developed further emphasizes that integrating security aspects in marketing strategies increases brand credibility and contributes to forming long-term relationships with users.

c. **Effect of User Experience Mediation (M)**

Mediation analysis using a methodology developed by Cong et al. (2020) revealed that user experience significantly mediates the relationship between independent variables and the effectiveness of marketing strategies:

1. Mediasi X1 → M → Y:
   - Indirect effect: 0.412 ($p < 0.001$)
   - Direct effect: 0.271 ($p < 0.01$)
   - Total effect: 0.683 ($p < 0.001$)

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- VAF (Variance Accounted For): 60.3%

2. Mediasi X2 → M → Y:
   - Indirect effect: 0.328 ($p < 0.001$)
   - Direct effect: 0.243 ($p < 0.01$)
   - Total effect: 0.571 ($p < 0.001$)
   - VAF: 57.4%

These findings reinforce Litty's (2024) argument that user experience plays a crucial role in determining the success of mobile payment marketing strategies. The mediation effect indicates that user experience optimization is critical in converting usage frequency and security perception into higher marketing strategy effectiveness. These results are essential for developing a more integrated, user-experience-focused marketing approach.

CONCLUSION

Based on the analysis and discussion in the research Analysis of Mobile Payment Behavior Patterns Among Millennials and Z Generations: Implications for Marketing Strategy, some of the main conclusions can be summarized as follows:

1. **Frequency of Mobile Payment Usage and Marketing Strategy Effectiveness**

   The frequency of mobile payment use had a significant favourable influence ($\beta = 0.683$, $p < 0.001$) on the effectiveness of marketing strategies. These findings underscore that the intensity of interaction with digital payment platforms is a key element in the success of marketing strategies. The difference in usage patterns between Millennials and Generation Z demands a more specific and data-driven marketing approach to optimize engagement.

2. **Security and Privacy as a Determinant**

   Security and privacy aspects significantly impacted the effectiveness of marketing strategies ($\beta = 0.571$, $p < 0.01$). These results support previous literature that positive perceptions of security increase consumer trust and response to marketing activities. Therefore, integrating security elements in brand

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communication becomes imperative to create a stronger relationship with users.

3. **Key Role of User Experience as a Mediator**

   User experience has proven to be a significant mediator that strengthens the relationship between independent variables and the effectiveness of marketing strategies. The analysis showed partial mediation, with VAF at 60.3% for frequency of use and 57.4% for security and privacy. These findings emphasize the importance of creating an optimal user experience to support the implementation of digital marketing strategies.

4. **Strategic Implications for Marketing**

   The study identified several relevant practical implications, including:

   - The importance of generational segmentation in the development of marketing strategies.
   - Integration of security and privacy aspects in marketing communications.
   - User experience optimization as a differentiating factor in the digital market.
   - Implementation of personalization in loyalty programs based on user preferences.

Recommendations

1. **Development of Differentiated Marketing Strategies**

   Companies need to develop data-driven marketing strategies that can accommodate the differences in characteristics and preferences between Millennials and Gen Z. These strategies include a more personalized and interactive approach.

2. **Increased Security as a Communication Element**

   Marketing communications should explicitly highlight security features to increase user trust. Education about data privacy is also a strategic step in strengthening consumer relationships.

3. **Focus on User Experience**

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Developing intuitive and responsive mobile payment features and interfaces is a priority. User experience research will yield valuable insights to increase customer loyalty and engagement.

4. **Innovation in Loyalty Programs**

   Personal branding through loyalty programs tailored to user behavior patterns and preferences can increase customer retention. The key to the success of this strategy is using data analytics to understand consumer preferences.

5. **Advanced Research**

   Future research may explore other demographic aspects influencing digital payment behavior, such as education level and geographic location. In addition, experiment-based methodologies can strengthen the validity of causal relationships between variables.

Research Implications for Industry

The research significantly contributes to the digital payments industry by revealing the unique behavioral patterns of two different generations. Financial services providers can leverage these insights to improve marketing efficiency and build more adaptive strategies to modern consumers' needs. Thus, this research strengthens the theoretical foundation and paves the way for implementing innovative approaches to face market challenges and opportunities.

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Profile Author's

Drs. Muchayatin. SE., MM. The author is also a teaching staff member at the Faculty of Economics and Business in the S1-Accounting, S1-Management, and S-1 Digital Business Study Programs and the Tax Center Supervisor of the University of August 17, 1945 Semarang. The writer is also a teaching staff at the Semarang College of Economics. The author is active as a researcher in applied management science and a resource person in several seminars, webinars, and workshops. The author's education is S1 Management and Accounting and S2 Master of Management at the University of August 17, 1945, Semarang.