A Predictive CRM Analytics Framework For Merchant Retention: Applying RFM Segmentation, Customer Profiling, and Behavioral Analytics In The B2B Payment Gateway Company

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ABSTRACT
The history of payment systems, especially in the digital world, tells an engaging story of technological breakthroughs, economic growth, and shifts in society. The purpose of this study is to find out a Predictive CRM analytics framework for merchant retention: integrating RFM Segmentation, customer profiling, and dynamic insights in the B2B payment gateway company. This research outlines the research methodology, which links the theoretical concepts discussed earlier with the empirical evidence to be analyzed. Result diverse merchant base, spanning enterprises and SMEs across a wide range of industries, presents a unique set of challenges for retention. With over 50,000 merchants active and a complex landscape of transaction patterns and payment preferences, a one-size-fits-all approach is insufficient. A robust, adaptive, and data-driven framework is essential to effectively address these challenges and drive long-term merchant loyalty. The conclusion is This comprehensive analysis of the merchant base through the lens of enriched RFM segmentation, transactional trends, payment preferences, and CLV reveals a dynamic and nuanced landscape.

Keywords: CRM, digital payment, RFM

INTRODUCTION
The history of payment systems, especially in the digital world, tells an engaging story of technological breakthroughs, economic growth, and shifts in society. Originally, trading involved a simple barter system where goods were exchanged directly. However, as societies developed and became more complex, this makes the limitations of this system become increasingly clear. Transitioning to physical currency, from coins to paper money, represented a major advancement that simplified transactions and broadened trade possibilities (Choudhury & Harrigan, 2014). Yet, the true revolution in payment systems started with the rise of the internet. Digital payments, a major innovation, allowed for transactions to span great distances without the need for physical money. At the heart of this digital shift is the 'payment gateway,’ a technology that ensures online transactions are secure by encrypting and transferring payment information between the customer and the merchant. This technology not only makes the payment process more efficient but also crucially helps keep online transactions secure, safeguarding against fraud and unauthorized entries. (Chircu, 2015) (Hisyam & Manuaba, 2022)

This evolution has also been driven by various innovations that had developed previously. For example, Pioneering companies like PayPal has modernized online payments by introducing secure payment gateways that emphasized speed, ease of use, and enhanced security. Similarly, The emergence of mobile payments, offered by services like Apple Pay and Google Wallet, has further changed the payment landscape. Collectively, these advancements, which also supported by the widespread use of
smartphones, are steering us towards a society that increasingly relies on cashless transactions.

![Figure 1: Favorite Payment Method In Indonesia. Source Image By Tim Shopback Dota. The survey was conducted on 2,025 respondents throughout Indonesia on March 8-10, 2021]

In Indonesia, the digital payment evolution mirrors global trends while also showcasing unique regional characteristics. The country’s journey from SMS Banking to sophisticated platforms like M-Banking and Internet Banking illustrates a dynamic financial technology landscape. Particularly noteworthy are the e-Money and e-Wallet services, which have gained immense popularity. These platforms offer the flexibility of digital transactions without direct bank involvement, appealing to a wide range of users (Hallikainen, Savimäki, & Laukkanen, 2020). This shift in Indonesian consumer behavior towards preferring cashless payments mirrors a global trend, a shift that the COVID-19 pandemic has only accelerated, emphasizing the role of digital payments in maintaining economic stability. In Indonesia, as elsewhere, the pandemic has made digital payments not just popular, but essential, playing a crucial role in keeping businesses running and supporting health measures. Research has shown that knowledge, security, convenience, and trust significantly influence the adoption and use of financial technology systems, especially online-based payments, during this period (Iskandar & Alim, 2023; Iskandar & Tanjung, 2023).

DOKU, a leading digital payment provider in Indonesia, exemplifies the impact of these advancements. Starting in 2007, DOKU pioneered a digital transactional system in a conventional era, facing the immense challenge of introducing a new concept in the progressing industry. The company’s vision is to realize changes that will drive rapid growth in payment systems. To achieve this vision requires not only the right processes but also the right partners, making trust the foundation of DOKU’s journey for more than a decade (Harrigan, Ramsey, & Ibbotson, 2011). The company has continually prioritized the security of business partners’ transactions, designing its own risk mitigation system to ensure seamless processing and protection against threats and frauds. DOKU’s product innovation has matured its system and experiences, driving the progress of the ecosystem from B2B payment solutions for Corporates national and international to facilitating payment system and also international fund transfers, significantly contributing to Indonesia’s economic growth.
Global and Local Context

Figure 2: Cashless Transaction Volume Will More Than Double By 2030. Source Image By PwC Strategy & Global Payments Model, 2021

In this digital era, the global business environment, especially in the financial sector, has experienced significant transformation. Accelerated by the COVID-19 pandemic in 2020, this transformation can be proven by the huge surge in the use of digital payments worldwide, particularly electronic payments. While this shift is considered to make the transaction better, it also has made cash transactions increasingly rare. According to PwC, these developments are central to the transformation of the financial sector, fostering inclusion and supporting the growth of digital economies (PwC, 2021).

Figure 3: Digital Payments To Lead 162% Growth In E-Commerce Spend Across Southeast Asia. Source Image By Idc Report, 2021

In Southeast Asia, the digital evolution is especially pronounced, with e-commerce spending expected to rise by 162% to reach $179.8 billion by 2025. Digital payments are projected to account for 91% of these transactions, driven by changing consumer and retail trends, more inclusive payment options, and the rise of mobile wallets, domestic payments, and Buy Now Pay Later (BNPL) services (IDC, 2021).

Compounding this challenge is the rapid evolution of Indonesia's digital landscape. Forecasts indicate a significant increase in internet users, with an expected addition of 10.5 million users (+3.86 percent) between 2024 and 2028 (figure 4). This surge points to a broader acceptance of digital platforms and online transactions, suggesting a diminishing effectiveness of traditional sales methods. In this context, payment gateway
products and services must be strategically positioned to resonate with the digital-first approach increasingly preferred by businesses and consumers. In Indonesia, the payment gateway market is experiencing rapid growth and increasingly fierce competition. The emergence of a number of new players in this sector reflects the growing demand for diverse and reliable digital payment options.

Figure 4: Number of Internet Users in Indonesia from 2013 to 2028. Source: Image by Statista

According to the recent BCG report, the fintech sector in Indonesia is experiencing remarkable growth, due to various kind of factors such as high mobile usage, a burgeoning middle class, and supportive government policies. Consequently, this growth is fueling the expansion of digital financial services, including payment gateways, which have become crucial components of Indonesia's financial landscape. The BCG report emphasizes the rapid adoption of fintech solutions in Indonesia, pointing to substantial opportunities for further innovation and expansion (BCG, 2023).

Figure 5: Indonesia’s Fintech Growth Source Image by Pitchbook, BCG Analysis

In this vibrant environment, the Indonesian payment gateway market is not only growing rapidly but also experiencing intense competition. The entry of several new players reflects the escalating demand for diverse and reliable digital payment methods.
Key players such as Duitku, Prismalink, Nicepay, Finpay, Midtrans, Xendit, Espay, Winpay, and Faspay are at the forefront of this movement. In such a competitive arena, merely offering payment solutions isn't sufficient; it's also crucial to ensure that transactions proceed smoothly, even during disruptions. Therefore, many companies and organizations are adopting multiple gateways, which helps them minimize the risks associated with depending solely on one provider.

DOKU’s strategy for engaging merchants has seen success but now faces significant challenges in increasing activities. This situation reflects a broader industry trend, where digital or traditional engagement strategies must evolve to meet the sophisticated demands of today’s market. A study by MIT Sloan highlights the importance of integrating data, analytics, and algorithms to better reach socially-linked modern consumers, emphasizing the role of social proof in marketing effectiveness (Stackpole, 2022).

The initial personal approach and digital follow-up, while effective in the past, no longer suffice. DOKU must advance its approach to ensure consistent merchant involvement, leveraging insights from the financial technology sector's shift towards data-driven engagement models. Google predicts shifts in the industry towards inclusive marketing campaigns, privacy-centric data strategies, and the importance of relevance and authentic purpose in branding (Karnowski, 2021).

The path to enhancing merchant engagement is fraught with obstacles. The full potential of DOKU’s CRM system remains untapped, with missed opportunities to tailor experiences for merchants and predict their future needs. Many in the sector are struggling to fully integrate Big Data with CRM systems, limiting the ability to effectively analyze and act on customer data. Hootsuite's insights on digital trends emphasize the significance of a messaging-first strategy and integrating social CRM to build better digital campaigns (Hootsuite, 2022).

Table 1: Doku Current Situation Vs Ideal Situation By Author

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Current Situation</th>
<th>Ideal Situation</th>
<th>Measurement Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merchant Activation &amp; Engagement</td>
<td>A significant portion of onboarded merchants remains inactive, with less than 35% actively engaging in transactions.</td>
<td>Nearly all onboarded merchants are actively engaged, with regular transactions indicating successful integration into DOKU’s ecosystem.</td>
<td>Percentage of active merchants post-onboarding, frequency of transactions per merchant, and growth in merchant transactions over time.</td>
</tr>
<tr>
<td>Data-Driven Merchant Management</td>
<td>Merchant management strategies are not fully leveraging data analytics, leading to generic engagement approaches.</td>
<td>Advanced data analytics drive merchant management strategies, enabling personalized engagement and tailored solutions for different merchant segments.</td>
<td>Increase in merchant segmentation accuracy, usage of personalized engagement strategies, and merchant satisfaction scores.</td>
</tr>
<tr>
<td>CRM Utilization</td>
<td>CRM systems are underutilized in</td>
<td>CRM systems are fully leveraged to</td>
<td>Number of personalized</td>
</tr>
</tbody>
</table>
Merchant Retention Strategies

| Merchant Retention Strategies | Retention strategies lack a data-driven approach, resulting in missed opportunities for deepening merchant relationships. | Retention strategies are informed by detailed data analysis, focusing on high-value merchants and personalized retention programs. | Improvement in merchant lifetime value, retention rate increase, and loyalty program enrollment numbers. |

Integration of Big Data & CRM

| Integration of Big Data & CRM | The integration between Big Data and CRM is nascent, limiting the potential for predictive analytics and segmentation. | A seamless integration of Big Data and CRM enables predictive analytics, efficient segmentation, and targeted marketing campaigns, driving higher merchant satisfaction and loyalty. | Degree of data integration achieved, number of data-driven campaigns executed, and increase in campaign conversion rates. |

The gap analysis highlights the need for DOKU to evolve from its current state to a more ideal, data-driven approach in managing and engaging merchants. By leveraging advanced data analytics and fully utilizing CRM systems, DOKU can enhance merchant engagement to increase retention rate.

**Why to Improve the Current System and the Importance of the Issue**

DOKU's operating framework is being rapidly reshaped by the fast-evolving digital payment industry and the growing complexities of merchant needs. Shifting to a data-driven approach for managing merchant relationships is not just a minor change—it's essential for fully harnessing the power of digital innovation. Merging Customer Relationship Management (CRM) with Big Data analytics is key to this shift, offering unmatched opportunities for tailored interactions and forward-looking insights (Company., 2023).

The digital payment scene is constantly changing, with both merchants and consumers demanding more customized and agile services. Traditional B2B sales methods are struggling to keep up with these new requirements. For DOKU, adopting a digital-first strategy supported by advanced data analytics is vital to stay ahead of the competition and ensure ongoing growth (Morgan, 2023).

**RESEARCH METHOD**

This research outlines the research methodology, which links the theoretical concepts discussed earlier with the empirical evidence to be analyzed. It focuses on systematically collecting, analyzing, and interpreting data to evaluate the effectiveness of DOKU's Customer Relationship Management (CRM) strategies. The choice of research
design, data collection methods, and analytical techniques is crucial for gaining meaningful insights into merchant behavior and CRM efficacy within the digital payments domain.

The chosen methodology reflects the need to thoroughly address the research questions introduced earlier. It serves as the study's operational core, bridging the gap between theory and practice. This research is especially important due to the increasing complexity of data-driven CRM strategies, which requires a nuanced approach to understanding merchant retention.

This research establishes the methodological framework that guides all phases of data collection and analysis. It ensures the study meets rigorous academic standards while remaining grounded in practical applications. The insights gained from this methodology will contribute significantly to the field of digital payments and CRM, potentially influencing DOKU's strategy and broader industry practices.

This research continues by explaining the chosen research design and its rationale, including whether the approach is deductive or inductive. This approach must align with the study's objectives. The research's significance lies in its role as a transition from theoretical concepts to practical, data-driven conclusions.

RESULT AND DISCUSSION
Research Data Analysis and Findings
Building on the theoretical framework of Research 1 and the methodological approach of Research 3, Research 4 delves into empirical data analysis to reveal key patterns and insights that are important for merchant retention. Utilizing the RFM (Recency, Frequency, Monetary) model alongside comprehensive profiling, this research aims to segment the merchant base and assess their engagement levels. The findings will directly address the research questions posed in Research 1, providing empirical validation or refutation of the theoretical propositions. By investigating transactional data, distinct merchant segments and their behaviors will be identified, ultimately leading to the development of data-driven strategies that bolster merchant retention and engagement.

Data Overview

Data Set
The data set for this analysis came from the company CRM system, which is essential for various operations, awareness, transactional, acquisition, and retention efforts. While the CRM database contains a wealth of information, this analysis specially sharpened in on active merchant data, identified through active email engagement, as this data is most effectively managed within the CRM platform. This initial analysis of active email data served as the basis for a subsequent comprehensive data extraction from the broader database, facilitating a more in-depth analysis.

Data Attribute Refinement
The final dataset, a culmination of the initial strategic variables and the refined definitions outlined in the "Define Variables" section, provides a comprehensive and nuanced understanding of active merchant base. This meticulously curated dataset encompasses a wide range of attributes, including merchant identification, business characteristics, service utilization patterns, detailed transactional data, and the RFM metrics crucial for segmentation and targeted engagement strategies. This complete view of merchant activities, distilled from a variety of data points collected over time, becomes
the basis for subsequent in-depth analysis and the formulation of actionable insights for analysis.

<table>
<thead>
<tr>
<th>Data Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Records</td>
<td>50,970 merchants</td>
</tr>
<tr>
<td>Sampling of Analysis</td>
<td>6,000 merchants</td>
</tr>
<tr>
<td>Time Period</td>
<td>1 year (January - December 2022)</td>
</tr>
<tr>
<td>Early Identification Data</td>
<td>Email registered and active base on CRM database</td>
</tr>
<tr>
<td>Merchant Information</td>
<td></td>
</tr>
<tr>
<td>Merchant ID</td>
<td>Unique identifier assigned to each merchant.</td>
</tr>
<tr>
<td>Joining date</td>
<td>Month and year</td>
</tr>
<tr>
<td>Merchant Type</td>
<td>Classification of merchant size (Enterprise or SME).</td>
</tr>
<tr>
<td>Merchant Base (Location)</td>
<td>Location of the merchant's business.</td>
</tr>
<tr>
<td>LOB Merchants (Line of Business)</td>
<td>The industry or sector in which the merchant operates (Fashion, Mobility, Retail, F&amp;B, Hospitality, OTA, Digital Business, Insurance, Marketplace, NGO, Government, Fintech).</td>
</tr>
<tr>
<td>Service Usage</td>
<td>Service Payment Gateway</td>
</tr>
<tr>
<td>Email Active Status</td>
<td>Indicates whether the merchant's email is active within the CRM database.</td>
</tr>
<tr>
<td>Transactional Data</td>
<td></td>
</tr>
<tr>
<td>Number of Transactions</td>
<td>Total successful transactions.</td>
</tr>
<tr>
<td>Date of Transactions</td>
<td>The dates on which transactions occurred.</td>
</tr>
<tr>
<td>Average Transaction Value (ATV)</td>
<td>The average amount spent per transaction.</td>
</tr>
<tr>
<td>Payment Success Rate</td>
<td>Percentage of successful transactions.</td>
</tr>
<tr>
<td>Refund Rate</td>
<td>Percentage of transactions resulting in refunds.</td>
</tr>
<tr>
<td>Payment Channels</td>
<td></td>
</tr>
<tr>
<td>Credit Cards</td>
<td>Transactions made using credit cards.</td>
</tr>
<tr>
<td>Bank Transfer</td>
<td>Transactions made via bank transfers.</td>
</tr>
<tr>
<td>Convenience Store</td>
<td>Transactions paid at convenience stores.</td>
</tr>
<tr>
<td>QRIS</td>
<td>Transactions made using QRIS.</td>
</tr>
<tr>
<td>E-Wallet</td>
<td>Transactions made through e-wallets.</td>
</tr>
<tr>
<td>Direct Debit</td>
<td>Transactions paid through direct debit.</td>
</tr>
<tr>
<td>Digital Banking</td>
<td>Transactions made via digital banking platforms.</td>
</tr>
<tr>
<td>PayLater</td>
<td>Transactions using &quot;buy now, pay later&quot; services.</td>
</tr>
<tr>
<td>Internet Banking</td>
<td>Transactions made through online banking.</td>
</tr>
<tr>
<td>RFM</td>
<td>Total Transaction Recency Dates (RT) Date of the merchant’s most recent transaction.</td>
</tr>
<tr>
<td>Total Frequency of Service Usage (F)</td>
<td>How often the merchant used the payment gateway.</td>
</tr>
<tr>
<td>Total Transaction Value (Monetary Value) (M)</td>
<td>Total value of all successful transactions.</td>
</tr>
</tbody>
</table>

**Figure 6 Data Attribute By Author**

**Data Cleaning and Profiling**

The Data Cleaning and Profiling stage was a meticulous process designed to ensure the accuracy and reliability of the dataset. This involved refining the data by identifying and resolving errors, inconsistencies, or missing information that could potentially distort the analysis. In profiling, Merchant IDs were transformed into analysis codes that encapsulated key attributes such as industry, company size, and join date. This facilitated efficient organization and identification within the analytic system, with formulas established to easily filter and analyze data based on these codes.

Data cleaning was focused on retaining only the most relevant and critical information for the deep analysis process. This included key data points like merchant location, number of transactions (broken down by month and payment channel), total transaction value, average transaction value, and the recency of transactions. This streamlined dataset served as the foundation for subsequent in-depth analysis and insights.
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RFM Analysis

RFM Results Analysis

The RFM analysis, calculated using a specialized analytical system and following the scoring guidelines detailed in Research 3, was applied to a meticulously chosen sample of 6,000 merchants. This sample, constituting 10% of the active merchant population within the original database of 50,970 merchants, was strategically selected using a stratified random sampling methodology. This approach ensured the sample mirrored the diverse attributes of the entire merchant base, encompassing factors like size, industry type, and transaction volume. The resulting segmentation was derived by plotting the sum of Frequency and Monetary scores divided by two on the Y-axis, intersected with the Recency score on the X-axis.

Return: Study of Management Economic and Business, Vol 3 (6), June 2024
Figure 7 RFM Analysis Result By Author

Figure 8 Segmentation Result By Author
Segmentation Result Analysis

The RFM analysis of the 6,000 merchant sample, representative of the company's active customer base, reveals a diverse range of engagement and spending behaviors. On average, merchants transact every 61 days (Recency), complete 1,411 transactions (Frequency), and spend Rp 775,695,391 per transaction (Monetary). Total transaction value for the analyzed merchants reached an impressive Rp 4.65 trillion.

While the presence of Potential Loyalists (34.4%) signifies a substantial opportunity for growth, the considerable proportion of At Risk (15.23%) and Hibernating (6.63%) merchants indicates a pressing need to address churn. Conversely, Loyal Customers and Champions, making up approximately 21% of the sample, underscore the importance of maintaining strong relationships with high-value segments. This analysis underscores the need for a multi-pronged approach that balances growth strategies with retention efforts, catering to the distinct needs of each segment to maximize customer lifetime value and overall revenue.

Merchant Segmentation Scatter Plots by Industry

This section examines the correlation between different RFM (Recency, Frequency, Monetary) dimensions to understand the engagement and value of merchants across
various industries. By analyzing these relationships, patterns and insights critical for developing targeted CRM strategies can be identified.

![Figure 11 Frequency vs Monetary Scatter Chart By Author](image)

**Figure 11 Frequency vs Monetary Scatter Chart By Author**

**Scatter Chart 1 : Frequency Score (Y-axis) vs. Monetary Score (X-axis)**

This scatter plot illustrates the distribution of merchants based on their transaction frequency and monetary value, providing insights into their engagement levels and spending patterns.

- **High Frequency, High Monetary**
  Populated by the "Champions" segment (7.23%, 434 merchants), primarily from industries like Fashion, Hospitality, and Fintech. These merchants exhibit both high frequency and high monetary scores (average scores of 4.71 and 4.70 respectively), signifying consistent engagement and substantial transaction values. This segment contributes significantly to overall revenue and demonstrates strong loyalty.

- **High Frequency, Low Monetary**
  Merchants with frequent transactions but lower individual transaction values. The "Promising" segment (8.82%, 529 merchants), primarily from Marketplace and F&B industries, falls into this category. Their average frequency score (1.35) indicates consistent engagement, but their lower monetary score (1.32) suggests potential for growth by increasing transaction values.

- **Low Frequency, High Monetary**
  Merchants with high-value transactions but low frequency. This includes the "Can't Lose Them" segment (1.88%, 113 merchants), with sectors like Government and NGO, suggesting occasional high-value engagements. Their average monetary score of 5.00 underscores their importance despite their lower frequency (1.61).

- **Low Frequency, Low Monetary**
  Merchants with low engagement and transaction values. The "Hibernating" segment (6.63%, 398 merchants), primarily from industries like F&B and NGO, falls into this category. Their low average frequency (1.14) and monetary (1.23) scores indicate a need for targeted re-engagement strategies to increase their activity and value.

**Scatter Chart 2: Recency Score (Y-axis) vs. Monetary Score (X-axis)**

This scatter plot examines the relationship between a merchant’s recency (how recently they transacted) and their monetary value, revealing insights into recent spending patterns and their correlation with overall transaction value.
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Figure 12 Recency vs Monetary Scatter Chart By Author

- **High Recency, High Monetary**
  Dominated by high-value, recently active merchants primarily from industries like Fashion, Hospitality, and OTA. The "Champions" segment (7.23%, 434 merchants), with an average recency score of 5.00 and average monetary score of 4.70, exemplifies this group. This quadrant also includes a significant portion of "Loyal Customers" (13.55%, 813 merchants), indicating sustained engagement and spending.

- **High Recency, Low Monetary**
  Merchants who have transacted recently but with lower transaction values, particularly those from the Retail and Digital Business sectors. The "New Customers" segment (3.92%, 235 merchants) is prominent here, with an average recency score of 5.00 and a low average monetary score of 1.00. This suggests the potential to increase transaction value through targeted promotions and incentives.

- **Low Recency, High Monetary**
  Merchants who have not transacted recently, indicating a risk of churn. This quadrant is populated by merchants from industries like NGO and Government, including the "Can't Lose Them" segment (1.88%, 113 merchants), with an average monetary score of 5.00 but a low recency score of 1.61. Proactive re-engagement efforts are crucial to retain these valuable customers.

- **Low Recency, Low Monetary**
  Merchants with both low recency and low monetary scores, primarily from the F&B and NGO sectors. The "Hibernating" segment (6.63%, 398 merchants), with average scores of 1.25 for recency and 1.23 for monetary, is the primary occupant of this quadrant. This segment requires substantial reactivation efforts to re-engage them with the platform.

**Scatter Chart 3: Recency Score (Y-axis) vs. Frequency Score (X-axis)**

This scatter plot visualizes the relationship between recency and frequency, providing insights into the overall engagement level of merchants across different industries.
High Recency, High Frequency
Characterized by frequent and recent transactions. The "Champions" segment, with average scores of 5.00 for both recency and frequency, dominates this quadrant, with significant representation from industries like Fashion and Fintech.

High Recency, Low Frequency
Merchants who have engaged recently but infrequently. This includes the "New Customers" segment (average scores of 5.00 for recency and 1.00 for frequency), which features merchants from various sectors, particularly NGO and F&B. Strategies to increase their transaction frequency are recommended.

Low Recency, High Frequency
Merchants with high transaction frequency but less recent activity, indicating potential decline in engagement. The "Can't Lose Them" segment (average scores of 1.61 for recency and 5.00 for frequency) falls into this category, with a notable presence from industries like OTA and Insurance. These merchants require attention to prevent further disengagement.

Low Recency, Low Frequency
Merchants, with both low recency and low frequency. The "Hibernating" segment (average scores of 1.25 for recency and 1.14 for frequency) is the primary occupant, with representation from various sectors, emphasizing the need for significant re-engagement efforts across industries.

Merchant Profiling, Characteristic Patterns and Behavior
This subresearch focuses on the engagement patterns observed across different merchant segments. By analyzing these patterns to understand the behavioral tendencies of various segments, providing insights into how to tailor CRM strategies effectively.

Transactional Insights by Type of Industry: Unveiling Payment Preferences, Opportunities, and Customer Lifetime Value
The analysis of transactional data from a sample of 6,000 merchants reveals a diverse landscape of payment channel preferences across industries, highlighting opportunities for targeted marketing and engagement strategies. Furthermore, examining the relationship between payment channels and Customer Lifetime Value (CLV) provides insights into how payment preferences impact long-term customer value.
RFM Segmentation and Payment Channel Preferences: Uncovering Targeted Opportunities for Engagement and Growth

Delving deeper into the RFM segmentation reveals distinct payment channel preferences across customer segments, offering valuable insights for tailoring engagement strategies and optimizing customer lifetime value (CLV). By understanding the unique behaviors and preferences of each segment.

Monthly Transaction Trends: A Deep Dive into Seasonality Segments and Type of Industry

<table>
<thead>
<tr>
<th>Segmentation</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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</thead>
<tbody>
<tr>
<td>Positive Potential</td>
<td>177</td>
<td>161</td>
<td>113</td>
<td>118</td>
<td>97</td>
<td>85</td>
<td>192</td>
<td>204</td>
<td>217</td>
<td>220</td>
<td>220</td>
<td>225</td>
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<tr>
<td>Loyal Customer</td>
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<td>108</td>
<td>81</td>
<td>84</td>
<td>57</td>
<td>51</td>
<td>147</td>
<td>150</td>
<td>154</td>
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<td>112</td>
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<td>100</td>
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<td>Needs Attention</td>
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<tr>
<td>Intermittent</td>
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<td>New Customers</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
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</tbody>
</table>

Figure 14 Monthly Transaction Trend By Author

Analysis of monthly transaction data reveals a nuanced interplay of seasonal fluctuations and segment-specific behaviors within the merchant ecosystem. While April emerges as a peak month for transaction volume across numerous sectors, including F&B, OTA, Hospitality, Fashion, Digital Business, Retail, Mobility, Fintech, and Marketplace, with bank transfers and credit cards dominating as preferred payment methods. This widespread trend suggests a collective surge in consumer spending and engagement during this period, potentially driven by seasonal factors or promotional events. Conversely, October and December consistently demonstrate lower transaction volumes across multiple industries, particularly for transactions made through bank transfers and credit cards, indicating potential off-peak periods.

High-value segments like Champions demonstrate consistent engagement throughout the year, predominantly relying on bank transfers and credit cards, while also showing a high adoption of QRIS. However, the Potential Loyalist segment, the largest by merchant count, experiences significant fluctuations, indicating a need for targeted interventions during off-peak months. The alarming decline in transactions among the At Risk segment underscores the urgency of proactive retention strategies.

Furthermore, industry-specific trends highlight diverse seasonal patterns. The Insurance, Government, and NGO sectors, with a preference for bank transfers and credit cards, experience consistent peaks in both March and April. This suggests a sustained period of increased activity in the first half of the year, potentially influenced by specific industry-related events or cycles.
● Industry Trends: A Tale of Peaks and Valleys
  ○ Peak Season
    April emerges as a peak month across numerous sectors, including F&B (595,464 transactions), OTA (145,813 transactions), Hospitality (104,793 transactions), Fashion (162,100 transactions), Digital Business (71,639 transactions), Retail (176,212 transactions), Mobility (90,786 transactions), Fintech (68,727 transactions), and Marketplace (100,730 transactions). This widespread trend suggests a collective surge in consumer spending and engagement during this period, potentially driven by seasonal factors or promotional events.
  ○ Consistent Peaks
    The Insurance, Government, and NGO sectors deviate from this pattern, exhibiting consistent peaks in both March and April. This indicates a sustained period of increased activity in the first half of the year, possibly influenced by specific industry-related events or cycles.
  ○ Low Season
    October and December consistently demonstrate lower transaction volumes across multiple industries, including F&B (154,072 transactions in September), OTA (26,060 transactions in October), and Retail (23,724 transactions in October). This suggests a natural decline in consumer activity during these months, potentially requiring targeted marketing efforts to stimulate engagement.

● Segment-Specific Trends: A Deeper Look at Customer Behavior
  ○ Champions
    This high-value segment maintains consistent transaction volumes throughout the year, with a slight dip in February (55,391 transactions) and October (78,597 transactions). This indicates strong loyalty and a consistent need for DOKU's services.
  ○ Potential Loyalists
    This largest segment shows greater fluctuations, peaking in April (473,911 transactions) and experiencing a significant decline in September (136,114 transactions). This suggests a need for targeted engagement strategies to maintain their interest during off-peak months.
  ○ At Risk
    A worrying downward trend is observed, with the lowest point in November (2,398 transactions). This highlights the urgency of proactive retention strategies to prevent churn.
  ○ Other Segments
    The remaining segments also exhibit unique monthly patterns, with "About to Sleep" showing a decline in recent months and "New Customers" steadily increasing their transactions.
Merchant Base by Location

<table>
<thead>
<tr>
<th>Locations</th>
<th>Number of Transactions</th>
<th>Monetary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yogyakarta</td>
<td>202,519</td>
<td>Rp 78,095,891,600</td>
</tr>
<tr>
<td>Surabaya</td>
<td>1,732,221</td>
<td>Rp 947,634,882,432</td>
</tr>
<tr>
<td>Semarang</td>
<td>509,104</td>
<td>Rp 283,692,645,664</td>
</tr>
<tr>
<td>Medan</td>
<td>463,721</td>
<td>Rp 310,612,687,294</td>
</tr>
<tr>
<td>Manado</td>
<td>55,367</td>
<td>Rp 99,598,141,842</td>
</tr>
<tr>
<td>Makassar</td>
<td>99,884</td>
<td>Rp 59,516,542,770</td>
</tr>
<tr>
<td>Lombok</td>
<td>46,582</td>
<td>Rp 84,438,065,566</td>
</tr>
<tr>
<td>Jogja</td>
<td>761,567</td>
<td>Rp 225,048,827,926</td>
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<tr>
<td>Jakarta</td>
<td>1,667,855</td>
<td>Rp 858,663,693,751</td>
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<td>Bogor</td>
<td>70,267</td>
<td>Rp 101,752,165,348</td>
</tr>
<tr>
<td>Bandung</td>
<td>1,896,264</td>
<td>Rp 997,156,128,246</td>
</tr>
<tr>
<td>Bali</td>
<td>962,672</td>
<td>Rp 607,962,674,429</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,468,023</strong></td>
<td><strong>Rp 4,654,172,346,868</strong></td>
</tr>
</tbody>
</table>

**Figure 15: Locations Monetary By Author**

The analysis of transaction data by location reveals a concentrated yet diverse merchant base, with significant opportunities for expansion and growth in untapped regions.

- **Dominant base**
  - **Surabaya**
    This bustling city stands out as the dominant, accounting for 1,732,221 transactions and a substantial Rp 947,634,882,432 in monetary value. This signifies a thriving merchant ecosystem with a strong demand for digital payment services.
  - **Bandung**
    Following closely behind is Bandung, with 1,896,264 transactions and Rp 997,156,128,246 in monetary value, indicating a similarly robust market with high potential for further growth.
  - **Jakarta**
    The capital city, Jakarta, also plays a significant role, contributing 1,667,855 transactions and Rp 858,663,693,751 in monetary value. This reflects a mature market with established merchant networks, but also potential for deeper penetration and increased engagement.

- **Emerging Markets and Untapped Potential**
  - **Yogyakarta, Semarang, Medan, Jogja**
    These cities, with transaction volumes ranging from 202,519 to 761,567, represent emerging markets with significant untapped potential. Their considerable monetary value suggests a presence of both SME and enterprise merchants engaging in online/digital business activities. Targeted marketing and localized strategies could further drive growth and adoption in these regions.
  - **Bali**
    With 962,672 transactions and a monetary value of Rp 607,962,674,429, Bali presents a unique opportunity for enhancement. As a major tourist destination...
with a thriving e-commerce scene, this region could benefit from tailored payment solutions and marketing campaigns that cater to the specific needs of both local and international merchants.

- **Other Regions**
  Smaller cities like Manado, Makassar, Lombok, and Bogor, despite lower transaction volumes, still hold considerable monetary value, suggesting a presence of high-value merchants and potential for expansion. Investing in infrastructure and localized marketing efforts in these areas could unlock untapped revenue streams.

**Business Solution: A Data-Driven Framework for Merchant Retention**

Result diverse merchant base, spanning enterprises and SMEs across a wide range of industries, presents a unique set of challenges for retention. With over 50,000 merchants active and a complex landscape of transaction patterns and payment preferences, a one-size-fits-all approach is insufficient. A robust, adaptive, and data-driven framework is essential to effectively address these challenges and drive long-term merchant loyalty.

A refined RFM analysis, enriched with merchant profiling and additional relevant variables, provides the foundation for this solution. By incorporating factors such as industry type (e.g., F&B, OTA, Retail), company size (Enterprise vs. SME), and geographic location (Surabaya, Jakarta, Bandung, etc.), Company can move beyond basic segmentation to create a more nuanced understanding of its merchant base. This granular view enables the identification of distinct clusters of merchants with unique behaviors and preferences.

Integrating this enriched analysis into the company's system empowers actionable insights. For instance, the analysis of 6,000 active merchants revealed significant variations in CLV (Customer Lifetime Value), ranging from Rp 10.5 million (New Customers) to Rp 265.7 million (Can't Lose Them). This knowledge allows DOKU to prioritize high-value segments, such as the Champions (7.23%) and Loyal Customers (13.55%), who contribute significantly to revenue. Additionally, it highlights the need for targeted engagement strategies for lower-CLV segments like the Promising (8.82%) and Needs Attention (4.43%) groups, focusing on increasing transaction frequency and value.

The Customer Segmentation Dashboard (CSD), a dynamic and interactive visualization tool integrated within the database analytic, further enhances this data-driven approach. By providing real-time insights into merchant behavior, trends, and the impact of ongoing strategies, the CSD empowers marketing, PR, brand sales, and product teams to make informed decisions, particularly marketing. Its flexibility to adjust variables based on evolving business goals and target segments ensures the solution remains relevant and adaptable to changing market dynamics and from the result the company can be more sharpened into taking action either from personal approach, digital approach with giving rich insight to customer relationship management with tools or not.

For example, if the company launches a new payment method, the CSD can quickly assess its adoption rate across different segments and industries, allowing for swift adjustments to marketing strategies to maximize uptake. Similarly, the CSD can track the impact of promotional campaigns on specific segments, helping to identify successful tactics and areas for improvement.
CONCLUSION

This comprehensive analysis of the merchant base through the lens of enriched RFM segmentation, transactional trends, payment preferences, and CLV reveals a dynamic and nuanced landscape. The findings underscore the importance of adopting a data-driven approach to customer engagement and retention. By understanding the distinct behaviors, needs, and preferences of various merchant segments, we can tailor our marketing, product development, and support strategies to maximize customer lifetime value and drive sustainable growth. The Customer Segmentation Dashboard emerges as a powerful tool for translating these insights into actionable initiatives, enabling DOKU to navigate the evolving digital payment landscape with agility and precision.
REFERENCES