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Customer Relationship Management Information System Analysis Using RFM Dashboard For Customer Segmentation Strategy (Study On A Ritel Fashion Company in Bandung)

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Abstract

The progression of information technology compels organizations to adeptly leverage customer data, particularly in mitigating the elevated rate of client attrition resulting from insufficient comprehension of consumer behavior and limited personalization in marketing approaches. This study aims to develop and implement a Customer Relationship Management (CRM) system, coupled with an RFM (Recency, Frequency, Monetary) dashboard, for the fashion enterprise Whoop Culture. This system employs the equal-width intervals binning approach to categorize clients based on purchase frequency, transaction value, and the recency of their latest transaction, thereby facilitating the company's understanding of the needs and preferences of each customer category. This online solution is designed to analyze client data and execute segmentation, facilitating more targeted marketing techniques. This research aims to enhance the company's performance by gaining a deeper understanding of consumer behavior, enabling Whoop Culture to improve customer retention, sales, and resource allocation..

Keywords : *Information System, Binning, Customer Relationship Management (CRM), RFM Dashboard, Customer Segmentation*

INTRODUCTION

The swift progression of information technology has become essential in daily life across personal, social, and professional domains. This has also affected multiple industries, including the fashion retail sector, where information technology is anticipated to facilitate decision-making.

In the fashion retail sector, numerous organizations utilize customer data to comprehend consumer preferences and behaviors, as exemplified by Zara. This is also essential for the fashion retailer in Bandung as it experiences an increase in transactions concurrent with consumer growth. Consequently, a data-driven marketing strategy is necessary. The rise in churn rate, or customer attrition, is a primary challenge faced by fashion retail enterprises, which can be detrimental to sales and reputation. (Ehsani & Hosseini, 2025)

Information System

An information system is defined as "a series of formal procedures through which data is organized, processed into information, and disseminated to users" (Ling et al., 2024). Information systems include all operational and management components within an organization, ranging from transaction data processing to report generation for external entities (Abdinegara Kabut & Windasari, 2024).

Customer Relationship Management (CRM)

Customer Relationship Management (CRM) is a strategy that employs information technology within a customer-centric company philosophy to enhance the effectiveness of sales, marketing, and service processes (Jamshidi et al., 2024). Customer Relationship Management (CRM) is a

business approach focused on understanding, predicting, and addressing the needs of current and prospective customers of an organization (Chattopadhyay et al., 2023).

Recency, Frequency, Monetary (RFM)

The RFM model is a widely utilized and efficient approach for segmentation grounded in transaction history data (Chen et al., 2022; Hilmy et al., 2023). The RFM model is an analytical framework that categorizes clients based on three primary variables: the timing of the most recent transaction (Recency), the frequency of transactions (Frequency), and the monetary value of transactions (Monetary). This approach allows organizations to categorize clients into various segments (Alzami et al., 2023).

Customer Segmentation

Client segmentation is categorizing the client base into homogeneous groups to generate tailored marketing strategies based on their attributes (Supangat & Mulyani, 2023). Segmentation is the process of partitioning the market into more homogeneous consumer groups, each of which can be designated as a target market by the organization employing its methods (Wang & Lien, 2019).

To mitigate the elevated churn rate, the deployment of a Client Relationship Management (CRM) information system can help the organization manage client data, understand their requirements, and formulate effective marketing strategies. The CRM system features an RFM (Recency, Frequency, Monetary) dashboard, which categorizes consumers based on their last transaction date, transaction frequency, and expenditure levels. This RFM dashboard enables the company to develop more targeted marketing and focus on consumers with the highest income potential. Utilizing the RFM dashboard, Whoop Culture can achieve more precise client segmentation, reduce churn rates, and enhance sales and profitability. This enables Whoop Culture to sustain its competitiveness in the highly competitive fashion retail sector.

METHOD

This study employs a descriptive methodology combined with a quantitative approach to evaluate and develop a Customer Relationship Management (CRM) system linked to an RFM dashboard for the fashion enterprise Whoop Culture in Bandung. To fulfill the research objectives, data collecting entails comprehensive interviews with managers and personnel engaged in marketing and customer management. The purpose of these interviews is to investigate the issues encountered by the organization and the specific requirements for managing customer data. Furthermore, questionnaires will be administered to clients to collect data on their preferences and purchase behaviors, yielding comprehensive insights into customer expectations and requirements.

A study of historical transaction data will be performed to supplement the data gathering. This data will encompass details regarding purchase frequency, transaction value, and the timing of the most recent transaction. By analyzing client behavior patterns using transaction data, the organization can discern pertinent trends and patterns. This approach

establishes a robust basis for subsequent analysis and the formulation of more targeted and pertinent marketing strategies.

The data analysis will employ the Binning Equal-Width Intervals approach to categorize clients according to three principal variables: Recency (the time since the last transaction), Frequency (the rate of purchases), and Monetary (the total amount of transactions). This method enables the organization to categorize clients into more uniform segments, allowing for the customization of marketing campaigns to meet the specific needs of each segment. The developed web-based CRM system will interface with the RFM dashboard, enhancing the visualization of segmentation outcomes and enabling personnel to access information more quickly and efficiently.

Upon completion of the system development, a testing phase will be implemented to verify the system's functionality and dependability within the operational environment. This assessment involves examining the user interface, the accessibility of data, and the system's ability to generate the required reports. This step is crucial to ensure that the system operates efficiently and aligns with the company's strategic objectives.

The performance evaluation of the system will assess its efficacy in improving comprehension of consumer behavior and its influence on customer retention, sales, and resource allocation. This research aims to enhance Whoop Culture's performance by optimizing the use of consumer data, enabling the company to compete more successfully in the highly competitive fashion sector.

RESULTS AND DISCUSSION

System Analysis and Design

Business Process Analysis

The following is a business process that is currently running.

Figure 1. Business Process Analysis

System Requirements Analysis

The interview results, and study indicates that Whoop Culture, especially within the discussed division, necessitates streamlined access to customer data and straightforward analysis of customer segmentation. The functional requirements for developing this information system encompass a system for processing customer transaction data, a system for analyzing customer data, and a system for determining customer segmentation.

Besides functional requirements, the non-functional requirements for the information system encompass critical elements such as security and user interface design. To ensure security, users are required to register their usernames and passwords in the system, hence permitting access exclusively to registered individuals. Regarding the user interface, the design must be intuitive, enabling users to comprehend the system's functionality easily. Observations and interviews performed at the company will inform this design process. Additionally, training sessions will be offered to users to optimize the use of the system's features, ensuring they can fully harness its powers.

New System Proposal

Proposed Business Process

From the results of the system requirements analysis, the following business processes can be obtained:

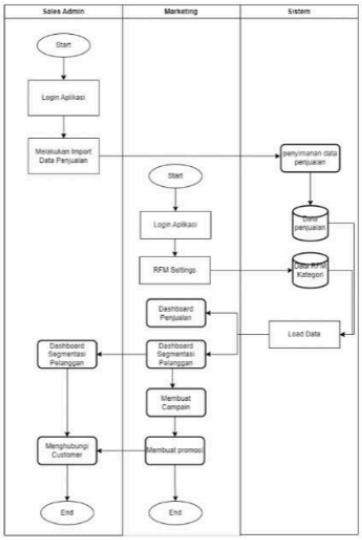

Figure 2. Proposed Business Process

Figure 3. Use Case Diagram

Identifikasi	
Nomor *Use Case*	UC-02
Tujuan	Melakukan *reset password*
Deskripsi	Halaman ini memungkinkan user untuk melakukan *reset password*.
Aktor	Administrator, *marketing*, *sales admin*
Kondisi Awal	Aktor telah login, dan menampilkan halaman utama aplikasi
Skenario Utama	
Aksi Aktor	**Reaksi Sistem**
1. Aktor menekan simbol ajon, menu dropdown akan muncul lalu menekan tombol "*Reset*"	
	2. Sistem mencari data user, sistem menampilkan halaman *reset account* dengan menampilkan data *username* kedalaman *field username*.
3. Aktor mengisi *field password*	

Figure 4. Use Case Narrative

System Design

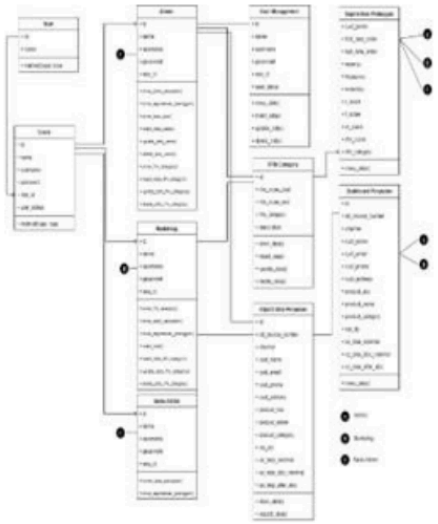

Figure 5. Class diagram

System Implementation

The system implementation phase involves detailing an application system to ensure its readiness for operation.

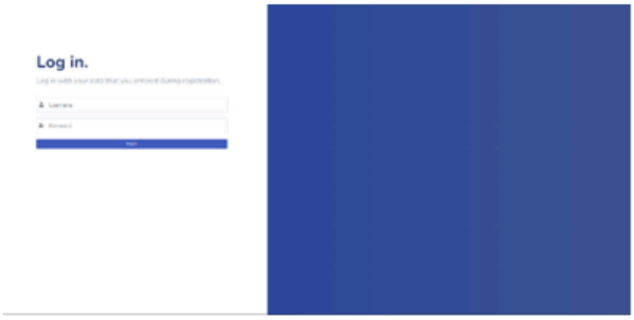

Figure 6. Login Page View

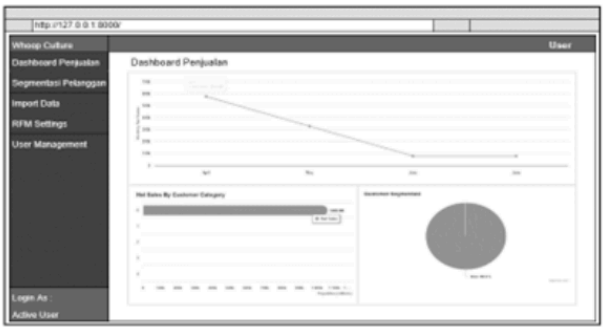

Figure 7. Dashboard Page View

Figure 8. Import Data Page View

CONCLUSION

This research concludes that the evolution of information technology has revolutionized business processes, particularly in the fashion retail industry, where firms such as On A Retail Fashion Company in Bandung face challenges in client retention due to intense competition. The elevated churn rate poses a substantial challenge that negatively impacts the company's revenue and reputation. The development of a Customer Relationship Management (CRM) system is a vital answer to this issue. The CRM system, particularly one that utilizes the RFM (Recency, Frequency, Monetary) dashboard, can help the organization manage client data, execute precise segmentation, and develop relevant and practical marketing plans. The use of CRM at On A Retail Fashion Company in Bandung is expected to enhance business performance, reduce the churn rate, and facilitate expansion through more efficient resource allocation.

Moreover, many recommendations may guide subsequent studies. Ongoing system

development must incorporate routine maintenance to evaluate performance and identify potential issues while also modifying the algorithms to accommodate future conditions. Enhancing data security is essential to protect client information from unauthorized access. Ultimately, the precision of the generated data is significantly contingent upon the information provided by the relevant team, highlighting the necessity of meticulous data management techniques.

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