

CRM STRATEGY FOR E-COMMERCE BASED ON CUSTOMER PAYMENT TYPE

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ABSTRACT

An e-Commerce that uses CRM is a strategy to increase customer loyalty. Although it is a widely used strategy, a CRM strategy that utilizes customer payment types has not been implemented in serving e-Commerce needs. This study aims to propose a strategy to support CRM e-commerce. The CRM strategy consists of three main stages, namely: the first stage as the Payment Data Strategy, the second stage as the RFM Strategy, and the third stage as the CRM Strategy. The payment method of customer data on e-Commerce www.alfacart.com has been analyzed to implement the strategy. This research has strong implications because it produces 27 the type of payment as a basis for Customer Payment Segmentation, and Customer Loyalty in providing support to CRM strategies in e-Commerce for customer loyalty needs.

Keywords: *E-Commerce, CRM Strategy, Payment Type, CRM, Framework, Loyalty Customer.*

1. INTRODUCTION

There are many conveniences that are obtained from e-Commerce as a digital business medium. E-Commerce besides being used for purchases, it has also been used as a medium for payment transactions. Payment methods in e-Commerce can be made in various ways, when buying the same product for convenience aspects [1] [2]. This electronic payment method in e-Commerce is known as payment technology (Fintech).

One of the Fintech methods used by e-Commerce in Indonesia is e-wallets, such as GoPay, Doku, ReKpon, and so on. The various types of e-wallets available have increased customer purchase transactions. The widespread use of e-wallets for payment transactions in e-Commerce is an interesting phenomenon and should be considered to support the Customer Relationship Management (CRM) strategy. This strategy should try to make consumers loyal to e-commerce.

Providing customer loyalty tailored to the right data needs should be considered for an e-commerce CRM strategy. To increase customer loyalty, CRM strategies have helped e-Commerce collect payment data to acquire potential customers [3]. Using this

data, it is possible to get various types of customer payments to support a CRM strategy in e-commerce.

Thus, this study aims to propose an e-commerce CRM strategy framework. Then the framework will be implemented based on customer payment data on e-Commerce www.alfacart.com.

2. LITERATURE STUDY

Currently, e-Commerce is an important medium used in digital buying and selling transactions. Therefore, the payment method used should also simplify the transaction process. Purchase transactions on e-Commerce will involve the use of e-Payment by customers [4] [5].

E-Payment services, such as e-wallets, have an attraction for customers that allows them to easily pay for a product [6]. The e-wallet is a payment method made via a mobile device [7]. This method in Indonesia does not only come from banks, it also comes from telecommunications companies such as T-Cash, transportation companies such as Go-Pay, and some from digital start-up companies such as OVO, Dana, and others [8].

Payment transaction data on e-Commerce via e-wallet should need to be analyzed to support Customer Relationship Management (CRM). In e-Commerce, CRM is a business strategy to create and deliver value to target customers [9]. The main objective of this strategy is to optimize current and future customer value for the benefit of e-Commerce [10]. A CRM strategy in e-Commerce should use payment data to create and manage customer relationships more effectively.

An effective relationship between e-Commerce and customers in digital business is expected to lead to customer loyalty. This can be realized through a CRM strategy that suits customer needs, such as knowing about their requests according to the type of payment offered [11].

There are several studies that have been done previously related to CRM strategies in E-Commerce. Research that developed the Electronic Customer Relationship system to prepare reports and company relationships with customers so that it makes it easier to manage the recording of shipping transactions, receiving goods to help customers get information about the status of shipping goods online [12]. Then the research applies Customer Relationship Management to Tokopedia to determine the level of customer satisfaction and loyalty in making purchases [13].

Meanwhile, the Recency, Frequency and Monetary (RFM) approach can be based on customer transaction data in an e-Commerce. The main objective of the RFM approach is to analyze customer behavior so that it can be used as a CRM strategy [14]. The RFM approach in e-Commerce, is also often used for market segmentation, related to information about the most recent purchase time (recency), the number of times a customer made a purchase (frequency), and the average money spent (monetary) in shopping [15]. Research related to RFM is the segmentation of savings customers using the RFM approach for CRM strategies [16]. In addition, research on e-Commerce in South Korea that analyzes cosmetic purchasing data uses the RFM approach to build a CRM strategy, so that it can be used to appropriately recommend product items to customers [17].

In contrast to existing CRM studies, this study has strong implications and renewability because it proposes an e-Commerce CRM strategy. This strategy generates 27 types of payments as the basis for Customer Payment Segmentation, and Customer Loyalty in supporting the CRM strategy in e-Commerce for customer loyalty needs. This

approach is not shared by existing CRM strategies, specifically for e-Commerce applications.

3. METHODOLOGY

This section describes a methodology that focuses on proposing an e-Commerce CRM strategy, and data analysis. The proposed framework can help analyze payment transaction data in an e-commerce that can support a CRM strategy.

For the purpose of this study, a CRM strategy for e-Commerce is proposed. There are three main stages used by this strategy. These are (1) Payment Data Strategy, (2) RFM Strategy, and (3) CRM Strategy. Figure 1 shows the e-Commerce CRM strategy.

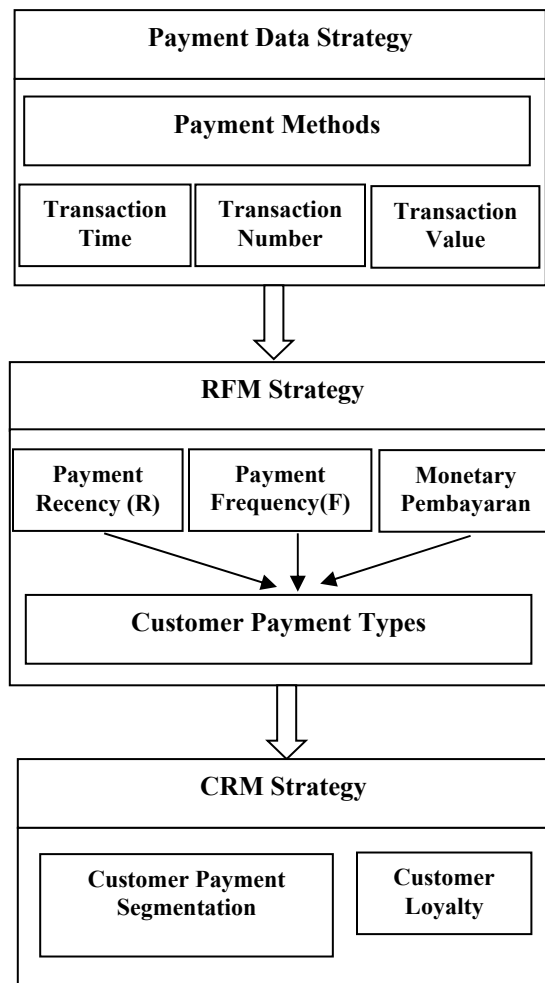


Figure 1: The e-Commerce CRM strategy

The first stage, the payment data strategy which includes: payment methods, transaction times for each customer within a certain timeframe, number of transactions, and transaction value. It is essential to support the RFM Strategy at a later stage.

The second stage, the RFM strategy consists of Payment Recency (R), Payment Frequency (F), Payment Monetary (M), and Customer Payment Types.

- Payment Recency (R) is the transaction time of each consumer within a certain time frame, namely the difference between the evaluation date (ED) and the last payment transaction date (LD): $R = ED - LD$. Categorization of high (3), medium (2), or low (1) a customer payment recency uses the rules set by company management.
- Payment Frequency (F) is the number of transactions from customer payment data. Category F is divided into three categories, namely high (3) medium (2) and low (1). The determination of the categorization is based on the rules established by the company management.
- Payment Monetary (M) is total transactions from payment data. The Monetary category is also divided into three, namely: high (3), medium (2), or low (1). The determination of the categorization is based on the monetary rules established by the company management.

The combination of the RFM will result in 27 types of customer payments (see Table 1). An example is the payment type 1 (PT₁) which has low Recency (R), low frequency (R) and low monetary (M). Meanwhile, the payment type 27 (PT₂₇) has high Recency (R), high frequency (R), and high monetary (M).

Table 1: 27 Payment Type

Payment Type	R	F	M
PT ₁	1	1	1
PT ₂	1	1	2
PT ₃	1	1	3
PT ₄	1	2	1
PT ₅	1	2	2

PT ₆	1	2	3
PT ₇	1	3	1
PT ₈	1	3	2
PT ₉	1	3	3
PT ₁₀	2	1	1
PT ₁₁	2	1	2
PT ₁₂	2	1	3
PT ₁₃	2	2	1
PT ₁₄	2	2	2
PT ₁₅	2	2	3
PT ₁₆	2	3	1
PT ₁₇	2	3	2
PT ₁₈	2	3	3
PT ₁₉	3	1	1
PT ₂₀	3	1	2
PT ₂₁	3	1	3
PT ₂₂	3	2	1
PT ₂₃	3	2	2
PT ₂₄	3	2	3
PT ₂₅	3	3	1
PT ₂₆	3	3	2
PT ₂₇	3	3	3

The third stage, the CRM strategy is to use customer payment types to determine customer payment segmentation and customer loyalty. Table 2 shows the payment segmentation and customer loyalty based on the type of payment.

Table 2: segmentation and customer loyalty

Payment Type	Customer Payment Segmentation	Customer Loyalty
CT ₁ - CT ₉	Kriteria_1 (CPS ₁)	Customer Loyaty_1 (CL ₁)
CT ₁₀ - CT ₁₈	Kriteria_2 (CPS ₂)	Customer Loyaty_2 (CL ₂)
CT ₁₉ - CT ₂₇	Kriteria_n (CPS _n)	Customer Loyaty_n (CL ₃)

4. RESULT AND IMPLEMENTATION

4.1 Payment Data

CRM strategy implementation using payment data on e-Commerce www.alfacart.com. E-Commerce has Alfamart mini markets throughout Indonesia that serve people from big cities to remote areas to shop online. Figure 2 shows that Alfamart e-Commerce provides various types of daily necessities such as food, beverages, fashion, cosmetics, household appliances, and so on. It offers a practical and easy way of shopping with the motto "Online Shopping So Close".



Figure 2: E-Commerce www.alfacart.com

Payment data collected in this study is sourced from a payment log data on e-commerce www.alfacart.com. The log data period used is payment transactions from January 2019 to July 2019. Payment methods use Doku Wallet (P1), BRI Epay (P2), Go-Pay (P3), Akulaku (P4), LinkAja (P5), Midtrans (P6), Rekening Ponsel (P7), VA BCA (P8), and Visa Master (P9). Table 3 shows the data based on the type of payment which consists of the last transaction time, the number of transactions, and the transaction value.

Table 3: Payment Log Data

Payment Methods	Transaction Time	Transaction Number	Transaction Value
Doku Wallet (P1)	7/31/2019 22:45	632	70235275
BRI Epay (P2)	7/31/2019 22:06	622	113976070
Go-Pay (P3)	7/31/2019 11:46	54177	4259 927 947
Akulaku (P4)	7/31/2019 22:48	2447	381419429
LinkAja (P5)	7/31/2019 17:46	11102	712504100
Midtrans (P6)	7/31/2019 23:47	2078	511389720
Rekening Ponsel (P7)	7/31/2019 20:51	17706	2211610675
VA BCA (P8)	7/31/2019 23:54	35138	6288931147
Visa Master (P9)	7/31/2019 22:36	3378	1331868869
Total		127280	11621935285

Based on the payment method, from 1 January 2019 to 31 July 2019, there were 127280 transactions, and the total transaction value was 11621935285. The most widely used payment method is Go-Pay (54177), and at least BRI Epay (622). Meanwhile, the highest transaction value is the VA BCA payment method (6288931147), and the least amount is Doku Wallet 70235275.

4.2 Strategi RFM Layer

The RFM strategy is based on the e-commerce management policy of www.alfacart.com. Table 4 shows the policies for determining the RFM criteria.

Table 4. RFM Criteria

RFM			Category (value)
R	F	M	
>75	<= 2	<= 74900	Low (1)
5 – 75	3 – 6	74901 – 299999	Moderate (2)
<= 4	>6	>= 300000	Hight (3)

Each RFM Criteria can be used to determine the value or category of low, medium, or high Recency (R), Frequency (F), and Monetary for each type of payment. Table 4 shows the results of the RFM category or value for each type of payment. For example, the Go-Pay (P3) payment type has three RFM categories or values: low (1), medium (2), and high (3) respectively R = 50348, 3743, 86; F = 29863, 23556, 758; and M = 29863, 23556, 758.

Table 5. RFM category or value for the payment method

Payment Method	Value	R	F	M
P ₁	1	526	0	0
	2	104	632	632
	3	3	0	0
	Total	632		
P ₂	1	313	54	54
	2	231	519	519
	3	78	49	49
	Total	622		
P ₃	1	50348	29863	29863
	2	3743	23556	23556
	3	86	758	758
	Total	54177		
P ₄	1	1503	857	857
	2	865	1331	1331
	3	79	259	259
	Total	2447		
P ₅	1	981	8013	8013
	2	10096	3057	3057
	3	25	32	32
	Total	11102		
P ₆	1	1387	128	128
	2	657	1571	1571
	3	43	379	379

	Total	2078		
P ₇	1	12750	1606	1606
	2	4655	16067	16067
	3	301	33	33
	Total	17706		
P ₈	1	418	6703	6703
	2	7630	25923	25923
	3	418	2512	2512
	Total	35138		
P ₉	1	2253	139	139
	2	1066	2042	2042
	3	59	1197	1197
	Total	3378		
Total	127280			

There are 27 types of payments (TP₁, TP₂, TP₃, ... TP₂₇) based on the combination of the RFM. Table 6 shows the 27 payment types for each payment method.

Table 6. Payment Types

Payment Type	R	F	M	Total
PT ₁	70479 (1)	65034 (1)	47363 (1)	182876 (3)
PT ₂	70479 (1)	65034 (1)	74698 (2)	210211 (4)
PT ₃	70479 (1)	65034 (1)	5219 (3)	140732 (5)
PT ₄	70479 (1)	38281 (2)	47363 (1)	156123 (4)
PT ₅	70479 (1)	38281 (2)	74698 (2)	183458 (5)
PT ₆	70479 (1)	38281 (2)	5219 (3)	113979 (6)
PT ₇	70479 (1)	23965 (3)	47363 (1)	141807 (5)
PT ₈	70479 (1)	23965 (3)	74698 (2)	169142 (6)
PT ₉	70479 (1)	23965 (3)	5219 (3)	99663 (3)
PT ₁₀	29047 (2)	65034 (1)	47363 (1)	141444 (4)
PT ₁₁	29047 (2)	65034 (1)	74698 (2)	168779 (5)
PT ₁₂	29047 (2)	65034 (1)	5219 (3)	99300 (6)
PT ₁₃	29047 (2)	38281 (2)	47363 (1)	114691 (5)
PT ₁₄	29047 (2)	38281 (2)	74698 (2)	142026 (6)

PT ₁₅	29047 (2)	38281 (2)	5219 (3)	72547 (7)
PT ₁₆	29047 (2)	23965 (3)	47363 (1)	100375 (6)
PT ₁₇	29047 (2)	23965 (3)	74698 (2)	127710 (7)
PT ₁₈	29047 (2)	23965 (3)	5219 (3)	58231 (8)
PT ₁₉	1092 (3)	65034 (1)	47363 (1)	113489 (5)
PT ₂₀	1092 (3)	65034 (1)	74698 (2)	140824 (6)
PT ₂₁	1092 (3)	65034 (1)	5219 (3)	71345 (7)
PT ₂₂	1092 (3)	38281 (2)	47363 (1)	86736 (6)
PT ₂₃	1092 (3)	38281 (2)	74698 (2)	114071 (7)
PT ₂₄	1092 (3)	38281 (2)	5219 (3)	44592 (8)
PT ₂₅	1092 (3)	23965 (3)	47363 (1)	72420 (7)
PT ₂₆	1092 (3)	23965 (3)	74698 (2)	99755 (8)
PT ₂₇	1092 (3)	23965 (3)	5219 (3)	30276 (9)

Then, Table 7 shows the type of payment for each payment method. From a total of 3.196.602 payment method transaction data, there are 27 payment types (PT₁...PT₂₇). Each payment method data from the smallest to the largest transaction is also spread out the payment type. The Doku Wallet (P₁) has 1737 (PT₂) the largest transaction, and the smallest is 15 (PT₂₅ and PT₂₇). The BRI Epay (P₂) has 1406 (PT₂) the largest transaction, and the smallest is 55 (PT₂₇). The Go-Pay (P₃) has 111960 (PT₁) the largest transaction, and the smallest is 8504 (PT₂₇). The Akulaku (P₄) has 4157 (PT₅) the largest transaction, and the smallest is 644 (PT₂₇). The LinkAja (P₅) has 24305 (PT₁₃) the largest transaction, and the smallest is 1426 (PT₂₇) the largest transaction. The Midtrans (P₆) has the largest number 4074 transactions (PT₅), and the smallest is 429 (PT₂₅). Rekening Ponsel (P₇) has 35612 (PT₈) the largest transaction, and the smallest is 5486 (PT₂₄). The VA BCA (P₈) has 52392 (PT₁₁) the largest transaction, and the smallest is 10158 (PT₂₇). The Visa Master (P₉) has 6770 (PT₂) the largest transaction, and the smallest is 525 (PT₂₅).

Table 7: the type of payment for each payment method

PaymentTypes	Payment Methods									Total
	P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	P ₈	P ₉	
PT ₁	1105	941	111960	3178	12531	2219	20115	25960	4867	182876
PT ₂	1737	1406	105653	3652	7575	3662	34576	45180	6770	210211
PT ₃	1105	936	82855	2580	4550	2470	18542	21769	5925	140732
PT ₄	567	405	94979	3683	15190	2631	19508	16192	2968	156123
PT ₅	1199	870	88672	4157	10234	4074	33969	35412	4871	183458
PT ₆	567	400	65874	3085	7209	2882	17935	12001	4026	113979
PT ₇	538	377	87871	2666	10363	1773	21151	14349	2719	141807
PT ₈	1170	842	81564	3140	5407	3216	35612	33569	4622	169142
PT ₉	538	372	58766	2068	2382	2024	19578	10158	3777	99663
PT ₁₀	683	859	65355	2540	21646	1489	12020	33172	3680	141444
PT ₁₁	1315	1324	59048	3014	16690	2932	26481	52392	5583	168779
PT ₁₂	683	854	36250	1942	13665	1740	10447	28981	4738	99300
PT ₁₃	145	323	48374	3045	24305	1901	11413	23404	1781	114691
PT ₁₄	777	788	42067	3519	19349	3344	25874	42624	3684	142026
PT ₁₅	145	318	19269	2447	16324	2152	9840	19213	2839	72547
PT ₁₆	116	295	41266	2028	19478	1043	13056	21561	1532	100375
PT ₁₇	748	760	34959	2502	14522	2486	27517	40781	3435	127710
PT ₁₈	116	290	12161	1430	11497	1294	11483	17370	2590	58231

PT ₁₉	582	706	61698	1754	11575	875	7666	25960	2673	113489
PT ₂₀	1214	1171	55391	2228	6619	2318	22127	45180	4576	140824
PT ₂₁	582	701	32593	1156	3594	1126	6093	21769	3731	71345
PT ₂₂	44	170	44717	2259	14234	1287	7059	16192	774	86736
PT ₂₃	676	635	38410	2733	9278	2730	21520	35412	2677	114071
PT ₂₄	44	165	15612	1661	6253	1538	5486	12001	1832	44592
PT ₂₅	15	142	37609	1242	9407	429	8702	14349	525	72420
PT ₂₆	647	607	31302	1716	4451	1872	23163	33569	2428	99755
PT ₂₇	15	137	8504	644	1426	680	7129	10158	1583	30276
Max.	1737	1406	111960	4157	24305	4074	35612	52392	6770	3196602
Min.	15	137	8504	644	1426	429	5486	10158	525	

4.3 CRM Strategy

Alfascart.com management has defined customer payment segmentation into three categories, namely: Bronze (CPS₁), Silver (CPS₂), and Gold (CPS₃). Each of these categories will be used to determine customer loyalty. If customer payment segmentation = "Bronze (CPS₁)", then customer loyalty = "Point (CL₁)". If customer payment segmentation = "Silver (CPS₂)", then customer loyalty = "Special Exchange Point (CL₂)". If customer payment segmentation = "Gold (CPS₃)", then customer loyalty = "Birthday Promos, Points, and Special Exchanges (CL₃)".

Customer payment segmentation and customer loyalty will be determined based on the results of the payment type as a form of CRM strategy (See Table 8). Payment Type PT₁ - PT₉ will define CPS₁ and CL₁. The Payment Type of PT₁₀ - PT₁₈ will define CPS₂ and CL₂. The Payment Type of PT₁₉ - PT₂₇ will define CPS₃ and CL₃.

Table 8: CRM Strategy

Payment Type (PT)	Customer Payment Segmentation (CPS)	Customer Loyalty (CL)
PT ₁ - PT ₉	Bronze (CPS ₁)	Point (CL ₁)
PT ₁₀ - PT ₁₈	Silver (CPS ₂)	Special Exchange Point (CL ₂)
PT ₁₉ - PT ₂₇	Gold (CPS ₃)	Birthday Promos, Points, and Special Exchanges (CL ₃)

The CRM strategy for each payment method will be explained in tables 10-17. Table 9 shows the CRM strategy for Doku Wallet (P₁). The overall CRM strategy for the Doku wallet (P₂) payment method is 17073 (0.53%). There are 8526 (0.27%) customer payment segmentation CPS₁ or CL₁ customer loyalty based on payment types PT₁ - PT₉. Then 4728 (0.15%) CPS₂ or CL₂ based on the payment type of PT₁₀ - PT₁₈. Meanwhile, 3812 (0.12%) CPS₃ or CL₃ were based on payment types from PT₁₉ -PT₂₇.

Table 9: CRM Strategy Doku Wallet (P₁)

PT	CPS	CL	Transaction (%)
PT ₁ - PT ₉	CPS ₁	CL ₁	8526 (0.27)
PT ₁₀ - PT ₁₈	CPS ₂	CL ₂	4728 (0.15)
PT ₁₉ -PT ₂₇	CPS ₃	CL ₃	3819 (0.12)
Total			17073 (0.53)

Total transactions of the CRM strategy for the BRI Epay (P₂) payment method amounted to 16794 (0.50%). There are 6549 (0.20%) customer payment segmentation CPS₁ or CL₁ customer loyalty based on payment type PT₁ - PT₉. Then 5811 (0.18%) CPS₂ or CL₂ based on the payment type from PT₁₀ - PT₁₈. Meanwhile, 4434 (0.14%) CPS₃ or CL₃ based on the payment type from PT₁₉ - PT₂₇.

Table 10: CRM Strategy BRI Epay (P₂)

Payment Types	Customer Payment Segmentation	Customer Loyalty	Transaction (%)
CT ₁ - CT ₉	CPS ₁	CL ₁	75441 (2.36)
CT ₁₀ - CT ₁₈	CPS ₂	CL ₂	157476 (4.93)
CT ₁₉ - CT ₂₇	CPS ₃	CL ₃	66837 (2.09)
Total			299754 (9.38)

The overall transaction of the CRM strategy for the Go-Pay (P₃) payment method is 1462779 (45.76%). There are 778194 (24.34%) customer payment segmentation CPS₁ or CL₁ customer loyalty based on the payment type from PT₁ - PT₉. Then 358749 (11.22%) CPS₂ or CL₂ based on the payment type from PT₁₀ - PT₁₈. Meanwhile, 325836 (10.19%) CPS₃ or CL₃ based on the payment type from PT₁₉ - PT₂₇.

Table 11: CRM Strategy Go-Pay (P₃)

PT	CPS	CL	Transaction (%)
PT ₁ - PT ₉	CPS ₁	CL ₁	778194 (24.34)
PT ₁₀ - PT ₁₈	CPS ₂	CL ₂	358749 (11.22)
PT ₁₉ - PT ₂₇	CPS ₃	CL ₃	325836 (10.19)
Total			1462779 (45.76)

Payment method (P₄) is 66069 (2.07%). There are 28209 (0.88%) customer payment segmentation CPS₁ or CL₁ customer loyalty based on payment type CT₁ - CT₉. Then 22467 (0.70%) CPS₂ or CL₂ based on payment type CT₁₀ - CT₁₈. Meanwhile, 15393 (0.48%) CPS₃ or CL₃ based on payment type CT₁₉ - CT₂₇.

Then, transaction method of the CRM strategy for the LinkAja payment method (P₅) is 299754 (9.38%). There are 75441 (2.36%) customer payment segmentation CPS₁ or CL₁ customer loyalty based on payment type CT₁ - CT₉. Then 157 476 (4.93%) CPS₂ or CL₂ based on the payment type CT₁₀ - CT₁₈. Meanwhile, 66837 (2.09%) CPS₃ or CL₃ based on the payment type CT₁₉ - CT₂₇.

Table 12: CRM Strategy Akulaku (P₄)

PT	CPS	CL	Transaction (%)
PT ₁ - PT ₉	CPS ₁	CL ₁	28209 (0.88)
PT ₁₀ - PT ₁₈	CPS ₂	CL ₂	22467 (0.70)
PT ₁₉ - PT ₂₇	CPS ₃	CL ₃	15393 (0.48)
Total			66069 (2.07)

Table 13: CRM Strategy LinkAja (P₅)

PT	CPS	CL	Transaction (%)
CT ₁ - CT ₉	CPS ₁	CL ₁	75441 (2.36%)
CT ₁₀ - CT ₁₈	CPS ₂	CL ₂	157 476 (4.93%)
CT ₁₉ - CT ₂₇	CPS ₃	CL ₃	66837 (2.09%)
Total			1462779 (45.76%)

overall transaction CRM strategy for the transaction method. The overall CRM strategy for the Midtrans payment method (P₆) is 56187 (1.76%). There are 24951 (0.78%) customer payment segmentation CPS₁ or CL₁ customer loyalty based on payment types CT₁ - CT₉. Then 18381 (0.58%) CPS₂ or CL₂ based on the payment type CT₁₀ - CT₁₈. Meanwhile, 12855 (2.40%) CPS₃ or CL₃ based on the payment type CT₁₉ - CT₂₇.

Table 14: CRM Strategy Midtrans (P₆)

PT	CPS	CL	Transaction (%)
CT ₁ - CT ₉	CPS ₁	CL ₁	24951 (0.78%)
CT ₁₀ - CT ₁₈	CPS ₂	CL ₂	18381 (0.58%)
CT ₁₉ - CT ₂₇	CPS ₃	CL ₃	12855 (2.40%)
Total			56187 (1.76%)

The payment method of customer data on e-Commerce. The overall transaction of the CRM strategy for the payment method for the Mobile Account (P₇) is 478062 (14.69%). There are 220 986 (6.91%) customer payment segmentation CPS₁ or CL₁ customer loyalty based on payment types

CT1 - CT9. Then 148131 (4.63%) CPS2 or CL2 based on the payment type CT10 -CT18. Meanwhile 108945 (3.41%) CPS3 or CL3 based on the payment type CT19 -CT27.

Table 15: CRM Strategy Rekening Ponsel (P7)

PT	CPS	CL	Transaction (%)
PT ₁ - PT ₉	CPS ₁	CL ₁	220 986 (6.91%)
PT ₁₀ - PT ₁₈	CPS ₂	CL ₂	148131 (4.63%)
PT ₁₉ -PT ₂₇	CPS ₃	CL ₃	108945 (3.41%)
Total			478062 (14.69%)

Total transactions of the CRM strategy for the VA BCA (P₈) payment method amounted to 708678 (22.17%). There are 91206 (2.85%) customer payment segmentation (CPS₁), or customer loyalty (CL₁) based on PT₁ - PT₉. Then 279498 (8.74) CPS₂ or CL₂ which is based on PT₁₀ - PT₁₈. Meanwhile, 20799(0.65%) CPS₃ or CL₃ based on PT₁₉ - PT₂₇ payment types.

Table 16: CRM Strategy VA BCA (P8)

PT	CPS	CL	Transaction (%)
PT ₁ - PT ₉	CPS ₁	CL ₁	91206 (2.85%)
PT ₁₀ - PT ₁₈	CPS ₂	CL ₂	279498 (8.74)
PT ₁₉ -PT ₂₇	CPS ₃	CL ₃	20799 (0.65%)
Total			708678 (22.17%)

On the last for total transactions of the CRM strategy for the VA Visa Master (P₉) payment method amounted to 91206 (2.85%). There are 40545 (1.27%) customer payment segmentation (CPS₁), or customer loyalty (CL₁) based on PT₁ - PT₉. Then 29862 (0.93) CPS₂ or CL₂ which is based on PT₁₀ - PT₁₈. Meanwhile, 214590 (6.71%) CPS₃ or CL₃ based on PT₁₉ - PT₂₇ payment types.

Table 17: CRM Strategy Visa Master (P9)

PT	CPS	CL	Transaction (%)
CT ₁ -CT ₉	CPS ₁	CL ₁	40545 (1.27%)
CT ₁₀ - CT ₁₈	CPS ₂	CL ₂	29862 (0.93)
CT ₁₉ -CT ₂₇	CPS ₃	CL ₃	214590 (6.71%)
Total			91206 (2.85%).

The study limitations that have been felt in this study are due to the unavailability of log data sources for various e-commerce sites. The CRM strategy in e-Commerce that has been proposed should be implemented based on customer payment log data on various e-Commerce. The covid-19 pandemic is quite disturbing in data collection activities. With the limited log data available, the proposed strategy is only implemented for customer payments on e-commerce www.alfacart.com.

5. CONCLUSIONS

The RFM strategy in payment transactions aims to support Customer Relationship Management (CRM) in an E-Commerce. This strategy has proposed three main interrelated stages to support CRM activities in e-Commerce.

These stages are the first stage as the Payment Data Strategy, the second stage as the RFM Strategy, and the third stage as the CRM Strategy. By utilizing payment method data in an E-Commerce, 27 payment types are formed which can map into three types for each Customer Payment Segmentation and Loyalty Program to support the CRM Strategy. This is reflected in the results of processing data on 9 payment methods used to implement the CRM strategy in AlpaCart e-Commerce. Further research needs to implement this CRM strategy in various e-Commerce payment methods in Indonesia.

REFERENCES:

- [1] Wolfinger, M. and Gilly, M.C, 2001. Shopping online for freedom, control, and fun. *California Management Review*, 43(2), 34-55
- [2] Zavolokina, L., Dolata, M., & Schwabe, G. (2016). The FinTech phenomenon: antecedents of financial innovation perceived by the popular press. *Financial Innovation*, 2(1), 1-16.
- [3] Doney, P.M. and Cannon, J.P. (1997). An Examination of the Nature of Trust in Buyer-Seller Relationships. *Journal of Marketing*, 61, 35-51
- [4] Chaffey, D. (2007). *E-business and E-Commerce Management: Strategy, Implementation and Practice*. Pearson Education.
- [5] Kaur, K., & Pathak, A. (2015). E-payment system on E-Commerce in India. *International Journal of Engineering Research and Applications*, 5(2), 79-87.
- [6] Phonthanukitithaworn, C., Sellitto, C., & Fong, M. W. (2016). An investigation of mobile payment (m-payment) services in Thailand. *Asia-Pacific Journal of Business Administration*.
- [7] Dahlberg, T., Mallat, N., Ondrus, J., & Zmijewska, A. (2008). Past, present and future of mobile payments research: A literature review. *Electronic commerce research and applications*, 7(2), 165-181.
- [8] Chandra, Y. U., Kristin, D. M., Suhartono, J., Sutarto, F. S., & Sung, M. (2018, September). Analysis of Determinant Factors of User Acceptance of Mobile Payment System in Indonesia (a case study of go-pay mobile payment). In 2018 International Conference on Information Management and Technology (ICIMTech) (pp. 454-459). IEEE.
- [9] Buttle, Francis. (2007). *Customer Relationship Management (Manajemen Hubungan Pelanggan) : Concept and Tools*. Bayumedia Publishing, Malang.
- [10] Kumar, V., & Reinartz, W. 2012. *Customer Relationship Management: Concept, Strategy, and Tools*. 2nd ed. Heidelberg: Springer
- [11] Wilde, S. (2011). *Customer Knowledge Management: improving customer relationship through knowledge application*. Springer Science & Business Media.
- [12] Ema, U. (2013). Penerapan Customer Relationship Management Untuk Merancang Fitur Aplikasi Penjualan Buku Online. *Jurnal Teknologi Technoscintia*, 46-54.
- [13] Dewa, B. P., & Setyohadi, B. (2017). Analisis Dampak Faktor Customer Relationship Management dalam Melihat Tingkat Kepuasan Dan Loyalitas Pada Pelanggan Marketplace Di Indonesia. *Telematika: Jurnal Informatika dan Teknologi Informasi*, 14(1), 33-38.
- [14] J. Wei, S. Lin, and H. Wu, "A review of the application of RFM model," *African J. Bus. Manag.*, vol. 4, no. 19, pp. 4199–4206, 2010.
- [15] Y. J. Lee, "Privacy-preserving Data Mining for Personalized Marketing," *Int. J. Comput. Commun. Networks*, vol. 4, no. 1, pp. 1–9, 2014
- [16] Hardiani, T., Sulisty, S., & Hartanto, R. (2015). Segmentasi nasabah tabungan menggunakan model RFM (recency, frequency, monetary) dan k-means pada lembaga keuangan mikro. In *Seminar Nasional Teknologi Informasi dan Komunikasi Terapan (SEMANTIK)* (p. 463468).
- [17] Jin, B. W., Cho, Y. S., & Ryu, K. H. (2010). Personalized E-Commerce recommendation system using RFM method and association rules. *Journal of the Korea society of computer and information*, 15(12), 227-235.