DEVELOPMENT OF CUSTOMER RELATIONSHIP MANAGEMENT (CRM) AT PT. WAHANA SEMESTA BANDUNG EKPRES

Karno Kusnendar[1] , Riani Lubis[2]

[1,2] Teknik Informatika – Universitas Komputer Indonesia
Jl. Dipatiukur 112-114 Bandung
E-mail: noe.koesnendar@gmail.com[1] , riani.lubis@email.unikom.ac.id[2]

ABSTRAK

Daily Bandung Ekspres is one of the Jawa Pos newspaper group that includes the circulation of Bandung Raya. Although the new newspaper, but slowly Bandung Ekpres can compete with local newspapers in the city of Bandung.

Currently Bandung Ekspres fluctuating each month, it is because the approach taken by the company in retaining customers by considering the quality of the newspaper from actualization, accuracy and variety of news only. The number of customers who dimliki, then there are problems that must be faced, how to determine the ratings of customers potentially based on transactions that have been done, so the company can determine the right marketing strategy for each customer based on the customer group that owned that companies can attract customers to still subscribe to newspapers.

To overcome these problems PT Wahana Semesta Bandung Ekspres need an information system *of Customer Relationship Management* (CRM) that can help marketing managers in determining appropriate services to potential customers. As well as using CLV *(Customer Lifetime Value)* in determining the potential customer recommendations.

Based on alpha and beta testing results obtained in this thesis, it can be built kesimpulan.Sistem information that can assist the marketing manager in determining the potential customers. The information system built to help marketing managers in determining a plan of services to customers based on customer groups.

Keywords: *Customer Relationship Management*, Methods CLV *(Customer Lifetime Value)*

1. PRELIMINARY

Daily Bandung Ekspres is one of the Jawa Pos newspaper group whose distribution as Bandung Raya (West Bandung, Cimahi and Bandung District). Daily Bandung Ekspres prime published February 7, 2009 in Bandung, West Java. Publishing 20 pages, contents pages ditampilkanrata average local news, with seven pages of which it is a sport, is published every day (except public holidays). Although it's still new in newspaper business, but sustainably Bandung Express can compete with local newspapers in the city of Bandung.

Based on the interview with Mr. Jajat Darojat as marketing manager stated that newspaper sales fluctuate each month. This is due to the approach taken by the company in retaining customers by considering the quality of a newspaper of actualization, accuracy and variety of news only. Judging from the sales data for the period January to August 2016 the average customer transaction ranges from 42 customers a day and the average print circulation of 26 420 copies per month range. To address the decline in customers, companies need an approach to the customer. Due to the terms of a direct approach to customer-owned, the company has not had a specific action in keeping potential customers. The inability of the company to deliver more value to customers resulting in decreased sales.

With many customers have, the problems to be faced is how to determine the potential customer ratings based on transactions that have been done, so the company can determine the right marketing strategy for each customer based on customer-owned group of companies in order to attract

customer interest to remain subscribed to newspapers. One appropriate action to recommend potential customers is by way of segmenting customers using CLV *(Customer Lifetime Value).* CLV is usually defined and estimated customer segments or individual level. It allows us to distinguish between customers who are more favorable to the customer with an average profitability. Because customer loyalty are the most valuable thing of all future profits earned on his relationship with the company.

Customer Relationship Management (CRM) is means to establish the relation between the company and customer. By using CRM, companies will know what is expected and in need of the customer. Similarly, customer loyalty can be retained and not easily switch to other products.

Based on the problems that exist today, the PT Wahana Semesta Bandung Ekspres need an information system *of Customer Relationship Management* (CRM) which helps marketing managers in determining appropriate services to potential customers. As well as using CLV

(Customer Lifetime Value) in determining the potential customer recommendations.

Based on the description of the problems that have been raised before, we need a system to define potential customers of PT. Wahana Semesta Bandung Ekspres approach to *customer relationship management* (CRM) as for the purpose of development of Information Systems CRM as follows:

a. *Manager* marketing helps in providing recommendations potential customers by giving ratings to customers who subscribe to the newspaper.
b. *Manager* marketing help in determining the appropriate type of service to its customers so that customers remain interested in subscribing to the newspaper.

2. ISI RESEARCH

2.1. Information Systems

Information system is formed from two words namely systems and information. The system is the connection of the unit with other units interconnected with one another and can not be separated and headed a unity to achieve certain goals, if there is interference or constraint then the objectives achieved would be disturbed [2].

Information quality can be affected by the six things, namely:

a. relavan
b. accurate
c. On time
d. Economical
e. Efficient
f. Can be trusted

After obtaining the understanding of the system and update the information system is a set of subsystems selling interconnected, gathered together and form a unified whole, interact and cooperate between the parts to each other with specific ways to perform data processing functions, receive input (input) in the form of data, then process (processing), and produces output (output) in the form of information as a basis for useful decision making and have value that can be felt as a result either at that time or in the future, support the operation, managerial, and strategic organization, by utilizing some of the resources available for these functions in order to achieve the objectives [3].

2.2. Definition of *Customer Relationship Management*

Definition of CRM can be viewed from different sides of the sides with regard to technology, the communication and management, and the business side. The sense is as follows:

1. CRM is "a strategy to optimize the lifetime value of the customer (customer lifetime value) in a way to know more about the customer information and interacting with customers intensively (in terms of technology) [4].
2. CRM is defined as "an enterprise approach to understanding and influencing customer behavior through intensive communication in order to improve customer acquisition, customer retention, customer loyalty (in terms of communication and management) [4].
3. CRM definition when viewed in terms of business can be defined as "a business strategy to understand, anticipate and manage the needs of potential customers in an organization at the present time and in the future [4].

2.3 Stages CRM

CRM cycle consists of a process Acquire - Retain - Exspansion [5], each phase of the cycle can be explained as follows:

1. Acquire, the process of acquiring a new relationship is to get a new customer that can be realized in a variety of strategies. Keywords associated with this phase is differentiation, innovation, and comfort (convenience).
2. Retain, retaining customer relationship is the phase where the organization is pursuing a strategy to retain customers by improving service. Customer retaintion become an important strategy for the company for customer choice for a growing number of organizations created by many service providers (competitors). Keywords associated with this phase is adaptability, listening, and Responship.
3. Expansion, is the time to establish a good relationship that has existed with the customer, always listen to customers and serve them better, create loyal customers with the product / service organization. Some keywords are associated with this phase is loyalty, reduce costs, and customer service.

2.4 Type CRM

There are three types of CRM applications [6], namely:

1. Operational CRM
   Is an integrated process automation of all business processes running within the company, both the sale and marketing. In the process include Customer Touch-Point, Channels and Front Office.
2. Analytical CRM
   Is the analysis of the data generated through the CRM operational processes, including data mining applications.

3. Collaborative CRM
   Is the process collaborative application services include e-mail, e-communities, discussion forums and the like that provide interaction between the company and its customers.

2.5 Framework of Dynamic CRM

At this stage of CRM CRM is described a framework in the form of a series of processes Acquisition-Retention-Expansion.

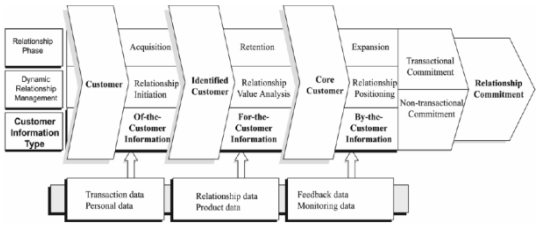


Figure 1 Framework of Dynamic CRM

Illustrated in Figure 2.3 framework dynamic framework of CRM. Broadly speaking, Dynamic CRM actually describes a series of phases to be done in achieving an organization's customer management in accordance with the company's main business. The framework can be considered a reference pattern or model of an organization in improving their customer management maturity. Within this framework there are several phases, among others [8]: phase relationship, dynamic and customer relationship management information type. In the phase relationship can be divided into 3 parts, among others:

1. Acquisition, this process is the process to get new customers.
2. Retention, this process is the company pursuing a strategy to retain customers by way of service improvement.
3. Expansion, the services provided to make a better relationship with existing customers by listening.

2.6 Customer segmentation

Don Pepper and Martha Roger in his book "Managing Customer Relationship: A Strategic Framework". Categorization of customers as follows:

1. *Most Valuable Customer,* ie customers with the highest value for the company. is a customer that provides the greatest benefit for the company.
2. *Most growable Customer,* ie customers who unwittingly has great potential.
3. *Below zeroes,* ie customers who benefit less than the cost to provide services.

2.6.1 Model CLV

CLV (Customer Lifetime Value) is generally defined as the present value of all future profits derived from the customer on his relationship with the company. CLV similar to the discounted cash flow approach used in finance. However, there are two main differences. First, CLV is usually defined and estimated customer segments or individual level. It allows us to distinguish between customers who are more favorable to the customer with an average profitability. Here is the basic formula of calculation of CLV by Sunil Gupta in 2006 in the research journal entitled Modeling Customer Lifetime Value.Rumus CLV can be seen in equation (1) and (2):

$$CLV = \sum_{t=0}^{T} \frac{(p_t - c_t) r_t}{(1+i)^t} \quad \text{Persamaan 1}$$

Information:
pt = The amount to be paid by customers at time t.
ct = cost to the company to serve customers at time t
i = discount rate or cost of capital (in the form of capital%)
rt = Possible customer repurchase at time t
T = time horizon for estimating CLV

$$\text{BTS} = \frac{\text{Batas Atas} + Batas\ Bawah}{2} = \quad \text{Persamaan 2}$$

2.7 Category Customer Identification

In classifying the customer, customer category refers to the value CLV. Where the customer categories, which are grouped there are 3 that Most Valuable Customer, Customer and Blow growable Most Zeros.

Referring to (Appendix F) obtained the highest transaction value of customer transactions at Rp 6.75 million ERUs Agency and the lowest transaction from customers Bambang Agency of Rp 450,000. Then calculate the middle limit the value of transactions in advance to be used as the lower limit of the customers most growable customer. Limit the middle score is determined according equation 2.1 that is described in section 2, so that the results are as follows:

Because the middle limit transaction value obtained Rp 3,600,000, then the value is used as a middle limit for the category most growable customer, so the value of the transaction <Rp 3,600,000 a customer categories below zeros, then for the value of transactions in the value of Rp 3,600,000 ≤ transactions <Rp 6.75 million is the most growable customer categories of customers and value of transactions in the transaction value ≥ Rp 6.75 million is a category of customers most valuable customer.

2.7.1 Customer Segmentation with CLV Analysis

Customer segmentation is to segment customers into several parts with the aim to see customer behavior and measure the level of

customer loyalty of the transaction that he did, so do the follow-up regarding the services to be provided to the customer in accordance with the level. Customer segmentation process will be carried out using CLV analysis model which will be accompanied by an example of a case based on the customer transaction data, the following steps CLV customer segmentation analysis.

1. Presenting customer transaction data Daily Ekpres Bandung.
2. Selecting the data to isegmentasi.
3. Doing defining data and calculation of CLV

Manual calculation of CLV on a customer by the name of ERUs Agency contained in table 3.4 in section 3:

pt = The amount to be paid by customers at time t
ct = cost to the company to serve customers at time t
i = (discount rate) of 10% or 0,1
rt = assumed 1
T = 1 month (because the process of segmentation is done every month)

$$CLV = \frac{(225000 - 22500)1}{(1+0{,}1)^1} + \frac{(225000 - 22500)1}{(1+0{,}1)^2} + \frac{(225000 - 22500)1}{(1+0{,}1)^3} \ldots$$

$$\frac{(225000 - 22500)1}{(1+0{,}1)^{18}} + \frac{(225000 - 22500)1}{(1+0{,}1)^{19}} + \frac{(225000 - 22500)1}{(1+0{,}1)^{20}}$$

$$= 1{,}707{,}000.00$$

The results of calculation of CLV for ERUs Agency customers can be seen in Table 1 below:

Table 1 Results of calculation of CLV ERUs Agency

No.	Total price	Cost Issued Company	discount Rate	value CLV
1	225000	22500	0.1	184,090.91
2	225000	22500	0.1	167,355.37
3	225000	22500	0.1	152,141.25
4	225000	22500	0.1	138,310.22
5	225000	22500	0.1	125,736.57
6	225000	22500	0.1	114,305.97
7	225000	22500	0.1	103,914.52
8	225000	22500	0.1	94,467.74
9	225000	22500	0.1	85,879.77
10	225000	22500	0.1	Rp 78,072.52
11	225000	22500	0.1	Rp 70,975.01
12	225000	22500	0.1	Rp 64,522.74
13	225000	22500	0.1	Rp 58,657.04
14	225000	22500	0.1	Rp 53,324.58
15	225000	22500	0.1	Rp 48,476.89
16	225000	22500	0.1	Rp 44,069.90
17	225000	22500	0.1	Rp 40,063.55
18	120000	12000	0.1	Rp 19,424.75
19	225000	22500	0.1	Rp 33,110.37
20	225000	22500	0.1	Rp 30,100.33
				Rp 1,707,000.00

4. Categorize customers based on the value CLV

After segmenting customer data PT. Wahana Semesta Bandung Ekspres using CLV your analysis, then the customer has a group in accordance with the transaction that has been done. The strategy applied to the Most Valuable Customer and Customer growable Most are discounted for customers who fell into this category has become a loyal customer. As for big rebates to customers who enter the group Most Valuable Customer is gets a 5% discount on any subsequent transactions and Most growable Customer 2% subscribe to the following frequently used, big discounts are only valid for one month after the customer into the second the above group. These services can be viewed by customers through the website, while for customers who are in the group Below Zeros, services performed is a notice to increase the value of the transaction. For the notification types of service to customers is through website pages wsbe.web.id customers on the service menu. Grouping based on the transaction value of the CLV can be seen in Table 2.

Table 2 Type Services Customer Groups

Customer groups	value CLV	Services To Customers
MVC	Transaction value ≥ 6.75 million ≤ 3,600,000	Getting Discounts 5%
MGC	Transaction Value <6.75 million	Getting Rebates 2%
Below Zeros	Transaction value <3,600,000	Notice to increase the value of the transaction

2.8 Network Analysis

Network analysis is presented for knowing how architectural analysis and the relationship between users and applications. Current conditions Bandung PT Wahana Universal Express to the 1st floor has 5 units of *personal* computers (PC), 1 server unit, 1 unit of the switch and two printers. The condition is sufficient to meet to access the system to be built. The following analysis of the network to be built that can be seen in Figure 3.5.

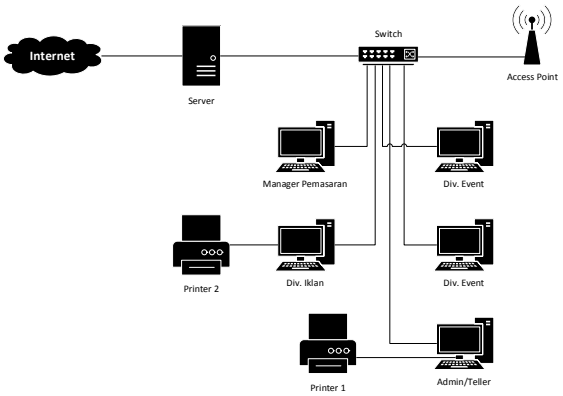


Figure 2 Network Analysis

Computer network in PT. Wahana Universal Express Bandung has implemented media UTP cable and wireless networks. The existing network currently used for airport employees to be able to access the company's local network and internet services.

CRM application system for potential customers recommendations will be implemented at PT. Wahana Universal Express Bandung, where the system will be stored on a server that will be managed by the admin. This system will be connected to the internet service, so users can access the system via online.

2.9 Analysis Database

Analysis of the database in the Customer Relationship Management system in the Daily Express Bandung which will be built using Entity Relationship Diagram (ERD). ERD is a data model that uses some notation to describe the data in the context of the entities and relationships described by the data. The ERD modeling is illustrated in Figure 3.

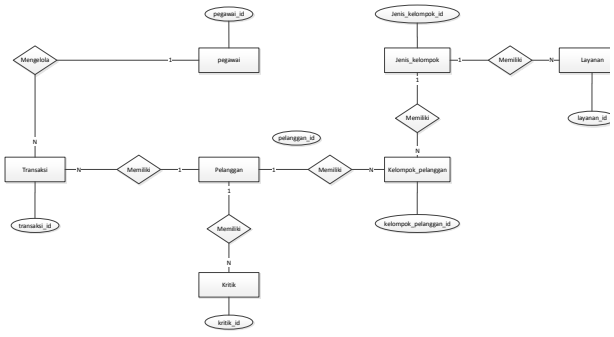


Figure 3 *Entity Relationship Diagram* (ERD)

2.9.1 Diagram Context

Context diagram is a diagram illustrating the scope of the system or how the system interacts with its environment. The system described by the sphere, while the environment is represented by outside entities represented by the square. The interaction between the system and external entities represented by a data stream represented by arrows flowing into the system from external entities (as input) or otherwise of the system to external entities (as output). The Modeling Diagram Context can be seen in Figure 4.

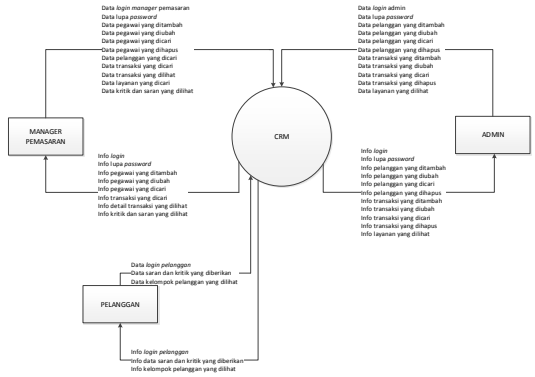


Figure 4 Diagram Context

2.10 Table Relationships

Table Relationships serves to illustrate the connectedness table in the system clearly. Table relationships will be illustrated in Figure 5.

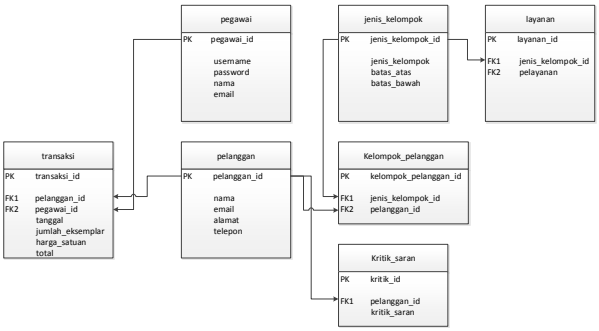


Figure 5 Relationship Diagram

2.11 Interface Design

Interface design plan describes the display interface to be built, consisting of the following forms.

2.11.1 Login Interface Design

Login interface is a view that is specifically designed for users who have access rights to log processing and monitoring, login interface design can be seen in Figure 6.



Figure 6 Interface Login

2.11.2 Main Page Admin Interface

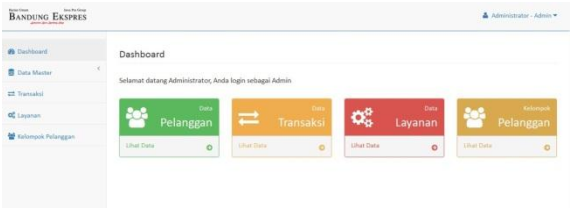


Figure 7 Interface Main Page Admin

2.11.3 Manage Customer Interface page (Admin)

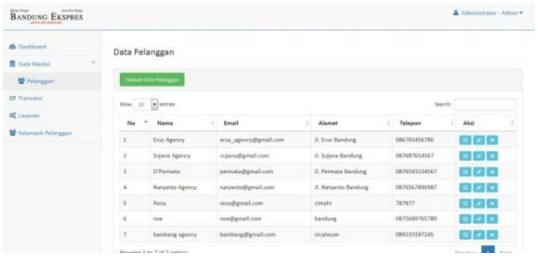


Figure 8 Interface page Manage Customers

2.11.4 Interface Page Manager Marketing

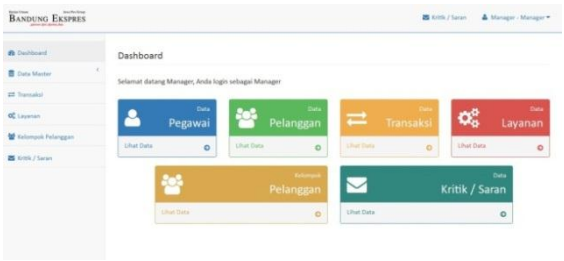


Figure 9 Interfaces Page Manager Marketing

2.11.5 Home Customer Interface

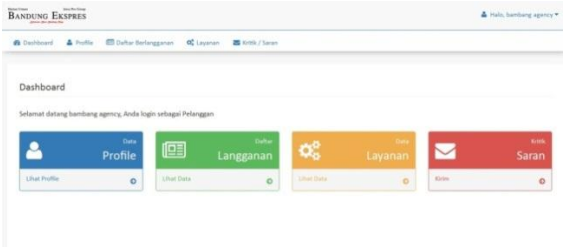


Figure 10 Interface Home Customers

2.11.6 Interface Customer Profile

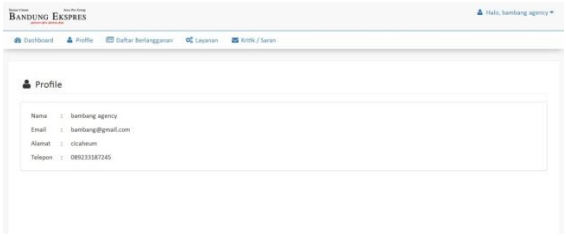


Figure 11 Interface Customer Profile

2.11.7 Interface Subscribe to Our Customers

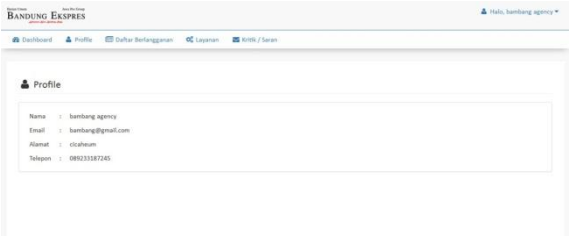


Figure 12 Interface Subscribe to Our Customers

2.12 Semantic network

Semantic networks describe the connectedness between menu pages. On customer relationship management system in PT Wahana Universal Express Bandung there are three semantic network as follows.

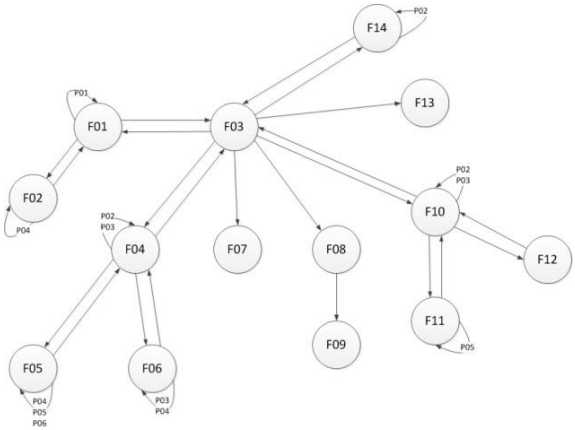


Figure 11 Semantic Networks Marketing Manager

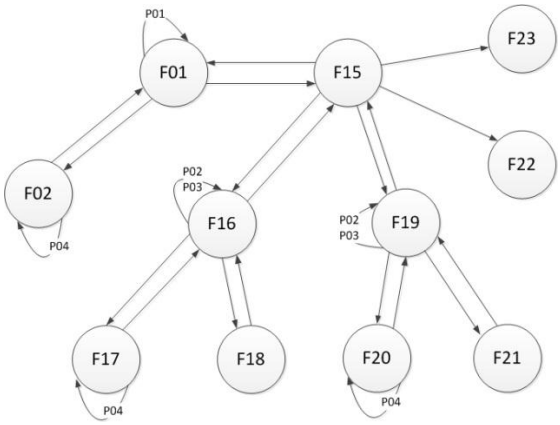


Figure 12 Semantic Network Admin

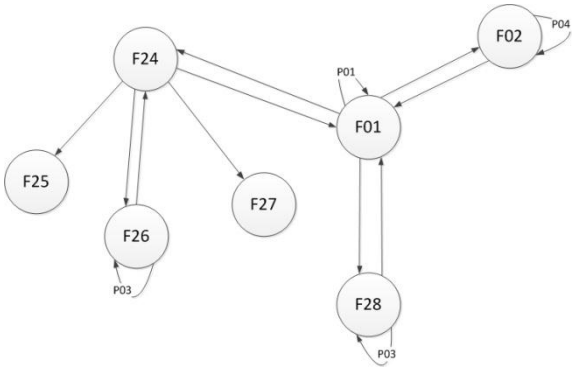


Figure 13 Semantic Network Customers

2.13 Procedural Login

Login procedure is a procedure that occurs when the user login process, the login procedure can be seen in Figure 14.

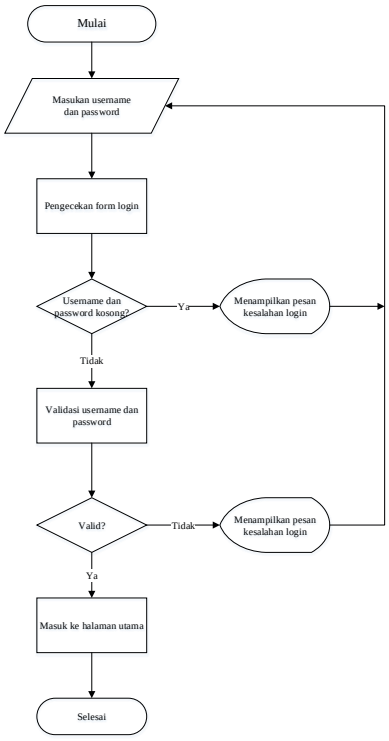


Figure 14 *Flowchart Login*

2.14 Examination

Testing of the system is the cornerstone that aims to find mistakes or shortcomings in the information system under test. The test intends to determine the information system are made in compliance with the performance in accordance with the design objectives.

2.14.1 *Black Box* Testing Results

Based on test results conducted by the black box test cases above, it can be concluded as follows:

1. If the entered data is correct, then the system will display the output as expected.
2. If the data is entered incorrectly, the system will show an error message according to his mistake and redirects the user to give the correct input so that a functional system can issue the corresponding results.

2.12.2 Beta Testing Results

In interviews with the Marketing Manager and Admin can be concluded that the system is built is to produce functional and outputs required. The main output is to provide assistance in assisting the marketing manager in memeberikan potential customer recommendations, and assist in determining the appropriate type of service to its customers.

3. COVER

This section will explain the research conclusions based on the results obtained after the analysis, design, and implementation of the system design were built and suggestions which will provide important records and possible improvements that need to be done for the development of the system.

3.1 Conclusions

Based on alpha and beta testing results obtained in this thesis, it can be concluded as follows:

1. The information system built to help marketing managers in determining potential customers.
2. The information system built to help marketing managers in determining a plan of services to customers based on customer groups.

3.2 Advice

The suggestions for the development of *customer relationship management* at PT. Wahana Universal Express Bandung is as follows:

1. Makes the system easier to learn, for example, by creating a page that provides instructions for using the system.
2. Improve the look more attractive again in presenting the information required.

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