MARKET SHARE ANALYSIS WITH CUSTOMER RELATIONSHIP MANAGEMENT APPROACH IN ROVELL DIGITAL PRINTING

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ABSTRAK

Rovell Digital Printing is a company engaged in digital printing. Established since 2005 address at Kopo Mas Regency Blok K-58 Margasuka, Babakan Ciparay District, Bandung. Rovell Digital Printing serve photo printing, business card printing, banner printing, laser printing, uv platbed printing, indoor digital printing, outdoor digital printing, cutting sticker, etc.

Based on the interview with Andre as Marketing in Rovell Digital Printing. Rovel's Marketing want to open a new branch to expand its business. The opening of new branches in Rovell Digital Printing will impact on the company as seen from the number of orders in Rovell Digital Printing, so Rovel's Marketing want to open new branches, especially in the city / county of West Java Province. However, Rovel's Marketing have trouble in determining areas that have high market share and has the potential for opening new branches. If Rovel's Marketing are wrong on determining the areas of marketing, it will have a direct impact on the company both in the number of consumers as well as to the success and failure of its business in the future. Based on the issues that occurred, it needed an Information System with Customer Relationship Management approach. The goal is to help Rovel's Marketing in determining which areas have a high market share and has the potential to open new branches by market share analysis. Geographical market segmentation is the method used to determine areas that have potential for high market share that will be implemented in information system with the customer relationship management approach to be built.

Based on the results of black box testing and beta testing of this research can be concluded that this system has helped the company in determining the market share of each region for the opening of new branches.

Keywords :*Customer Relationship Management, Dynamic CRM, segmentation geographic markets, opening new branches, black box testing.*

1. INTRODUCTION

Rovell Digital Printing is a company engaged in digital printing. Established since 2005 address at Kopo Mas Regency Blok K-58 Ex. Margasuka district. Ciparay Babakan Bandung. Rovell Digital Printing airport print photos, business cards, banners, laser, uv platbed printing, indoor digital printing, digital printing outdor, cutting sticker, etc. Competition in the digital printing business is very tight and growing very rapidly. Service, innovation and quality for the customers is the way out to improve competitiveness in the field of digital printing business.

Based on the interview Andre as Bag.Marketing in Rovell Digital Printing, the company currently has a desire to expand the area of marketing services and products in the company because of the company's turnover which is sufficient to create a new branch, the location of the company's position Rovell Digital Printing is still located within the complex housing is not strategic and make the company's profit was decreased so as to make customers less know where Rovell Digital Printing and make customers become loyal to the company, for which the company wants to open a new branch in order to improve marketing strategy services / products more widely and attract more customers , Therefore in Rovell Digital Printing will be opening a new branch strategic position that will impact very good company because judging from the number of customers and the level of purchases. However Bag.Marketing Rovell Digital Printing difficulties in determining which areas have a high market share and potentially expand the marketing of services / products so that it can open a new branch.

According August Losch (in Sofa 2008) "look at the issue from the demand side (market)". Losch said that "the seller's location affects the number of consumers who may be working on. The farther from the seller's premises, consumers are increasingly reluctant to buy because of the cost of transport to go to the more expensive the seller's premises ". The choice of location according to Buchari Alma (2003: 105) choose the right business location to determine the success and failure of business in the future. It can be deduced that if Bag.Marketing one decisive area, it will have a direct impact on the company both in the number of customers as well as to the success and

failure of business Rovell Digital Printing in the future.

Hence the need for an analysis of the market so Bag.Marketing can more easily determine which areas have high potential. Customer Relationship Management (CRM) is one of the businesses based approach to managing relationships or relationships with customers. Through the implementation of CRM, the company is expected to build communication and a good relationship with the pelangganyanya so as to produce a service or product, the company not only sell and market a service or product with good quality or competitive prices, but also be able to answer the wants and needs customer.

So based on the problems that exist at present in Rovell Digital Printing, then needed a system that could analyze market share in each region, as well as the opening of a new branch approach to Customer Relationship Management (CRM).

2. CONTENTS RESEARCH

2.1 Theoretical basis

The theoretical basis is a collection of theories that became the basis of the development of Customer Relationship Management Information System in Rovell Digital Printing.

2.1.1. Customer Relationship Management (CRM)

Consumers are a very important asset for a company. There will be no business without any prospect of the relationship between companies and consumers that are loyal. The coffers of the company will be more obese if they are able to manage the consumer baseline for identifying, satisfying, and managed to retain their most profitable customers (Buttle, 2004: 23). The following will be defined some understanding of CRM are taken from the literature, among others:

1. In terms of relating to information technology, CRM is a strategy to optimize customer lifetime value by knowing more about the consumer information and interact with consumers in intensive (Todman, 2001).
2. The definition of CRM if viewed in terms of business can be defined as a core business strategy that combines internal processes and functions, external network to create and deliver value to customers for profit. Didsarkan CRM customer data quality and is made possible by advanced electronic and information (Buttle, 2004: 55).

Of the three definitions above can be deduced about the definition of CRM is a comprehensive approach that integrates every business process that relates directly to consumers, ie sales, marketing and customer service through the integration of philosophy, technology, and processes (Tama, 2009). In other words, CRM is seen not as a product ataupunsebuah service, but a business philosophy which aims to maximize the value of the consumer in the long term (customer lifetime value).

2.1.2. Teknologi CRM

A standard definition of the components of CRM technology provided by META Group in "The Customer Relationship Management Ecosystem." This categorization aims to better understand how a CRM strategy and technology capable of providing the entire architecture thoroughly focused on consumer services. There are three main types of CRM technology, namely:

Analytical CRM CRM is known as "back office" or "strategic" CRM. Analytical CRM is usually associated with the use of data effectively, efficiently and strategically so as to enable appropriate decision making for management. Decision-making implemented after going through the process of analysis, modeling, and evaluation of the data stored in the database to generate a mutually beneficial relationship that between companies and consumers. Examples of Analytical CRM is a business intelligence such as data warehousing, OLAP, data mining the data.

The most important thing in understanding consumer behavior not only understand who they are (in this case customer profiling or segmentation), but also their behavior and patterns of patterns (pattern) that they follow. Understanding customer behavior should be defined as a dynamic and ongoing process.

2.1.3. *Dynamic* CRM

Research on CRM framework conducted by Chung-Hoon Park and Young-Gul Kim (Park, 2003: 652-671), review the connection information and marketing strategies, and create a model described Dalan "Framework of DynamicCRM". Described that phase of CRM within a framework in the form of a series of processes Acquisition-Retention-Expansion. As an integrated CRM framework based on the types of customer information is arranged in stratified according to the development of customer relations.

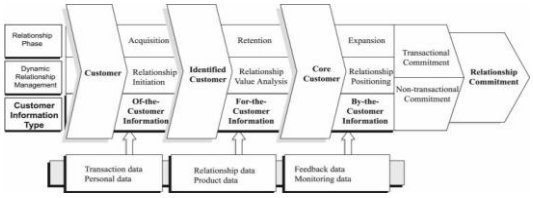


Figure 1. Framework for Dynamic CRM

CRM cycle consists of processes acquire, retain, and expansion (Budiardjo and Irwiensyah, 2008), respectively - each phase in the cycle can be explained as follows:

1. Acquire, the process of acquiring a new relationship is to get new customers that can be realized in a variety of strategies. Keywords associated with this phase is differentiation, innovation, and kenyamananm (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 because of choice for more and more customers are created by many service provider organizations (competitors). Keywords associated with this phase is adaptabiliy, 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 well, creating a loyal customer to the product / service organization. Some keywords are associated with this phase is loyalty, reduce costs, and customer service.

2.1.4. *Market Share*

The market share (Market Share) can be interpreted as part of the market is controlled by a company, or a sale of a company presentation to the total sales of its biggest competitor at a time and a place (William J.S, 1984). If a company with a particular product has a market share of 35%, it means that if the total sales of such products in the given period amounted to 1000 units, the company through its products will obtain sales of 350 units. The amount of market share at any time be changed according to changes in consumer tastes, or the migration of consumer interest from a product to another (Charles W. Lamb, 2001).

There are four characteristics that affect the user in making a purchase that cultural factors (culture, subculture, and social class), social factors (family groups, roles, and status), personal factors (age, occupation, economic situation, lifestyle, and personality) and psychological factors (knowledge, motivation, beliefs, and attitudes). The process of buying decisions a user passes through five stages, namely the introduction of needs, information search, evaluation of alternatives, purchase decision and post purchase behavior (Kotler, 1993).

2.1.5. Marketing Goals

Many organizations are utilizing targeted marketing is to differentiate the major market segments, target one or two segments, and developing products and marketing programs that are designed specifically for each segment. Targeted marketing carried out in three main steps as shown in Figure 2.6 (Kotler, P. & Armstrong, G. 2006).

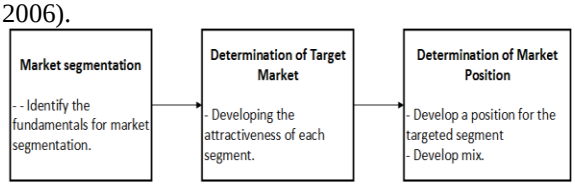


Figure 2. Segmentation, Target Determination and Determination of Market Position

1. Market Segmentation

Market segmentation is the process of putting consumers into subgroups that have the same response to a marketing program (Cravens, 1997). Market segmentation is dividing the market into groups of buyers are differentiated according to the needs, characteristics, or behavior, which may require a different product (Creep Lupiyoadi 2001). Market segmentation is to divide the activities of heterogeneous market of a product into the market units that are homogeneous. Based on the above definition, market segmentation can be defined as the process of dividing the market beterogen into groups that are more homogeneous, which have similar needs or characteristics and response to marketing programs (Swastha 1997).

There are several variables that can be used as the basis for segmentation, but an outline follows the category pioneered by Kotler as follows:

1. Geographic: A marketing activities carried out by dividing up the market in several geographic units such different areas, population density and climate.
2. Demographics: A marketing activities carried out by dividing the market into groups with bases of variables such as age, gender, income, occupation, education, family size, family life cycle, religion, race, generation, citizenship, and social class.

2. Criteria for Selecting Target Markets

Having evaluated the market segments, the next step is choosing a segment of the target audience or the target market. In selecting the optimum target market, keep in mind the following criteria:

1. Responsive
   Target market should be responsive to the product or marketing programs are developed. This step should begin with a clear segmentation study because without a clear target market producers bear the risk is too great.
2. Potential Sales
   Potential sales should be quite extensive. The larger the target market, the greater its value. The amount is not only determined by the number of population but also the purchasing power of the market and the desire to own the product.
3. Adequate Growth

he market could not immediately react. The market is growing slowly until finally slid rapidly and reaches a point of maturation.

4. Reach media

The target market can be achieved by optimal if marketers choose the right media to promote and introduce products.

3. Determination of Market Position (Positioning)

Determination of the position is the act of designing an offer and the image of the organization so that occupies a distinguished position (between competitors) in the minds of its target customers. Kotler looked at the position as a creative exercise that is performed on existing products. Determination of the position of starting with the products, goods, services, organizations, institutions, or even people.

The purpose is to distinguish the determination of the position following the organization's perception of products and services from competitors (Lupiyoadi, 2001). It also said that the establishment of the position of many forward the elements of communication and a communication strategy. Goods communicated through the attributes of goods and services products is communicated about the characteristics of the service. Determination of the position of the product is a different product, clearly and have more value relative to competitors' products in the minds of consumers (Setiadi, 2003).

Determination of the position is not only about what was done to the product but what we do to the mind / minds of consumers as expressed by Al Ries and Trout quoted Lupiyoadi (2001). This strategy is closely connected with how consumers are placing products organizations in their memories, so that potential customers targeted and selected segments have specific assessment and identify themselves with the product.

2.1.6. *Simple Additive Weighting* (SAW)

A weighted summation method. The basic concept is to find a method of SAW weighted sum of rating performance on each alternative on all criteria (Kusumadewi et al., 2006). SAW method requires a decision matrix normalization process (X) to a scale that can be compared with all the ratings of existing alternatives.

SAW method to know their two (2) attributes that criterion advantages (benefits) and cost criteria (cost). The fundamental difference of both of these criteria are in the selection criteria when making decisions.

The steps in the completion of use are:

1. Determining the alternative, namely Ai..
2. Determine the criteria that will be used as a reference in decision-making, ie Cj.
3. Provide rating matches the value of each alternative on each criterion.
4. Determine the weight of preference or level of interest (W) each criterion.

   $W = [W_1 \quad W_2 \quad W_3 \quad \dots \quad W_j]$
5. Create a table rating the suitability of each alternative on each criterion..
6. Make a decision matrix X formed from table rating the suitability of each alternative on each criterion. X value of each alternative (Ai) on each criterion (Cj) is already determined, wherein, i = 1,2, ... m and j = 1,2, ... n..

$$X = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1j} \\ \vdots & & & \vdots \\ x_{i1} & x_{i2} & \cdots & x_{ij} \end{bmatrix}$$

7. Normalizing matrix X decision by calculating the value of ternomalisasi performance rating (rij) of the alternative Ai on criteria Cj..

$$r_{ij} = \begin{cases} \dfrac{x_{ij}}{Max_i(x_{ij})} \\ \dfrac{Min_i(x_{ij})}{x_{ij}} \end{cases}$$

   If j is the criterion of profit (benefit) if j is the criterion costs (cost)

   Information :

   a. It said gains if the value criteria (Xij) provide benefits for decision makers, on the contrary, if the cost criteria (Xij) raises the cost for decision makers.
   b. If the form of the profit criterion values (Xij) divided by the value of Max (i) (Xij) of each column, while for the criteria of cost, value Min (i) (Xij) of each column divided by values (Xij).
8. The results of the value ternomalisasi performance rating (rij) forming the matrix normalized (R)

$$R = \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1j} \\ \vdots & & & \vdots \\ r_{i1} & r_{i2} & \cdots & r_{ij} \end{bmatrix}$$

9. The final result preference value (Vi) obtained from the sum of the normalized rows of the matrix multiplication element (R) with a weight of preferences (W) corresponding element column matrix (W).

$$V_i = \sum_{j=1}^{n} w_j r_{ij}$$

   The calculation result Vi greater value indicates that the alternative Ai is the best alternative (Kusumadewi et al., 2006).

2.2. Problem analysis

Analysis of the problem of the system that is currently running in Rovell Digital Printing is:

Bag.Marketing find it difficult to determine which areas have a high market share and the potential for opening new branches..

2.2.1. Analysis Framwork CRM

CRM Framework used in customer relationship management information system in digital printing Rovell is Dynamic CRM. Described that phase of CRM within a framework in the form of a series of processes Acquisition-Retention-Expansion.

2.2.1.1 Phase Acquisition

Acquisition, the process of acquiring a new relationship is to get new customers that can be realized in a variety of strategies. Keywords associated with this phase is differentiation, innovation, and kenyamananm (convenience). Acquire is a stage that is at the stage of acquisition on the part of the relationship that is used to attract potential customers Rovell Digital Printing to conduct transactions with Rovell Digital Printing.

As for the facilities built by Rovell Digital Printing to attract new customers is as follows:

a. Opening a new branch so Rovell Digital Printing gain new customers.
b. Displays information on the system opening new branches.

At this stage there is Initiation Relations / Relationship Initiation, which is the first stage of the analysis Framework Dynamic CRM, at this stage Rovell Digital Printing obtain the required data from transactions of the customers (of) to see customers like what many use the services Rovell Digital Printing, to be used as an indicator of market segmentation for the opening of new branches and analyze which areas have a high market share and has the potential to open new branches by market share analysis.

Based on interviews with the owner, the opening of new branches is restricted to cities / regencies in West Java Province. At this stage, further analysis is required to determine potential areas of new branch opening accurate. Here are the stages of market share analysis for the opening of new branches:

2.2.1.1.1 Market Share Analysis for the opening of new branches Rovell Digital Printing

The purpose of the analysis is to determine the market share of the potential market / customers in every region of the services offered by Rovell Digital Printing. To determine the market share, then the 3 stages of analysis, market segmentation, Targeting (Determination of Target Market) and Positioning (Positioning Market):

1. Geographic Market Segmentation Analysis

Geographic market segmentation that divides the market into different geographical units, such as country, state, region, county, city, or neighborhood.

At this stage of the process geographical segmentation is done to determine areas that more users of digital printing services that will be made as an indicator to see which geographic market segmentation potential for opening new branches Rovell Digital Printing.

In the geographical market segmentation, according to the results of interviews with the owner then do market segmentation by city / regency in West Java province. Here is the data from the BPS 27 City / Regency in West Java province which is the target of the new branches with many service users in each region Rovell Digital Printing.

Table 1. Data BPS City / Regency in West Java Province

No.	City / County	Industrial	College	School	Ground Rent
1	Kab. Bogor	101	5	3572	40000000
2	Kab. Sukabumi	19	4	2071	20000000
3	Kab. Cianjur	7	5	1984	15000000
4	Kab. Bandung	58	8	2158	50000000
5	Kab. Garut	-	10	2487	23000000
6	Kab. Tasikmalaya	2	12	1715	15000000
7	Kab. Ciamis	3	5	1158	10000000
8	Kab. Kuningan	4	4	897	14000000
9	Kab. Cirebon	58	14	1404	32000000
10	Kab. Majalengka	27	7	920	15000000
11	Kab. Sumedang	2	10	873	17000000
12	Kab. Indramayu	1	5	1393	18000000
13	Kab. Subang	7	7	1280	13000000
14	Kab. Purwakarta	42	10	717	26000000
15	Kab. Karawang	104	11	1317	50000000
16	Kab. Bekasi	187	16	1711	58000000
17	Kab. Bandung Barat	77	2	1199	59000000
18	Kab. Pangandaran	-	0	372	12000000
19	Kota Bogor	175	27	603	61000000
20	Kota Sukabumi	13	9	234	28000000
21	Kota Bandung	11	120	1397	70000000
22	Kota Cirebon	41	18	278	43000000
23	Kota Bekasi	17	39	1345	49000000
24	Kota Depok	69	13	981	52000000
25	Kota Cimahi	17	12	220	37000000
26	Kota Tasikmalaya	19	12	431	38000000
27	Kota Banjar	32	2	149	33000000

2. Targeting (Determination of Target Market)

For this stage is to choose which of the segmentation to target by Rovell Digital Printing. After seeing the BPS City / Regency in West Java province, the number of colleges, many schools and many industries being targeted opening of new branches by Rovell Digital Printing. After segmentation geographic markets with the data obtained from BPS later in the analysis of the data, so it is selected from 27 cities / regencies in West Java Province only 3 city / county most just Kab Bogor with the prevailing criteria of many schools with the number 3572 and the rents land worth 40000000, Bandung with the criteria of many colleges with the number 120 and Bekasi with the criteria of many industries with the number 187. this data will then be analyzed and used as examples in the calculation using the method of decision support systems with SAW (Simple Additive Weight).

Table 3. Data 3 City / Town Users Most in West Java Province

No.	City / County	Industrial	College	School	Ground Rent
1	Kab. Bogor	101	5	3572	40000000
2	Kota Bandung	11	120	1397	70000000
3	Kab. Bekasi	187	16	1711	58000000

3. Positioning (Positioning Markets)

At this stage, positioning the market carried out to determine the opening of new branches Rovell Digital Printing with views of the data that has been collected, from the stage of geographic segmentation to determine your target market then can the data from BPS 27 cities / regencies in West Java province to have 3 city / most districts as service users Rovell Digital Printing and superior criteria of city / other

districts namely Kab.Bogor, Bandung and Kab.Bekasi. Determination of market position is intended to analyze in more detail for the opening of new branches are on target, so the recommendation is given street in every city / district that will be the target of positioning market Rovell Digital Printing, so that in can be a recommendation to the three cities / districts to be analyzed namely Kab.Bogor with the recommendations is the way Malabar, Paledang road and highway Merdeka, Bandung is the road to Soekarno Hatta, road and street Karapitan Leuwi Elephants, for Kab.Bekasi is Sukatani Pilar street, road Kali Malang and the Pandavas, the data the recommendation is obtained from the company that will be in use as the assumption of a decision support system calculation methods SAW (Simple Additive Weight). The following table 4 3 Assuming the data to be analyzed for the opening of new branches Rovell Digital Printing.

Tabel 4. Assumption of data from 3 City / District to be analyzed

No.	City / County	Industrial	College	School	Ground Rent	Recommendation Roads
1	Kab. Bogor	101	5	3572	40000000	1.Jln.Malabar 2.Jln.Paledang 3. Jln. Raya Merdeka
2	Kota Bandung	11	120	1397	70000000	1. Jln Soekarno Hatta 2. Jln. Karapitan 3. jln. Leuwi Gajah
3	Kab. Bekasi	187	16	1711	58000000	1. Jln Pilar Sukatani 2. Jln. Kali Malang 3. jln. Pandawa

2.2.1.1.2 Analysis of calculation of SAW (Simple Additive Weight)

After analyzing the market share for the opening of new branches, then analyzed the determination of the prospective new branches from 27 cities / regencies in West Java and the sample to be analyzed taken 3 city / county to prove precisely targets the opening of new branches by using the system of decision-makers SAW (Simple additive Weight).

SAW calculation is a weighted summation method. The basic concept of the method SAW (Simple Additive Weight) is looking for a weighted sum of rating performance on each alternative on all criteria (Kusumadewi et al., 2006). Here are the steps to the calculation method of decision support systems with SAW (Simple Additive Weight), with 3 city / county of 27 city / regency in West Java province.

a. An equation used for the calculation of SAW (Simple Additive Weight) is as follows:
   1. Formula equation below are meant to see the equation which will be used, if the criteria used berifat profitable for the company then uses the equation j is an attribute of an advantage, if the criteria used are not profitable company then uses the equation j is the cost attribute. Here is the formula SAW (Simple Additive Weight).

$$r_{ij} = \begin{cases} \frac{X_{ij}}{Max\ X_{ij}} & \text{Jika j adalah atribut keuntungan } (benefit) \\ \frac{Min\ X_{ij}}{X_{ij}} & \text{Jika j adalah atribut biaya } (cost) \end{cases}$$

Information :
r_{ij} = value normalized performance rating.
X_{ij} = value attributes of each criterion.
$Max\ X_{ij}$ = largest value of each criterion.
$Min\ X_{ij}$ = value terkecildari each criterion.
Benefit = if the greatest value is the best.
Cost = if the smallest value is best.

2. The formula equation below is a formula for calculation method perangkingan on SAW (Simple Additive Weight).

$$V_i = \sum_{j=1}^{n} w_j\, r_{ij}$$

Information :
V_i = ranking for each alternative
W_j = weight value of each criterion
r_{ij} = value normalized performance rating

b. Providing data to be analyzed..
The data used is the analysis of the original data for opening new branches, but as an example of the calculation method applied to the SAW (Simple Additive Weight) which analyzed only three cities / regencies of West Java province alone. Below is a sample of the original data as the calculation method of SAW (Simple Additive Weight*).*

Table 5. The data will be analyzed

No.	City / County	Industrial	College	School	Ground Rent
1	Kab. Bogor	101	5	3572	40000000
2	Kota Bandung	11	120	1397	70000000
3	Kab. Bekasi	187	16	1711	58000000

c. Transform data into the form of a matrix X..
After getting the data to be analyzed and then made into the form of a matrix X below are examples of the matrix equation and the results matrix X by using the original data.

$$X = \begin{Bmatrix} R_{11} & R_{21} & R_{31} & R_{41} \\ R_{12} & R_{22} & R_{32} & R_{42} \\ R_{13} & R_{23} & R_{33} & R_{43} \end{Bmatrix}$$

Results matrix equation X with input original data.

$$X = \begin{Bmatrix} 101 & 5 & 3572 & 40000000 \\ 11 & 120 & 1397 & 70000000 \\ 187 & 16 & 1711 & 58000000 \end{Bmatrix}$$

d. Determining the criteria and weighting (W).
Before performing a predetermined calculation criteria and weighting that will be used in the calculation of perangkingan. In accordance interview with the owner and Bag. Rovell Marketing Digital Printing weight values in the table below is the value of the weight to the wishes of the owner. Below is the criteria and weighting.

Table 6. Criteria and weights

No	Criteria	Weight
1.	Number of Industrial	25 %
2.	Number of Higher Education	25 %
3.	Number of School	25 %
4.	Ground Rent	25 %

The results of the above table W = [0,25 0,25 0,25 0,25]

Information:

W = 0.25 for the weight of many industries

W = 0.25 for the weight of the many colleges

W = 0.25 for the weight of many schools

W = 0.25 for the weight of the ground lease

e. Normalize the matrix X into matrix R by the following equation.

$$r_{ij} = \begin{cases} \frac{X_{ij}}{Max\ X_{ij}} & \text{Jika j adalah atribut keuntungan } (benefit) \\ \frac{Min\ X_{ij}}{X_{ij}} & \text{Jika j adalah atribut biaya } (cost) \end{cases}$$

Information :

r_ij = value normalized performance rating.

X_ij = value attributes of each criterion.

Max X_ij = largest value of each criterion.

Min X_ij = smallest value of each criterion.

Benefit = if the value of the biggest is best.

Cost = if the smallest value is best.

Table 7. Determination of costs and benefits

No	Criteria	*Cost*	*Benefit*
1.	Industry		√
2.	College		√
3.	School		√
4.	Ground Rent	√	

From table 7 when the criteria used berifat profitable for the company then uses the equation j is an attribute of an advantage, if the criteria used are not profitable company then uses the equation j is an attribute costs. So after the views of all the criteria, 3 entry criteria to benefit because the more it will benefit the company and one entry criteria to the cost because more and more it is not profitable for the company.

f. Normalizing the decision matrix (X).

1. For a number of industries including the number of attributes into profit (benefit), because the greater the value, the better it is considered.

   So:

   $R_{11} = \frac{101}{Max\ (101; 11; 187)} = \frac{101}{187} = 0{,}540$

   Value of 0.540 for the calculation Kab Bogor

   $R_{12} = \frac{11}{Max\ (101; 11; 187)} = \frac{11}{187} = 0{,}059$

   Value of 0.059 for the calculation of Bandung

   $R_{13} = \frac{187}{Max\ (101; 11; 187)} = \frac{187}{187} = 1$

   value of 1 for the calculation of Bekasi

   So the conclusion from the above calculation with the criteria of many industries is highest value in Bekasi with a value of 1.

2. For a number of the many colleges belonging to the attribute advantage (benefit), because the greater the value the better it is considered.

   So :

   $R_{21} = \frac{5}{Max\ (5; 120; 16)} = \frac{5}{120} = 0{,}042$

   Value of 0.042 for the calculation Kab Bogor

   $R_{22} = \frac{120}{Max\ (5; 120; 16)} = \frac{120}{120} = 1$

   A value of 1 for the calculation of Bandung

   $R_{23} = \frac{16}{Max\ (5; 120; 16)} = \frac{16}{120} = 0{,}133$

   Value 0133 for the calculation of Bekasi

   So the conclusion from the above calculation with the criteria of many colleges are the highest values in Bandung with a value of 1.

3. For the number of times of schools included in the attributes profit (benefit), because the greater the value the better it is considered.

   So :

   $R_{31} = \frac{3572}{Max\ (3572; 1397; 1711)} = \frac{3572}{3572} = 1$

   A value of 1 for the calculation of Kab Bogor

   $R_{32} = \frac{1397}{Max\ (3572; 1397; 1711)} = \frac{1397}{3572} = 0{,}391$

   Value of 0.391 for the calculation of Bandung

   $R_{33} = \frac{1711}{Max\ (3572; 1397; 1711)} = \frac{1711}{3572} = 0{,}480$

   Value of 0.480 for the calculation of Bekasi

   So the conclusion from the above calculation with the criteria of many schools is highest value in Bogor Regency with a value of 1.

4. For the lease of land belonging to the attributes of the cost (cost), because the greater the cost, it is considered unfavorable for the company..

   So :

   $R_{41} = \frac{Min\ (40000000; 70000000; 58000000)}{400000000} = \frac{40000000}{40000000} = 1$

   A value of 1 for the calculation of Kab Bogor

   $R_{42} = \frac{Min\ (40000000; 70000000; 58000000)}{700000000} = \frac{40000000}{70000000} = 0{,}571$

Value of 0.571 for the calculation of Bandung

$R_{43} = \frac{Min\ (40000000; 70000000; 58000000)}{580000000} = \frac{40000000}{58000000} = 0{,}690$

Value of 0.690 for the calculation of Bekasi

So the conclusion from the above calculation criteria ground rent value is highest in Bogor Regency with a value of 1.

After calculation by normalizing the decision matrix X, it will get the matrix R. Below is a matrix R.

$$R = \begin{Bmatrix} 0{,}540 & 0{,}042 & 1 & 1 \\ 0{,}059 & 1 & 0{,}391 & 0{,}571 \\ 1 & 0{,}133 & 0{,}480 & 0{,}690 \end{Bmatrix}$$

g. Conducting the process of ranking.

At this stage, after getting matrix R that is calculated in ranks by the following equation.

$$V_i = \sum_{j=1}^{n} w_j\, r_{ij}$$

Information :

V_i = ranking for each alternative

W_j = weight value of each criterion

r_ij = value normalized performance rating

So :

V_1 = (0,25)(0,540) + (0,25)(0,042) + (0, 25)(1) + (0,25)(1)

= 0,135 + 0,011+ 0,25 + 0,25

= 0,646

0,646 results are ranked for Kab Bogor.

V_2 = (0, 25)(0,059) + (0, 25)(1) + (0, 25)(0,391) + (0,25)(0.571)

= 0,015 + 0,25 + 0,098 + 0,143

= 0,506

0.506 results are ranked for the city of Bandung.

V_3 = (0, 25)(1) + (0, 25)(0,133) + (0, 25)(0,480) + (0,25)(0,690)

= 0,25 + 0,033 + 0,12 + 0,173

= 0,576

0.576 results are ranked for Bekasi.

Then the conclusion of the calculation of the final results of ranking the Bogor Regency is superior than the other districts / cities with a value of 0,646.

h. Rated the best alternative.

Based on the calculations in points g, then the best alternative is V_1 value with the value of 0.646. So that when viewed from 3 city / county analyzed the new branch opening Rovell Digital Printing is done in Bogor.

Table 8. Results of the best alternative value

No.	City / County	Industrial	College	School	Ground Rent	The Final Result
V_1	Kab Bogor	0,540	0,042	1	1	0,646
V_2	Kota Bandung	0,059	1	0,391	0,571	0,506
V_3	Kab Bekasi	1	0,133	0,480	0,480	0,576

i. Conclusion

Based on the calculation method stage SAW (Simple Additive Weight) with the original data, for the determination of the new branch of the 3 city / district analyzed Kab Bogor, Bandung and Bekasi. The final result, on the opening of new branches is Kab Bogor with rank 1 with a value of 0,646, Bekasi with the ranking to second with a value of 0.576 and ranks 3rd is the city of Bandung with a value of 0.506. Below is a table after sort by ranking for the opening of new branches recommendation.

Table 9. Results and recommendations opening of new branches

No.	City / County	Industrial	College	School	Ground Rent	The Final Result
1.	Kab Bogor	0,540	0,042	1	1	0,646
2.	Kab Bekasi	1	0,133	0,480	0,480	0,576
3.	Kota Bandung	0,059	1	0,391	0,571	0,506

2.2.1.1.3 The results of the analysis of market shares and the calculation method of SAW (Simple Additive Weight) to be implemented on a map

Based on the results of the analysis has been done, the owner will be given advice on determining the area of opening new branches based on the target market of Rovell Digital Printing can be seen in table 10 and can be seen in figure 3.

Table 10. Results of the analysis and ranking

No.	City / County	Industrial	College	School	Ground Rent	The Final Result	Ranking	Description	Recommendations Street
1.	Kab Bogor	0,540	0,042	1	1	0,646	I	3 Bintang	1. Jln. Malabar 2. Jln. Paledang 3. Jln. Raya Merdeka
2.	Kab Bekasi	1	0,133	0,480	0,480	0,576	II	2 Bintang	1. Jl. Pilar Sukatani 2. Jln. Kali Malang 3. Jln. Pandawa
3.	Kota Bandung	0,059	1	0,391	0,571	0,506	III	1 Bintang	1. Jln Soekarno Hatta 2. Jln. Karapitan 3. Jln. Leuwi Gajah



Figure 3. Map on opening new branches

2.2.1.2 Phase Retention

Stage Retention on frameworck dynamic CRM has a goal to provide information from the company to the customers so that established good relationships with customers and can retain customers. Below is an explanation of the features of the retention phase*:*

a. company information

Features corporate information functions so customers know the profile of the company. The company information including, the history of the company, company profiles which can be determined by the customer in order to build the confidence of customers to the company.

b. Information services and products company
This feature is information about the kinds of services at Digital Printing Rovell eg banner creation services, cutting sticker, laser etc.

At this stage there is a relationship Value Analysis / Value Relationship Analysis, which is the second stage of analysis Dynamic CRM Framework, at this phase with their enterprise information, information services, Digital Printing Rovell customers can establish a good relationship.

2.2.1.3 Tahap Expansion

Expansion phase is the last stage in the dynamic phase of CRM, which is used to maintain customer loyalty to Rovell Digital Printing. Facilities to be built in the expansion stage doing promotions information given Rovell Digital Printing at a given moment..

At this stage the company provides promotions that will be given to the customer by providing information that will be built disistem and promotion through social media such as facebook or twitter to facilitate bag.marketing to disseminate promotional information contained in the company in order to attract new customers. The Company hopes that the promotional information informed by the system to be made and dissemination through social media customers will be more loyal to the services provided by Rovell Digital Printing particularly promotions provided by the company.

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2.3 Analysis Database

In the development of a CRM system requires a database design, modeling which will be used in the design of this database menggunanan Entity Relational Diagram (ERD). Database modeling can be seen in Figure 4.

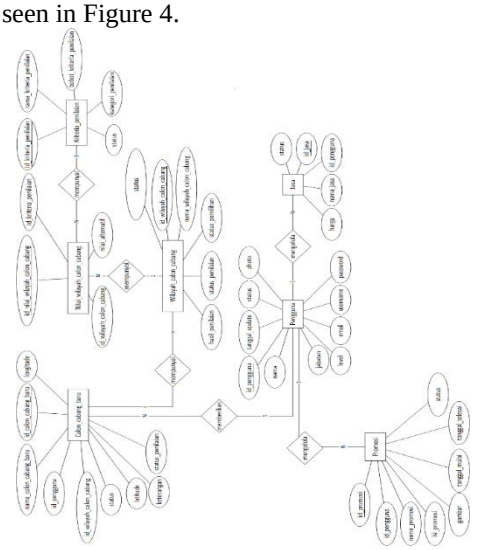


Figure 4. Diagram ERD

2.4. Diagram Context

Diagram Context is a simple diagram A diagram that illustrates the relationship between external entities, input and output of the system. Direpsentasikan context diagram with a single circle that represents the whole system. There are 4 users that play a role in this system is the chairman, administrators, and members in which each actor has the right info and types of data that can be seen in Figure 5.

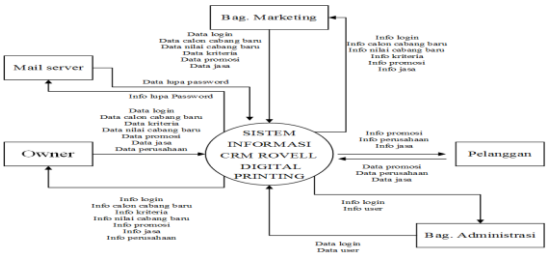


Figure 5. Diagram Context

2.5. Data Flow Diagram

DFD is often used to describe an existing system or the new system will be developed logically without considering the physical circle where the data flow or the physical environment in which the data will be stored. Here is a picture data flow diagram for Customer Relationship Management Information System in Rovell Digital Printing, DFD can be seen in Figure 6.

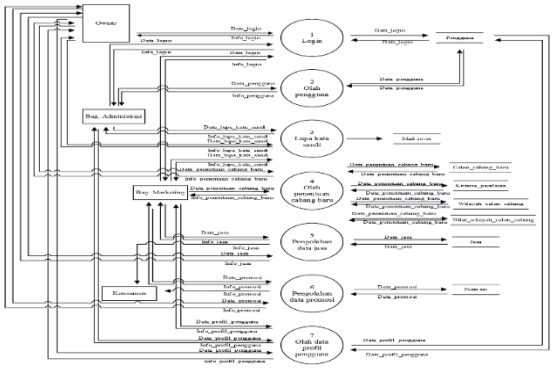


Figure 6. Data Flow Diagram (DFD) Level 1

2.6. Relation scheme

Relationship scheme is a series of relationships between multiple tables in a database system. Explanation series of databases on this system can be seen in Figure 7.

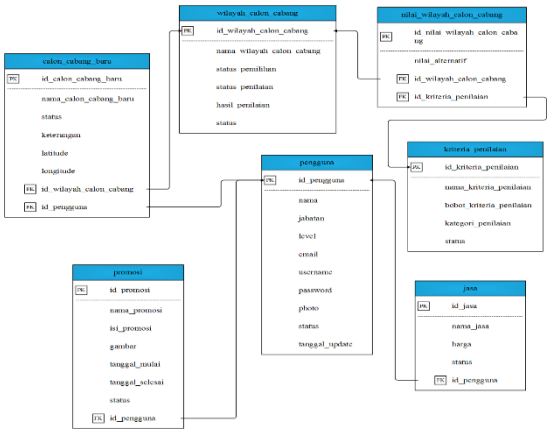


Figure 7. Schematic relation

2.7. Designing Interfaces

Interface design is made to give the concept of the implementation of making an interface later on the system. Here is an overview of interface design in this system.

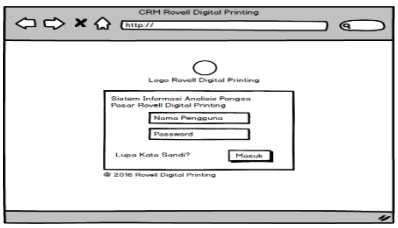


Figure 8. Display Log

2.8. Semantic Network

Semantic networks describe the connectedness between menu pages. On the customer relationship management information system in Rovell Digital Printing.

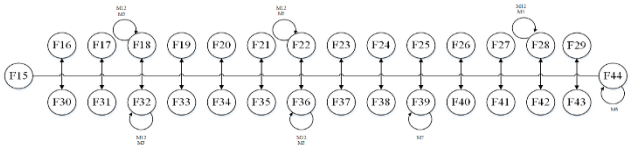


Figure 9. Bag semantic networks. Marketing

2.9. Testing Systems

Testing of the system is the cornerstone that aims to find errors or omissions in the information system under test. System testing is to determine the performance of information systems that have been made in accordance with the purpose of information system design. Testing the system uses black box testing. Black box testing focuses on functional requirements of the software.

Test plan will do is to test the system built by Black Box and Beta.

2.9.1. Blackbox Testing

Based on test results that have been made to the CRM information system, it can be concluded that Functionally the system is able to produce the system requirements as expected.

2.9.2. Beta Testing

Based on the answers of the Bag. Rovell Marketing Digital Printing on testing the system, it can be concluded that the Customer Relationship Management Information System has been built following the interview and answers beta testing:

Pertanyaan	Jawaban
What do you think about the interface on this CRM information systems?	For the user interface, the system looks simple so convenient to use, in terms of the placement of the menu until the color is appropriate.
What do you think about the language used in this CRM information system?	I think the language used in this information system is appropriate and easy to understand.
Is CRM information systems this functionality has been able to provide info sale?	I think for the information campaign, as the functionality is good.
Is CRM information systems this functionality has been able to provide information services?	According to me for information services, the functionality is already good.
What do you think about the management of information - information relating to your company with their CRM information systems based website?	With the CRM information system website is enough to help us in getting the information and data management related to the company.
Does the existence of CRM information systems can assist you in determining a region's market share for the opening of a new branch?	Very helpful, because it can give a recommendation in the determination of the area for the opening of new branches and is already as needed.
What do you think about the ease of data processing on this CRM information systems?	For the processing of the data easy to understand and operate.
What do you think about the ease of use of CRM information system as a whole?	I think the ease of use of CRM information systems have largely been good and easy to understand.
Do you have criticisms and suggestions to the information system so that information systems can be better?	The information system is good enough.

In this chapter, will be presented the conclusions that can be derived from the discussion of the previous chapters, as well as suggestions for improvement and further development of the system.

3.1. Conclusion

After doing the analysis, design, and testing. It can be concluded as follows:

Customer Relationship Management Information System can help Bag. Rovell Marketing Digital Printing in determining the market share of each region for the opening of new branches.

3.2. Suggestion

In order for a system built to work better, adding a few things should be done as follows:

1. The addition of online customer complaint facility on Information Systems Customer Relationship Management in Digital Printing Rovell.
2. The addition of online sales of navigation facilities on Information Systems Customer Relationship Management in Digital Printing Rovell.
3. The existence Increasing market share analysis of the competitors on Information Systems

Customer Relationship Management in Digital Printing Rovell.

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