ANALYSIS OF CROSS SELLING ON THE RECOMMENDATION PACKAGE CV. FOKUSMEDIA USING THE APPROACH CUSTOMER RELATIONSHIP MANAGEMENT

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ABSTRACT

CV. Fokusmedia is a company specializing in the field of book publishing book in particular governance and legislation. Companies in certain activities or in the day so the company doing the packaging of the book with a cheaper price. But in the process the book packaging, marketing manager has yet to find a pattern for the recommendation package the book and marketing manager have yet to detemine the type of customers that match the recommendation the book package.

Based on the existing problems in the current, then it needs a system that can determine which books will be recommended as a package that suits your type of customers using Customer Relationship Management approach. One way is to do a package of recommendations is to use analysis of cross selling. On the principle of cross selling is a strategy that is used to describe the sale of additional products to customers who have bought something from the company. The methods used to determine which books will be recommended as a package is the Association Rule.

Based on the results of the research and testing can be concluded that application that is built can make marketing manager in performing packaging book as well as the marketing manager can make in delivering package according to the type of customers.

Keyword : Customer Relationship Management, cross selling, recommendation packages, Assocotian Rule.

1. INTRODUCTION

CV. Fokusmedia is a company specializing in the field of book publishing book in particular governance and legislation. CV. Fokusmedia produce several categories of books, including books that categorized the Qur'an, of Government, legislation, as well as the public and the Islamic religion. In the company's monthly average 12500 published copies. Specifically for the book best seller in perbulannnya the company publishes an average of 5000 copies. CV. Fokusmedia has many customers from several regions in Indonesia. Customers CV.Fokusmedia from bookshops, agencies of Government, as well as from individuals.

Based on the results of the interview with the Director as JM Afrizal owner CV. Fokusmedia, companies in certain activities or in the day so the company doing the packaging of the book with a cheaper price. The book was made into packaging including book categories Qur'an, governmental, legal, as well as public and religious. But in the process the book packaging, marketing manager has yet to find a pattern for the recommendation package the book. Currently, manager marketing determine whichbooks will be recommended as a package by looking at many books sold on the transaction data in a period of 3 – 4 months as a consideration of decision-making which books will be made into a package. Therefore, manager marketing packaging often randomly based on the number of books sold in a given period. Of these, resulting in customers obtain a package of books has not been according to your needs. For example look at the sales data in January 2015 (table D Appendix d. 1), Staffing and systems administration book book Franchises each sold 42 copies and 36 copies. But it is not enough to make the recommendation package, because it might require customers book in addition to the two books. In addition, the company has yet todetermine the type of customers that match the recommendations the book package. Determination of the types of customers that are running right now that is based on an estimate of how often these customers making transactions at the company. Therefore, the determination of the existence of the types of customers yet sometimes manager marketing delivers the same package recommendations between subscribers. This results in customers who frequently conduct transactions in the company get a package of the same book with customers who rarely perform transactionsat the company.

One way is to do a package of recommendations is to use analysis of cross selling. On the principle of cross selling is a strategy used to

describe sales of additional products to customers who have bought something from the company.

Customer Relationship Management is a business strategy that combines the process and function of internal, external, network for creating and delivering value to customers for profit. CRM based on the customer data quality is made possible by the existence of information technology. [5]

Based on the background that have been put forward, then the outline of the research problem is how to apply the analysis of cross selling on the recommendation package CV. Fokusmedia using customer relationship management approach. While the goals to be achieved in this study are as follows.

1. Assist marketing manager in finding patterns for a package of recommendationsof books.
2. Assist manager marketing determine which types of customers in accordance with the recommendation of the book package.

2. CONTENTS RESEARCH

2.1 Cross Selling

An important aspect of the new orientation on customer-oriented marketing is the use of a database transaction customers to cross-sell analysis (cross-selling) services and products. Cross-selling efforts with regard to increasing the number of products or services that customers use of or purchase from the company. Cross-selling of products and services purchased customers currently cost lower than the associated costs to acquire new customers, because the company already has a relationship with customers. The proper implementation of implementing cross-selling can only be achieved if there is an information infrastructure that enables managers to offer products or services to customers who are absorbing their needs but not yet sold to their sales of additional products and services to customers who have bought something from the company. This strategy is related to the analysis of customer data. Some other terms that relate to this marketing technique, among others:

1. Product bundling, determine what products will be sold together as a package sale.
2. Product affinity analysis, understanding the poduk and what services are purchased simultaneously.
3. The Next sequential purchase, predict what products or services will be purchased later.
4. The Propensity-to-buy analysis, mengestimasi what products or services will be purchased later by certain customers.
5. Profitability analysis, understand where customers are very important to care.
6. Price elasticity modeling and dynamic pricing, finding optimal prices for certain products and certain customers to segment.

By analyzing customer behavior, it can be possible to predict the next customer behavior models and also the behavior of customers where potential. This is very profitable for the company as it can sell different products and services with the use of marketing techniques which are more diversified through the knowledge that has been acquired. Companies can identify customer needs and desires to establish additional product of its main product. Additional product suggested could be the common-sense-based (for example, if a customer bought a digital camera, then cross-sell his product is usually a memory card, case, and spare battery) or may also be data-driven (cross-selling is derived from data of purchase historikal customers). [2]

2.2 Customer Relationship Management

Customer Relationship Management is a business strategy that blends processes and internal functions, the external network, for the game and deliver value to customers for profit. CRM based on the customer data quality is made possible by the existence of information technology. [5]

2.2.1 Stages In CRM

There are three stages in CRM, which are as follows. [3]

1. Acquire a phase of acquiring customers. Through this stage can provide an assessment to the company by assessing the first impression to the company. If the customer has a good judgment against the company, then the transaction will be able to run well. Acquiring new customers by doing promotions on products and services offered.
2. Enhance is a process where the company builds good relationships with customers. By listening to complaints from customers and receive advice from customers is one of the effective ways in building relationships with customers. In this stage, there are two things to be aware of:
    a. Cross selling, that is one of the strategies for identifying customers in order to increase sales. For example, complementary product offering to customers.
    b. Up selling, that is the strategy of increasing sales of products through the addition of a quantity of products. For example, offer the same product with a larger quantity.
3. Retain is the stage where the company attempted to retain customers, in other words get a customer and then maintain a relationship with them. In order to establish rapport by constantly and maintain relationships with customers, then the company should use the

view using the customer by providing services and applications.

2.2.2 Destination CRM

In general it can be said that the purpose of any CRM strategy is to develop profitable relationships with customers. Some companies do it by eliminating the costs of such relations, for example by redirecting customers to self-service web-based. Other companies do it by increasing the earned income of the customer relationship, for example by selling additional products and services to customers. Most companies use both approaches. The purpose of the core CRM is addressed by the head of the arrow on the right end of the CRM value chain, namely customer profitability. In the context of non-profit, will seek a different CRM goals, such as efficiency of operations or increased client satisfaction.

Customer profitability measurement means that organizations must be able to track your income and expenses on customers, both at the level of the segment or individual level. Most of the company's Business-to-Business (B2B) can track revenue on customers. The database contains invoice data. There are fewer companies that can track costs to customers. For example, the cost of service fees and customer mastery. Application of CRM in the Business-to-Business (B2B), cost of revenues will most likely be allocated at segment level because there are a lot of customers there. [5]

2.2.3 Types Of CRM

Types of Customer Relationship Management (CRM) is the operational CRM, collaborative CRM and analytical CRM. [5]

1. Operational CRM focus more on automation company ways in dealing with customers. A variety of CRM software applications enabling functions of marketing, sales, and service can be run automatically.
2. Analytical CRM used to exploit consumer data in order to improve their value (the value data of the company). The system was developed based on information about the consumer. Customer data can be obtained from the information centres or data banks that are owned by the company, i.e. the relevant sales data (history of the purchase of goods or services by customers), financial data (payment history or credit score), data marketing (consumer response against ad campaigns, product loyalty scale data), and data services.
3. Collaborative CRM is activities to combine all the necessary communications, coordination and collaboration between companies with customers.

2.2.2 CRM Framework

In making a CRM system that will be built required a framework as a reference so that the CRM features that can be built quickly and precisely. This framework describes a series of stages of development or implementation of CRM. His most important substantive information is retrieved from the customer so obtained his output in the form of relationship management. As for the framework used is the Dynamic CRM framework.

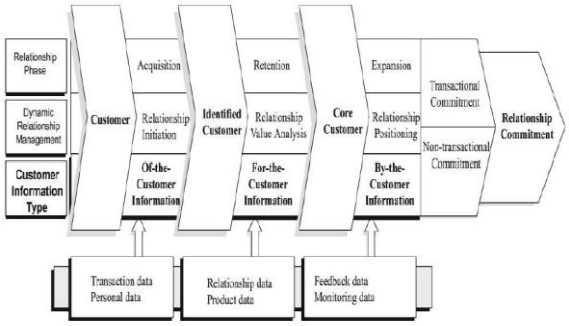


Figure 1 CRM Framework

Stages of Dynamic CRM framework is as follows.

1. Stages of the relatonship phase.
   a. Stages of acquisition in this section described how to get customers with diwujudkannya with a variety of strategies.
   b. Phase retention in this section described how a company can implement a variety of strategies to retain customers with ways to improve the service.
   c. Stage of expansion at this stage is the stage of how to build good relationships against existing customers with complaints, always listen to the wishes of the customer, as well as how to serve customers well.
2. The stages of dynamic relationship.
   a. Relationship intiation at the initiation of the relationship with the customer, the organization conducts logging against customers who have program transactions.
   b. The Relationship value analysis at this stage is conducted data analysis of data already available that aim to increase customer loyalty.
   c. Relationship positioning at this stage done penindak after customers advanced stages of Relationship value analysis.
3. Stages of customer information type:
   a. Of the customer information (customer information), that information regarding personal data and customer transaction data. The information in this category are

often known as database marketing and target marketing.

b. For the customer information (customer information), information about products, services and company information are considered important by customers. This information could be channeled through various media of communication in the form of direct mail, auto response system, and internet sites.

c. By the customer information (customer information), namely the information feedback from customers that include nontransaksional complaints, proposals, claims, customer needs and others. This information is usually manifested in the form of an expanded customer data because this information is very helpful in customer interaction. In addition, because it contains complaints, needs and suggestions, information of this type can be applied to develop the product.

2.3 Association Rule

Association rules is one of the techniques in data mining to determine relationships between items in a dataset (the set of data). The concept itself is derived from the term market basket analysis, i.e. the search relationships of several products in the purchase transaction. This technique seek possible combinations that frequently appears (frequent) of an itemset (a group of items). [1]

There are two steps in this algorithm. The first step is to do the calculation to find the frequent itemset and second step search for association rules (rules) of a group of frequent itemset. In using this method, there is generally a 2 size: [8]

1. Support is a measure that indicates the level of dominance of an itemset from the overall transaction (e.g. of the whole deal is, how likely an item A and item B is purchased at the same time).
2. Confidence is a measure that States the relationship between the two items in conditionals (e.g. how often an item is purchased, if A customer purchases an item B).

$$\text{conf}(A \rightarrow B) = (A \mid B) = \frac{jml\ transaksi\ yang\ mengandung\ item\ pada\ A \cap B}{jml\ transaksi\ yang\ mengandung\ item\ pada\ A} \quad (1)$$

Both this size later is useful in determining a pattern by comparing the pattern with a minimum value of both these parameters specified by the user. Basic analysis of the Metodoogi Association is divided into 2 phases :

1. High frequency pattern Analysis
   This stage is looking combinations of goods that qualify for a minimum value of support in the database.
2. The establishment of rules of the Association
   After all the high-frequency pattern is found, then look for a fairly strong association rule dependency between items. In the antecedent (the predecessor) and consequent (followers) and the minimum eligible for associative rules with confidence A → B.

2.4 FP-Growth Algorithm

Commonly used algorithms in finding frequent itemset for determination of product promotion recommendations among other things apriori algorithm and FP-Growth algorithm. This research will be discussed on how to search the frequent itemset uses the FP-Growth algorithm. FP-Growth algorithm is one of the alternative ways to find the set of data that appears most often (frequent itemset) without the use of a generation of candidates. FP-Tree (Frequent Pattern Tree) is used in conjunction with the FP-Growth algorithm for frequent itemset determine (the most frequent data) from a dataset.

Process calculation of association rule consists of several stages that can be seen in Figure 2. Figure 2 shows the steps in determining the frequent itemset, where first performed the determination of the minimum support of datasets, after that specify the header of the frequent itemset and make FP-Tree, then the existing FP-Tree used to make Conditionals Pattern. Of Conditionals Pattern then conducted the determination of Frequent Itemset. [9]

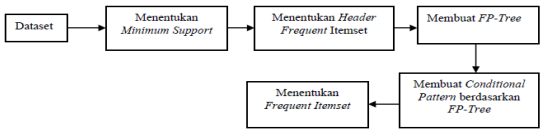


Figure 2 Tahapan-Tahapan Perhitungan Association Rule

2.5 Analysis Of The Problem

Analysis of the problem which is done is by identifying the constraints in the research that is being done. Need for analysis of the problem through the formulation of a problem that has been defined earlier. Based on the results of observation it can be concluded that the presence of a stock of books that are available in the warehouse make marketing manager do the packaging of the book. The purpose of the book so that the packaging of the book are available in the warehouse can be sold to customers with cheaper prices. But in doing the book packaging, marketing manager often do it randomly. This results in customers obtain a package of books that are not yet in compliance with

the requirement and allows the customer did not purchase the book. Therefore, the stock of the existing books in the warehouse is not reduced.

2.6 Analysis Of The Packaging Of The Book Using Association Rule

In this stage will do a workaround on the recommendation package of books in CV. Fokusmedia with method of Association Rules using the FP-Growth Algorithm.

A. Analysis of the book to be made into a package

The analysis will be performed to determine which books will be made into a package that is using the method of association rule. Explanation of stages of calculation process Association Rule is as follows.

1. The Dataset
   This stage is the process of removing sales data that only 1 of the same goods in a single transaction.
2. Determine the minimum support
   At this stage the data data cleansing process has been done will be done of the determination of the minimum support. Minimum support is a measure that indicates the extent of the level of a combination of an item in a data transaction. In this study a minimum of support being used, namely 7% of sales transaction data 39 used i.e. amounted to $2.73 \approx 3$, meaning goods that have the number of occurrence of less than 3 will be eliminated in transaction data.
3. Determine the header of frequent itemset
   After having obtained the data that meet the minimum support, further specify the header of the frequent itemset, give priority value starts from largest amount to smallest with.
4. Make an FP-Tree
   The next step is to make FP-Tree.
5. Make conditionals pattern based on FP-Tree
   After the stage of formation of FP-Tree of the database transaction is committed, then the next step is to implement FP-Growth Algorithm.
6. Determine the frequent itemset
   After getting the results of conditionals FP-Tree, the next step is to determine the frequent itemset. Frequent itemset can dimisalkan be A → B. from frequent pattern obtained results the next step is to find a subset or combination of each code

B. Analysis of the characteristics of the customers

Analysis of the characteristics of customers can purchase patterns known by customers, such as many categories of books purchased by these customers. Table history book purchases by customers during the period January – June 2015 can be seen in Appendix D table D. 11.

C. Recommendations book package

Book package recommendations offered to the customer is looking at purchasing patterns of customers with the results of the analysis that has been done. In deciding to book the package the customer has some rules that is is as follows.

1. determination of the package the book for the customer that is looking at the category of the most widely purchased by a customer. The categories will be made in a package is minimal, there are two categories of books the most widely purchased by customers.
2. If there is a category of books purchased in the same amount, then the category of books that will be used as the package is viewed total kuantiti from category the book.
3. after knowing the category of the most widely purchased by the customer, then the next step is to look at the titles of books that will be used as a package by looking at the results of the analysis.
4. Books will be made into a package that is seeing the largest number of occurrences of each book title.
5. Customers who get the recommendation package book is customers who have been doing deals at least twice.
6. Customers who get the recommendation package book is minimal customers had deals amounting to Rp 700,000
7. If there are agencies and bookstores who conduct transactions less than 2 times, then still get the recommendation package books with the terms total transactions conducted exceeds or equal to Rp 700,000

2.7 Non Functional Requirements Analysis

Non functional requirements analysis undertaken to produce details about things done system when implemented. As for the analysis contains non-functional needs analysis i.e. analysis, user needs analysis, requirements analysis software.

2.7.1 Needs Analysis Hardware

The hardware used in the CV. Fokusmedia can be seen in table 1.

Table 1 Hardware Specs In Progress

No	Hardware	Specifications
1	Processor	Intel pentium core 2 duo
2	Monitor	LCD 14”
3	Memory	4 GB
4	Hardisk	100 GB
5	VGA	1 GB
6	Keyboard	Port USB
7	Mouse	Port USB

Whereas the minimum hardware specification that should be owned CV. Fokusmedia to be able to run this application can be seen in table 2.

Table 2 The Specifications Of The Hardware Required

No	Hardware	Specifications
1	Processor	Intel pentium core 2 duo
2	Monitor	LCD 14”
3	Memory	2 GB
4	Hardisk	20 GB
5	VGA	512 GB
6	Keyboard	Port USB
7	Mouse	Port USB

Based on the specifications of the hardware used CV. Fokusmedia as shown in table 1 and table the minimum hardware specification required as in table 2 it can be inferred that the CV. Fokusmedia can run the applications that will be built.

2.7.2 Needs Analysis Software

The software used in CV. Fokusmedia can be seen in table 3.

Table 3 Software Specs In Progress

No	Software	Specifications
1	Operating System	Windows 8
2	Working device applications	Microsoft Office 2013
3	Web Browser	Internet Explorer dan Google Chrome

Whereas the minimum specifications of the software must be owned CV. Fokusmedia to be able to run this application can be seen in table 4.

Table 4 The Specifications Of The Software Required

No	Software	Specifications
1	Operating System	Windows 7
2	Working device applications	Microsoft Office 2010
3	Web Browser	Internet Explorer dan Google Chrome

Based on the specifications of the software used CV. Fokusmedia as shown in table 3 and table the bare minimum software required as in table 4 then it can be inferred that the CV. Fokusmedia can run the applications that will be built.

2.7.3 Network Analysis

Network analysis is presented to find out how architecture and the relationship between user one with other users. Computer networks and the internet are there in CV. Fokusmedia can be seen in Figure 3.

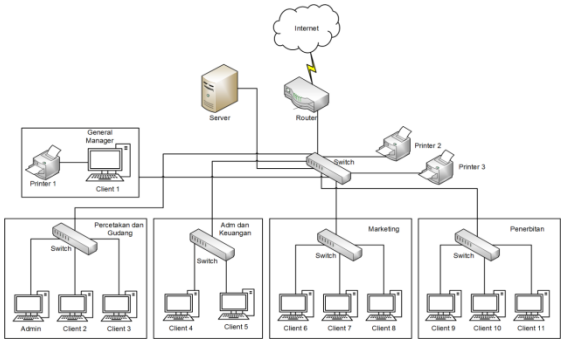


Figure 3 Network Analysis

Computer networks in CV. Fokusmedia UTP cable media has implemented and wireless network. The existing network is currently used for serving officers to be able to access the local network such as the internet service companies as well as access a web, e-mail and others. CV. Fokusmedia also use the star topology as a medium for data transfer. The star topology is a topology which one is suitable for networks in offices, due to the presence of cable for each client to the server in the bandwidth of the cable will be more width so that it will work to increase overall network. The star topology is said to be due to the connected devices connected on a switch.

CRM application for this package of recommendations would be implemented on CV. Fokusmedia, where the application is stored on a server to be managed by an admin. This application will connect to the internet, so that the employees of CV. Fokusmedia can access these applications through the online service.

2.8 Analysis Database

In the CRM application development recommendations for the determination of this package required a database design. Database design using Entity Relational diagrams (ERD) which can be seen in Figure 4.

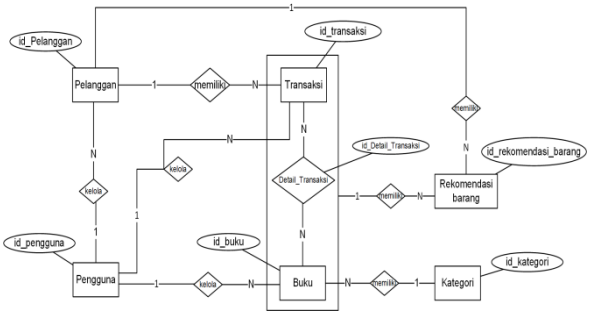


Figure 4 Entity Relational Diagram

2.9 Context Diagram

Context diagram is a diagram of the highest level of a DFD illustrates the relationship of the system with the external environment. The diagram context on this system can be seen in Figure 5.

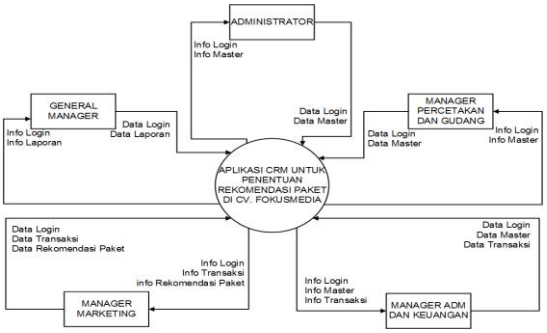


Figure 5 Diagram Konteks

2.10 Data Flow Diagram

Data Flow Diagram is a diagram that uses the notation-notation to describe the flow of data on a system, that its use is helpful to understand the system, structured logically and clearly.

Data Flow Diagram of CRM applications level 1 for the determination of the recommendation package CV. Fokusmedia can be seen in Figure 6.

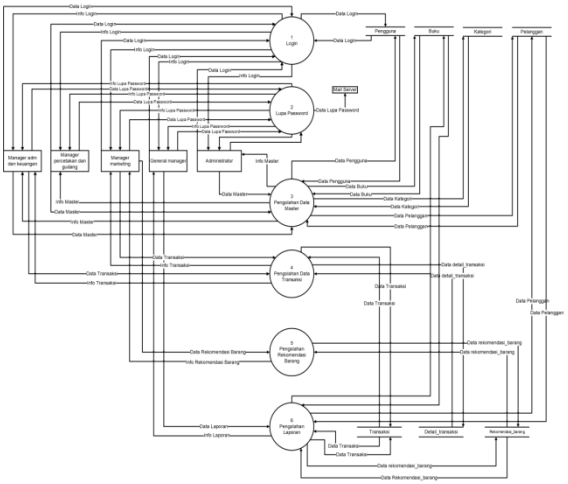


Figure 6 Data Flow Diagram

2.11 Scheme Relation

Scheme relation is used to describe the connectedness of tables in the system clearly. Scheme relation can be seen in Figure 7.

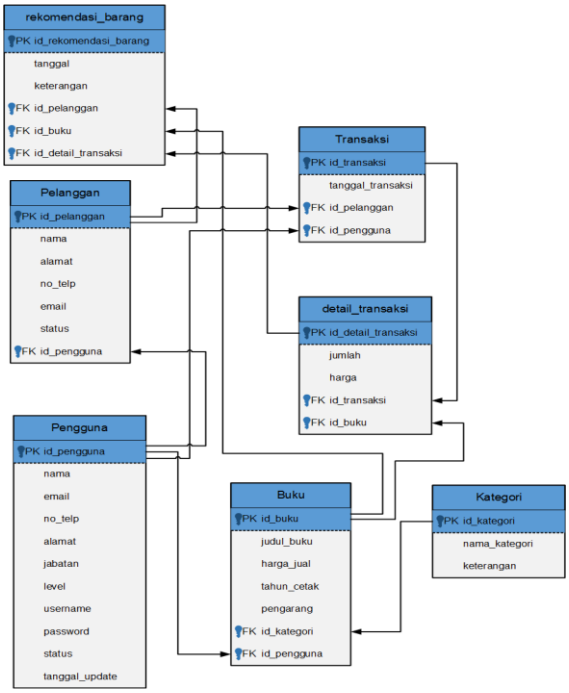


Figure 7 Scheme Relation

2.12 Testing The System

Testing is the most important thing is a system in which to find errors or deficiencies in the application being tested. The test aims to find out the application made in accordance with the performance meets the design objectives.

Testing is used to test the new system is a black box testing methods. Black box testing is focused on testing the requirements of an information system.

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2.12.1 Black Box Testing Conclusions

Based on the results of the test sample with a case testing that has been done, then it can be inferred that the process on the application you built are correct in accordance with the functionality. The existence of a fault message filtering error maximum is enough, and functionally built application can produce the expected output.

2.12.2 Conclusion Beta Testing

Based on the results of the testing that has been done, then the conclusion can be drawn that the applications that are built can facilitate marketing manager in performing packaging books, and can facilitate in providing packages according to the type of customers.

3. CLOSING

3.1 Conclusion

Based on the results obtained from all the processes that have been conducted in the writing of

this final task, then the conclusions to be drawn are as follows.

1. CRM Application for this package of recommendations can make marketing manager in performing packaging books.
2. CRM Application for this package of recommendations can simplify the marketing manager in providing packages of books to suit the type of customers.

3.2 Suggestion

Suggestions for the development of a CRM application recommendation package is an application that is built on the research of the next expected to recommend books that are more to be used as a package that complies with the minimum support and confidence.

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