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DECISION SUPPORT SYSTEM DETERMINATION OF CUSTOMER SATISFACTION LEVEL OF ORIFLAME PRODUCTS WITH ANALYTIC HIERARCHY PROCESS METHOD

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Abstract
In order to improve customer satisfaction with Oriflame products, customer satisfaction was studied. Find out how Oriflame can satisfy customers through its products, services, finances, delivery, and company conditions. In this research, information marketing research is needed to understand how customers behave and the criteria that are very important when deciding how customers make decisions about Oriflame products. At this stage of research, researchers analyze existing systems by conducting library research and direct observation. In order to calculate the customer satisfaction level, the AHP (Analytic Hierarchy Process) method is used. By using this decision support system, it is expected to make it easier for companies and sellers to determine customer satisfaction with Oriflame products.

I. INTRODUCTION

The Oriflame industry is a leading beauty industry with a direct selling system. It is located in more than 60 countries/regions and is an industry that originated in Sweden, with its headquarters in Switzerland. Oriflame Industries provides quality beauty products. In Stockholm in 1967, Oriflame was founded by brothers Robert and Jonas Af Jochnick (id.oriflame.com). Then in 1986, Oriflame entered Indonesia and has 14 branches until now. Oriflame entered the most direct direct sales program in Europe and entered the beauty product industry. It recruits over 3 million consultants worldwide and generates a revenue of about 2 billion euros every year (id.oriflame.com). The Oriflame industry provides a variety of care products every day through an independent sales network (independent consultant Oriflame) with a direct sales system (bisniseksklusif.com), starting from skin care products, body care products, perfumes and high-quality cosmetics for all ages.

Research on decision support systems has been tried many times, [1] Research related to the implementation of decision support systems with AHP procedures has been conducted to identify customer satisfaction with product quality standards, service quality, delivery, financial and industrial conditions. The consistency index value created by this study is 0.125, which means that the consistency value is still acceptable. However, if the consistency index is greater than 10%, it is no longer acceptable. Research conducted by [2] Analysis of Wardah's Cosmetic Product Marketing Strategy with the SWOT-AHP Approach, the results obtained from calculations using expert choice software show that in-house marketing strategies are more dominant than outsourcing with a weighted value of 0.750 , while the value outsourcing weight is 0.250. This shows that the in-house marketing strategy is considered more effective than the recommended marketing strategy, namely outsourcing. In house strategy which includes, advertisements on television, advertisements in cinemas, brand ambassadors, events, social media (Facebook and Instagram), billboards, banners, neon boxes, gifts with purchases,

beauty classes, word of mouth, direct marketing and bazaars. is a fairly effective marketing strategy for Wardah cosmetics within the scope of this research.

The research on the customer satisfaction decision support system of Oriflame products has not yet been widely tried. However, from previous studies until conclusions can be drawn, AHP methods can be used to try research related to determining customer or public satisfaction with products and services. Therefore, AHP (Analytic Hierarchy Process) is used to study the customer satisfaction level of Oriflame products. For decades, the Oriflame industry has been producing various beauty products with many customers who have purchased its products. However, the Oriflame industry has not yet realized how satisfied customers are with the products already on the market. Therefore, this research aims to help the Oriflame industry understand customer satisfaction with Oriflame products. Researchers hope to use the decision support system through the AHP (Analytic Hierarchy Process) method to more easily ensure customer satisfaction. Therefore, observation sessions, questionnaire surveys, library research, and calculations using AHP programs will be conducted in this research.

The purpose of this research, is to help the Oriflame industry know how satisfied customers with the products that have been produced so far. So that the industry can take a decision to improve the quality of products and services provided to customers. If the customer is satisfied with the products made by the industry, it means that it can increase sales as well as Repurchase Oriflame products. However, if the customer is not satisfied with the product maded. Oriflame Industry can recognize which criteria need to be improved to make customers feel satisfied.

II. LITERATURE REVIEW

2.1. Decision Support System

[3] The term Decision Support System refers to a system that uses a computer in its decision-making process. For more interpretation, there are some definitions of DSS by some experts. DSS is a computer-based data system used in decision-making that provides managers and business practitioners with interactive data support. In this system, the models used are analytical models, databases, evaluations as well as decision-making thinking, and an interactive pc-based modeling process to support semi-structured decision making. The concept of a Decision Support System (DSS) was originally put forward in a year 1970 by Michael S.Scott Morton as Management Decision System. [4] This system is a computer-based system that is intended to assist decision-making by using certain information and models to dismantle various things or unstructured problems.

The Decision Support System is also used to describe systems designed to help managers dismantle certain problems (Mcloed& Schell, 2008). From the definition of the above experts, we can formulate that the decision support system is a data system that supports mid-level management in making semi-structured decisions using analytical modeling and existing information. Decision Support System Components. From [5], the Decision Support System consists of 4 related subsystems:

1. Subsystem Management Data.
   The information management subsystem includes a database of information relevant to the condition as well as managed by the application on the Database Management System (DBMS). Information management can be interconnected with industry warehouse information, a repository of relevant industry information in making decisions.
2. Subsystem Management Model.
   Subsystem management models in the form of application packages containing financial models, statistics, management science, or quantitative models that provide analytical expertise and application management that is suitable. This app is made for a model base management system.
3. Discussion Subsystem (User Interface Subsystem).
   A discussion subsystem (User Interface Subsystem) is a system that can be used by users to communicate with the system and provide DSS commands. The browser website shares the structure of the user interface covering all aspects of communication between the user and the system.
4. Knowledge-Based Management Subsystem.

A knowledge-based management subsystem is a subsystem that can support other subsystems or be applied as a stand-alone component (independent).

There are also stages of decision-making. For [6], there are 4 phases in the development of a decision support system are:

1. Intelligent
   In this session, identification of problems is carried out, ascertaining the purpose, triggers, and magnitude. This step is very meaningful because before taking an action, the case must be formulated in detail and clear first. The problems are described in more detail and categorized whether listed as programmed or non-programmed.
2. Design
   In this phase, we try acceptable solving approaches and sort out alternatives, analyze potential solutions, create a model, create due diligence, and validate the results.
3. Choice
   This stage will be presented about acceptable solving approaches as well as sorting out the best decision alternatives. Alternative selection should make it easier to see if the desired result has a specific quantity value.
4. Implementation
   In this session, the solution that has been obtained in the Choice session is to be implemented. In this session, a series of planned actions must be prepared, to create a decision that can be seen and adjusted if a revision is needed.

2.2. Customer Satisfaction

The purpose of the business is to produce and maintain the costumers. Costumers in traditional thinking are the ones who buy and use their products. All management efforts are shown after one main goal, which is the creation of costumer satisfaction. Satisfaction for [7] defines customer satisfaction as follows "Customer satisfaction is the extent to which a product's perceived performance matches a buyer's expectations. If the product performance falls short of expectations the customers are dissatisfied. If performance matches expectations, the customers are satisfied. *Customers are highly satisfied or delighted if performance exceeds expectations.*" According to the above definition, customer satisfaction is the level of feeling a person has when receiving a product or service that meets the customer's expectations. Therefore, customer expectations play a meaningful role and have a great influence in ensuring product quality and consumer assessment to share their expectations as standard or reference. Because consumers are people who accept the work of a person or an organization, so only they can ascertain what kind of quality and they can deliver what and what they need. Satisfied customers want to be loyal for longer, less sensitive to prices, and give a good opinion about the industry.

From Lovelock and Wirtz, reported by [8], satisfied is something that is decidedly based on the experience gained. Research is needed to ensure that there is or is not hope that is part of the satisfaction. With the customer satisfaction, until the continuity of business will be maintained. In ensuring a customer's decision on a product, some aspects must be observed by the industry, among others is:

1. Product Quality, customers want to feel satisfied if they feel that the product they use is quality and has benefits following customer expectations.
2. Service Quality, Customers will be pleased if they receive good service.
3. Financially, products that have the same quality but at a relatively cheaper price, will provide higher value to customer satisfaction.
4. Delivery, if the speed of the delivery of the product and also the accuracy of the number of products sent following the customer's order, then the customer will feel more satisfied.
5. Company Condition, when the company has a strategic place and the company already has a good standard and safety, will make customers more confident and satisfied with the products made.

2.3. FMADM (Fuzzy Multiple Attribute Decision Making)

[9] FMADM (Fuzzy Multiple Attribute Decision Making) is an ordinance used in finding an alternative that is maximal of some alternatives with certain criteria. The point of the FMADM system is to ensure the weight value of each attribute, then carry out the process of fighting to select the available alternatives. [10] There are 3 approaches used in finding the weight value of each attribute, which are subjective approach, objective approach, and integrated approach. Each approach has certain advantages and disadvantages. [11], [12] In a subjective approach, the value of weight is from the subjectiveness of the decision-makers, so that some aspects of the alternative role process can be determined freedom. Contrast, in an objective approach, the weight value obtained is calculated mathematically and ignores the subjectivity of the decision-makers. [10] Some procedures can be used to solve an FMADM problem, among others is :

a. Simple Additive Weighting (SAW)
b. Weighted Product (WP)
c. ELECTRE
d. TOPSIS (Tecniques for Order Preference by Similary to Ideal Solution)
e. Analitic Hierarchy Process (AHP)

[6] In this research, researchers want to use the analytical hierarchy process (AHP) method which is a hierarchy with input or main input in the form of human thought. It was developed by Thomas Lorie Saaty of Wharton Business School in 1970. This procedure is used in finding the order or priority ranking of various alternatives in problem-solving. AHP procedures have been widely used to facilitate the decision-making of a complex case.

The working principle of AHP method is the simplification of a case in an unstructured environment, so some parts and organize in a hierarchy.[13], the analytical steps using AHP procedures are:

A. Define the problem and ensure the solution you want, then build a hierarchy of existing cases. Build hierarchy by setting goals or target systems in totality at the very top level.
B. Calculation of criteria weights to check the consistency. If the value is more than 10% until the evaluation of judgment information must be corrected. But if the consistency ratio (CI/IR) is less or equal to 0,1, until the calculation result can be declared correct.
C. Conducting alternative battles by multiplying alternative weights and criteria weights. Results with a very large value, until otherwise found the initial suggestion.

III. RESEARCH METHODOLOGY

3.1. Research Framework

Oriflame company wants to know how much customer satisfaction level, with this research will use fishbone diagram that can be seen in the following figure:

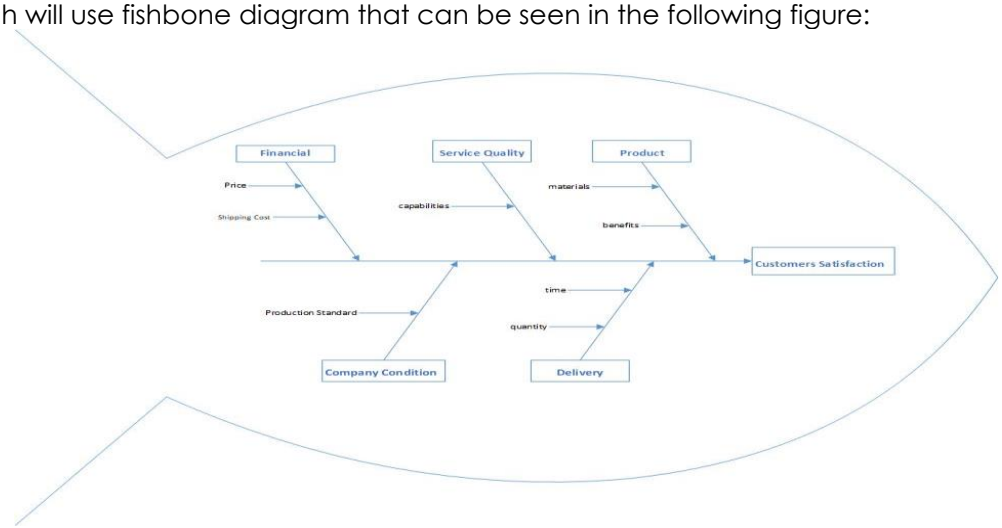

Figure 1. *Fishbone Diagram* Customers Satisfaction

According to the diagram, the factors that contribute to the level of customer satisfaction are products, services, financial, and shipping, as well as the industry itself.

3.2. Data Analysis

Data analysis was conducted on Oriflame products by utilizing the sales results of Oriflame products as well as the results of questionnaires that have been conducted. With AHP method, the stages in information processing should be initiated by drawing up a hierarchy that is sourced on the criteria used in the level of customer satisfaction. Building hierarchies is a stage where the company will determine the goals or objectives, where criteria and alternative customers are created into a structured hierarchy to facilitate the process of processing the next data. In assessing the level of customer satisfaction in this Oriflame Product, 5 criteria can be used, namely:

1. The Product Quality, with sub-criteria of packaging, benefits, and materials used.
2. Quality of Service, with sub-criteria of capability and availability.
3. Financial, with sub-criteria of the product price and shipping cost.
4. Delivery, has sub-criteria of punctuality and accuracy of quantity.
5. Company conditions, with sub-criteria of location and production standards.

3.3. Analytic Hierarchy Process Method Framework

In this study there will be a conducted observation process, library study and also a questionnaire to get the data used to be a reference in this study. Calculation by AHP method using Microsoft Excel 2007 number processing application program, to create priority evaluation of competency level of customer satisfaction with Oriflame products. This research will using the AHP method to obtain the level of customer satisfaction with Oriflame products. The following are the steps in the analysis using AHP method:

1. Create a hierarchy.

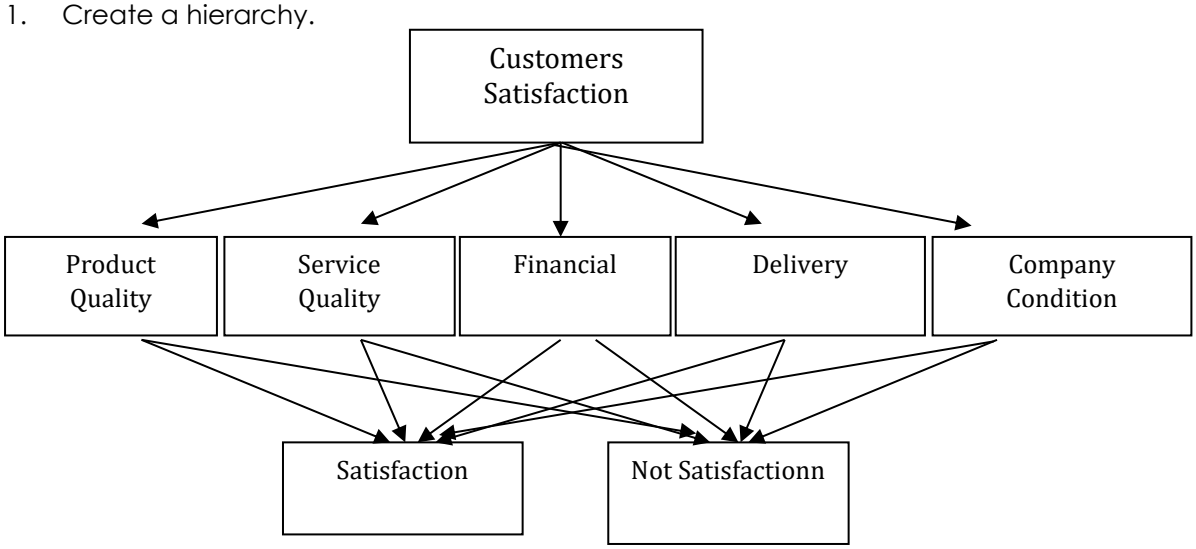

Figure 2. AHP Hierarchy Structure [6]

2. Assess criteria and alternatives.
3. Choose a priority.
4. Determine the logical consistency value.
5. Determine the consistency index (CI) value
   The formula is used as follows:
   $$CI = \frac{\lambda max - n}{n-1}$$
   Description:
   n = number of criteria.
6. Determine consistency ratio (CR)
   The formula is used as follows:
   $$CR = \frac{CI}{Ri}$$
   Description:
   CR = Consistency Ratio

CI = Consistency Index
RI = Random Consistency Index

7. Check the consistency of the hierarchy.
   If the calculation result of consistency ratio value is more than 10%, research must be improved or recalculated. But if the consistency ratio is less or equal to 0.1, it can be declared correct. For RI values or random indexes as in table 3.

IV. RESULTS AND DISCUSSIONS

4.1. Results

In determining the criteria of this DSS research, based on things that greatly affect the level of satisfaction. Each criterion will be given a different weight because, in the level of customer satisfaction, each criterion has a dominant influence and also does not. Here is an explanation of each criterion:

1. Product Quality (C1) Materials, benefits, and packaging.
2. Service Quality(C2) Expertise and responsibility.
3. Financial (C3) Prices and payments.
4. Delivery (C4) Speed and accuracy of the number of shipments.
5. Company Conditions (C5) Place as well as the brand.

Table 1. Level Of Importance

Value	Interpretation
1	O_i and O_J just as important.
3	O_i a little more important than O_J
5	O_i stronger level of importance than O_J
7	O_i very strong level of importance than O_J
9	O_i absolutely more important than O_J
2,4,6,8	Intermediate value

[6]

Steps to complete :

a. The first step, make sure which criteria weight is very meaningful, which in AHP terminology is pair-wire comparation or role against the existing criteria. The weight value is taken from the average result of each respondent's questionnaire calculation.

Table 2. Role of Criteria

RANKING		
The Product Quality	0,30	1
Quality of Service	0,25	2
Financial	0,20	3
Delivery	0,15	4
Company Conditions	0,10	5

b. Next, the results of the calculation of the average of questionnaires, are included in the calculation the matrix of comparison criteria.

Table 3. Paired Comparison Matrix

Criteria	C1	C2	C3	C4	C5
C1	1	2	3	2	3
C2	0,5	1	2	3	3
C3	0,333	0,5	1	3	2
C4	0,5	0,333	0,333	1	3
C5	0,333	0,333	0,5	0,333	1
Sum	2,667	4,167	6,833	9,333	12

c. Calculate the criteria weight by normalizing the values in the comparison matrix column by dividing each value in the matrix column by the corresponding column summing result.

Table 4. Calcutation Eigen Value

	Eigen Value				Sum	Average
0,375	0,48	0,439	0,214	0,25	1,758	0,351
0,187	0,24	0,293	0,321	0,25	1,291	0,258
0,125	0,12	0,146	0,321	0,167	0,879	0,175
0,187	0,08	0,048	0,107	0,25	0,673	0,134
0,125	0,08	0,073	0,035	0,083	0,397	0,079
						1

Description:

- In the column the sum is the total of all the numbers in the row above it in one column.
- In the Average column is the result of the left sum cell divided by the number of criteria used.
- Average = 0.351 obtained from the value in the sum cell 1.758/5
- Average = 0.258 obtained from the value in the sum cell 1,291/5
- Average = 0.175 obtained from the value in the sum cell 0.879/5
- Average = 0.134 obtained from the value in the sum cell 0.673/5
- Average = 0.079 obtained from the value in the sum cell 0.397/5
- The Average column shows the weight value of each criterion, so obtained product quality and service quality that has the highest weighting value / most important in customer satisfaction, followed by financial, shipping, and company conditions.
- Next is to check the weight value obtained, whether consistent or not. Therefore, the first thing to do is to calculate the λmax (Principal Eigen Value) matrix.
- Principal Eigen Value (λmax) matrix calculation by summing the multiplication results in number cells as well as average cells.
  - Principal Eigen Value
    λmax = (2,667*0,351)+(4,167*0,258)+(6,833*0.175)+(9,333*0.134)+(12*0.079) = 5.426
  - Calculating Consistency Index (CI)
    CI = (λmax - n)/(n-1), for n = 5
    CI = (5,426 – 5)/(5 - 1)
    CI = 0.1065, which means the weighting made has been consistent.
- Next is to calculate the consistency ratio (CR) obtained by the formula CR= CI / IR, where the IR value corresponds to the number of criteria used in the table below:

Table 5.Consistency Ratio Value

N	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
RI	0	0	0,58	0,9	1,12	1,24	1,32	1,41	1,45	1,49

Value n = 5
IR = 1.12
CR = CI/IR
= 0,1065/1,12
= 0,0951

If the CR result < or = 10%, then the consistency value is still accepted, but if the result of the calculation is > 10%, then the consistency value is not acceptable. Because the result of the calculation value CR = 0.951%, the consistency value is accepted.

d. Furthermore, assess each alternative or also called the calculation of pair-wire comparation. That is by calculating the average results of the questionnaire obtained:

Table 6. Alternative Comparison Matrix

Product Quality	**Satis-fied**	**Not Satisfied**	**Eigen Value**	**Sum**	**Average**

Satisfied	1	4	0,8	0,8	1,6	0,8
Not Satisfied	0,25	1	0,2	0,2	0,4	0,2
Sum	1,25	5				1

According to the table above, the level of customer satisfaction with the Product Quality criteria is 0.8, or 80%.

Table 7. Alternative Comparison Matrix

Service Quality	Satisfied	Not Satisfied	Eigen Value		Sum	Average
Satisfied	1	3	0,75	0,75	1,5	0,75
Not Satisfied	0,333	1	0,25	0,25	0,5	0,25
SUM	1,333	4				1

The table can mean the level of customer satisfaction in the criteria of Quality of Service is 0.75 or 75%.

Table 8. Alternative Comparison Matrix

Financial	Satisfied	Not Satisfied	Eigen Value		Sum	Average
Satisfied	1	3	0,75	0,75	1,5	0,75
Not Satisfied	0,333	1	0,25	0,25	0,5	0,25
SUM	1,333	4				1

The meaning of the table is the level of customer satisfaction in the Financial criteria is 0.75 or 75%.

Table 9. Alternative Comparison Matrix

Delivery	Satisfied	Not Satisfied	Eigen Value		Sum	Average
Satisfied	1	2	0,67	0,67	1,33	0,67
Not Satisfied	0,5	1	0,33	0,33	0,67	0,33
Sum	1,5	3				1

This table can be interpreted that the customer satisfaction level on the Delivery criteria is 0.67 or 67%.

Table 10. Alternative Comparison Matrix

Company Condition	Satisfied	Not Satisfied	Eigen Value		Sum	Average
Satisfied	1	2	0,67	0,67	1,33	0,67
Not Satisfied	0,5	1	0,33	0,33	0,67	0,33
Sum	1,5	3				1

The table means the level of customer satisfaction in the criteria of Company Conditions is 0.67 or 67%.

e. The last stage is to calculate the total value of each alternative. So that all the assessment results are included in the overall composite weight table.

Table 11. Overall Composite Weight

Overall Composite Weight	Weight	Satisfied	Not Satisfied
Product Quality	0,351	0,8	0,2

Service Quality	0,258	0,75	0,25
Financial	0,175	0,75	0,25
Delivery	0,134	0,67	0,33
Company Condition	0,079	0,67	0,33
Composite Weight		**0,75045**	**0,24954**

Weight is taken from the Average column of the criteria matrix. The value of each column is taken from the Average column of all criteria. Then the Composite Weight value is obtained from the result of the number of multiplications in the table above with the weight value.

- Satisfied = (0.351*0.8)+(0.258*0.75)+(0.175*0.75)+(0.134*0.67)+(0.079*0.67) = 0.75045
- Not Satisfied= (0.351*0.2)+(0.258*0.25)+(0.175*0.25)+(0.134*0.33)+(0.079*0.33) = 0.24954

From the table above can be concluded that PUAS has a very large score of 0.75045, then NOT SATISFIED with a score of 0.24954. This means that customers are satisfied with Oriflame's products, services, financial, shipping, and corporate conditions.

4.2. Discussions

To create a decision support system for determining the level of customer satisfaction with Oriflame products, in this study conducted a stage of data collection with several stages. The first is to make observations, study libraries, and also conduct questionnaires to get the correct data. After obtaining the required data, the researcher then performed the overall calculation of the questionnaire results that had been done to the customers. In this calculation, researchers used the AHP (Analitycal Hierarchy Process) method to help facilitate calculations in the creation of this decision support system. The stages performed in this study are, creating hierarchies, determining criteria and alternatives, determining priorities, and also calculating the consistency of calculations. After this research, data was obtained that 75.045% of customers were satisfied and 24.954% were dissatisfied. This indicates that customers are pleased with the oriflame company's products.With regard to the most important criteria, namely kriteri product and kriteri service quality.

V. CONCLUSION

Based on the research of decision support system to see the level of customer satisfaction by using the AHP method, it can be concluded that, with the AHP method, it was obtained that the level of customer satisfaction with Oriflame products reached 0.75045 or 75.045%. Sourced on the calculation of AHP, obtained priority criteria that are very important in determining the main satisfaction of customers, namely product quality or product quality. The level of customer satisfaction is also supported by criteria such as service quality and financial resources.

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