

Quality Improvement Model With Structural Equation-Based Measurements

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Abstract – In all corporate sectors, rivalry began to intensify to succeed in this competition, businesses must be able to keep their consumers satisfied, as customer satisfaction has a significant impact on a company's longevity. If customer satisfaction is not fulfilled, customers will migrate to a competing brand. The purpose of this study is to analyze the influence of service quality and product superiority on customer satisfaction and their impact on increasing customer loyalty. Structural equation modeling (SEM) with AMOS 24.0 software was utilized to evaluate the data. The results of the analysis show that the perceived index of service quality is in the "high" category (67.60%), the index of perceived product superiority is in the medium category (58.73%) and the index of perceived customer satisfaction is in the high category (64.00%), and the index of perceived customer loyalty is in the high category (67.90%).

Keywords – SEM; quality; service; customer; satisfaction

I. INTRODUCTION

All firm departments vie for the affections of clients. Customer happiness has a substantial effect on a company's future viability. If customer satisfaction is not attained, customers will seek out a competitor [1]-[3]. Service quality based on the company's classification of interests and specialized services [4],[5]

Different brands of bottled beverages are a product category in which rivalry is intense. In order to attract as many clients as possible, there is a competition among beverage firms to develop the most effective innovations. In online media, the battle for customer acquisition can be visible in the form of advertisements with promotional offers such as "buy 1, get 1 free" or discounts via partnering applications. The business owner employs a marketing plan to retain clients, presuming that a large number of customers desire affordable prices and high-quality taste. Customer happiness is a key measure of competition victory.

Research acc[6], suggests structural equation modeling for customer satisfaction index calculation using AMOS software (SK: Student of FMIPA UNY Against IM3 Operator). According to the findings, the FMIPA UNY student satisfaction index for the IM3 operator was 77.75%. This indicates that FMIPA UNY students are generally pleased with the IM3 operator that has been utilized thus far. The best score index is the lowest number, which is 48.54 percent. To learn [7], Bayesian SEM analysis of the impact of service quality, customer happiness, and trust on customer loyalty for flexi mobile broadband in the Surabaya region. Results The Bayesian SEM method has demonstrated its efficacy for estimating small samples. In this investigation, a sample size of 35 was utilized. Research [8] perform an analysis of customer loyalty in the shipping services industry using structural equation

models (SEM). The results indicate that perceived quality and perceived value affect consumer satisfaction. On the other hand, customer loyalty is influenced by satisfaction and trust variables. To learn[9] Application of the structural equation modeling technique to analyze the website quality satisfaction of academic information system users (a case study on the sia.undip.ac.id website). The results indicate that only the system dimension does not influence website user happiness, while the information dimension, interaction dimension, and service dimension do. The interaction dimension variable of 35% is the most influential variable. The information dimension represents 30.8%, the service dimension represents 22.1%, and the system dimension represents 8.8%. To learn[10] Using a structural equation modeling (SEM) technique, analyze customer satisfaction and vendor loyalty. The results indicate that product performance and service quality have a substantial effect on customer satisfaction, which in turn has an effect on customer loyalty. To remain competitive, vendors are continually required to enhance service quality and product performance. Future research will benefit greatly from the addition of independent variables to uncover the elements that influence customer satisfaction and customer loyalty. On the basis of numerous assertions, it was determined that a frequent examination of customer satisfaction is required for the company to identify its flaws and increase its client base. There are numerous methods for measuring customer happiness, including multiple logistic regression, structural equation modeling, partial least squares, and generalized maximum entropy, among others [11]. Regardless of the kind and format of customer happiness measurement, it often generates an index of customer satisfaction. The Consumer Satisfaction Index is a metric that indicates customer satisfaction as a whole. Utilizing the Structural Equation Modeling (SEM) method, the customer happiness index is calculated.[12]–[14].

Using structural equation modelling (SEM), this study intends to conduct an analysis of customer service quality based on satisfaction ratings. CV.Yotta Success Indonesia. Probability sampling is the technique used for sampling.

II. MATERIAL AND METHODS

2.1. Method of Data Collection

In this study data collection using questionnaires and documents[15], [16]. The questionnaire is a survey tool that contains questions regarding the issues investigated in this study (variables service quality, product quality are variable X and customer satisfaction variables, customer loyalty is variable Y). While documents are a technique of acquiring secondary data, namely by capturing material provided by the company, such as B. A general description of the company, the organizational structure of the company, etc., databases are a method of obtaining primary data.[17]–[20].

2.2. Data Acquisition System

A data collection system (DCS) is a computer application that enables the systematic collection of specific and structured information and the subsequent data analysis of that information [21]. Typically, a DCS shows a form that collects user input and validates it before transmitting the data to a persistent storage, such as a disk drive. B. a database are passed. Many commercial processes, the enforcement of numerous government regulations, and the integrity of scientific research depend on the collecting of accurate data. [22]–[24].

2.3. Analysis Method

Structural Equation Modelling (SEM)[25] used to analyse the studied data and problems (service quality variables, product quality are variable X and customer satisfaction and customer loyalty are variable Y), then proceed to hypothesis testing and test the validity and reliability of the SPSS application.

Validity Test

$$R = \frac{N(\sum xy) - (\sum x)(\sum y)}{\sqrt{[(N \sum x^2) - (\sum x)^2][(N \sum y^2) - (\sum y)^2]}} \dots \dots \dots (1)$$

Reliability Test

$$r = \frac{k}{k-1} \frac{\sum \sigma_b^2}{\sigma_t^2} \dots \dots \dots (2)$$

III. RESULT AND DISCUSSION

In this study, the number of respondents was 100 people, consisting of 17 men and 83 women, who were asked 12 questions for each variable. The scale used refers to the assessment with a Likert scale, where each question is labeled with manifest variables and latent variables.

TABLE I. LIKERT SCALE INSTRUMENT

No	Answers	Score
1	Very satisfied	5
2	Satisfied	4
3	For now	3
4	Unsatisfied	2
5	Very dissatisfied	1

3.1. Validity Test

R count > from R table ($0.486 > 0.195$), then the data is validated. For further calculations with SPSS 16.0 software.

TABLE II. VALIDITY TEST RESULTS

Variables	Calculated R value	Table R value	Character value	Decision
X1.1	0.748	0.195	0	Valid
X1.2	0.655	0.195	0	Valid
X1.3	0.737	0.195	0	Valid
X1.4	0.653	0.195	0	Valid
X1.5	0.486	0.195	0	Valid
X2.1	0.788	0.195	0	Valid
X2.2	0.626	0.195	0	Valid
X2.3	0.494	0.195	0	Valid
Y1.1	0.379	0.195	0	Valid
Y1.2	0.736	0.195	0	Valid
Y2.1	0.731	0.195	0	Valid
Y2.2	0.835	0.195	0	Valid

Table 2 shows that all statements have a calculated r- value greater than r-table (0.195). Thus, all statements are declared valid and the questionnaire can be continued in the phase of the reliability check. If R count > from the R table ($0.717 > 0.202$) then the data is validated.

3.2. Reliability Test

Cronbach's $\alpha \geq$ R table ($0.878 > 0.195$), then the instrument is declared reliable. In addition to calculating with formulas, SPSS 16 for Windows software was also used in this study.

TABLE III. RELIABILITY TEST RESULTS

Cronbach Alpha	R table (5%)(100)	Chain
0.878	0.195	Reliable

From the reliability test results using SPSS software, Cronbach's alpha results were 0.878 while the R-table was 0.195. This means that the importance level data is reliable since Cronbach Alpha \geq R table. Cronbach's Alpha \geq R table ($0.800 > 0.202$), then the instrument is declared reliable.

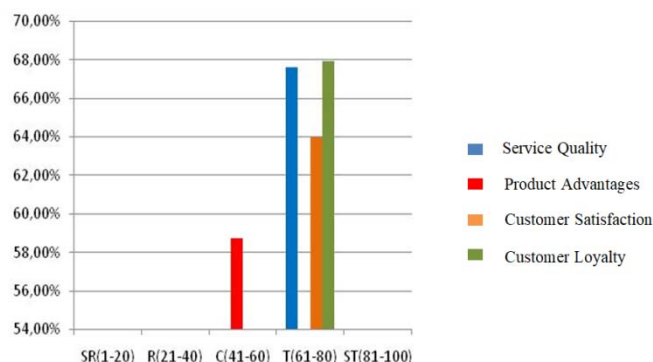


Fig. 1. Perceived variable score percentage results

The graph indicates that the perceived service quality index is high (67.60%), the perceived product superiority index is adequate (58.73%), the perceived customer happiness index is high (64.00%), and the perceived customer loyalty index is high (67.90%). This model of service quality is a multidimensional scale for comparing consumer perceptions and expectations of service quality. Consumer expectations must be matched to the achieved outcomes.[26],[27],[4]

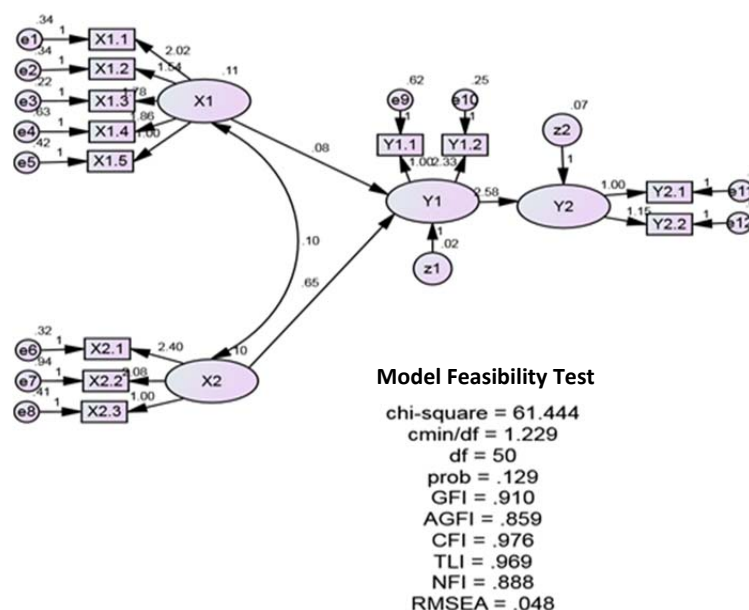


Fig. 2. Structural Equation Model (SEM) test results.

Services received from customers will occur GAP. Conditions in customer service can use the structural equation model (SEM) between the independent variable and the dependent variable

TABLE IV. STRUCTURAL EQUATION MODEL (SEM) FEASIBILITY TEST

Goodness of Fit Index	Cut off value	Analysis results	Model evaluation
Chi-Square (df =50) (Sig. 0.05)	$\leq 67,505$	61,444	Spring

Goodness of Fit Index	Cut off value	Analysis results	Model evaluation
probability	≥ 0.05	0.129	Spring
RMSEA	≤ 0.08	0.048	marginal
CMIN/DF	≤ 2.00	1,229	Spring
GFI	≥ 0.90	0.910	Spring
AGFI	≥ 0.90	0.859	marginal
TLI	≥ 0.90	0.969	Spring
CFI	≥ 0.90	0.976	Spring

In this analysis, the probability value indicates that the value is more than the significance threshold of 0.129 ($p > 0.05$). According to (Santoso, 2012), the chi-square calculation is the primary criterion for testing the entire model (overall model fit). Several models are good based on the aforesaid goodness-of-fit criteria, hence the model given in this study can be accepted.

TABLE V. HYPOTHESIS TEST

	Estimates	SE	CR	P
Y1 < --- X2	2,325	.775	3,002	.003
Y1 < --- X1	2077	.578	3,593	.000
Y2 < --- Y2	2,584	.868	2,976	.003

With a Critical Ratio (CR) value of 3.593 and a P (Probability) of 0.000 ($p < 0.05$), the hypothesis tests revealed a positive relationship between service quality and customer satisfaction, indicating a direct relationship between the two variables.

The testing of hypotheses also revealed a unidirectional relationship between product superiority and customer satisfaction, as well as between customer contentment and customer loyalty.

IV. CONCLUSION

This study is to investigate the impact of service quality and product superiority on customer satisfaction and their influence on boosting customer loyalty. Several indicators suggest that the service quality variable, perceived satisfaction with the bartender's friendliness and courtesy, is the most dominant indicator, with a value of 69.80%, while the indicator with the lowest value is perceived satisfaction with the bartender's knowledge and skills regarding the Explain menu, with a value of 62.40%. The hypothesis tests revealed a positive relationship between service quality and customer satisfaction, with a critical ratio (CR) value of 3,593 and a probability (P) of 0.000 ($p < 0.05$), while a number of signs pointed to the product quality variable. The most dominant factor was felt satisfaction with food flavor and delicacy (66.00%), while the least was perceived satisfaction with menu costs (50.00%). With a critical ratio (CR) value of 3,002 and a probability (P) value of 0.003 ($p < 0.05$), the results indicate a positive relationship between product quality and customer happiness. The study also revealed that, of the multiple indications that comprise the customer satisfaction variable, perception for service claims was the most influential at 67.00%, while perception for product claims was the least influential at 61.00%.

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