

Analysis of Website-Based Information Technology System on Patient Service Quality at Murni Murni Teguh Medan Hospital

Fernando¹, Pesta Gultom², Muhammad Ali Akbar³
Sekolah Tinggi Ilmu Ekonomi Eka Prasetya Medan,
Sumatera Utara, 20212, Indonesia
fernando.lie08@gmail.com

ABSTRACT

This study aims to determine whether the Website-Based Information Technology System and E-Complaint have a significant effect on Service Quality at the Murni Teguh Medan Hospital. This study uses quantitative data methods and the data source is primary data. The population in this study were patients at the Murni Teguh Medan Hospital totaling 53,800 patients. The sample of this study were patients of the Teguh Medan Pure Hospital totaling 100 respondents using purposive sampling data collection techniques. Data analysis and testing consists of validity test, reliability test, descriptive statistical test, classical assumption test, multiple regression analysis, partial (T test) and simultaneous (F test) hypothesis testing, and determination coefficient test. The results showed that the Website-Based Information Technology System had a partially significant effect on Service Quality with a t value of $13.515 > t_{table} 1.66055$. E-Complaint has a partially significant effect on Service Quality with a t value of $4.599 > t_{table} 1.66055$. Website-Based Information Technology Systems and E-Complaint simultaneously have a significant effect on Service Quality with a calculated F value of $100,129 > F_{table} 2.36$ with a regression coefficient value of 67.4%.

Keywords: *E-complaint* ;Information; Information Technology; Patient; Service Quality

INTRODUCTION

In the current era, information technology is very necessary and is also used to find various sources of data and information that we need. Information technology plays an important role in the operation of a hospital. Hospitals must be able to provide the services needed by patients in a timely manner. Murni Teguh Medan hospital is one of the large hospitals and has good credibility, this can be proven by the development carried out in their system.

In providing maximum service, Murni Teguh Medan Hospital uses technology called MTHIS (Murni Teguh Hospital Information System), MTHIS is a website-based technology that can be used by patients to make visiting schedules and used by staff to view patient test results so that when patients request test results, staff can provide them in hardcopy or softcopy. MTHIS is a website that is the most important part in accessing various data needed by patients and staff of Murni Teguh Medan Hospital. However, MTHIS is also a website designed by humans so that errors cannot be avoided for example when a patient does a PCR test, to get the results the staff can open the MTHIS website, but the website used has an error, making it difficult for patients to find the results of the tests performed. Staff at Murni Teguh Medan Hospital are also affected by errors on the MTHIS website, if MTHIS has an error, it will be difficult for staff to provide patients with the lab test results needed. One solution that can be used is to wait for IT staff to fix the MTHIS website.

Apart from the MTHIS website, Murni Teguh Medan Hospital also has an application called Murni Teguh Hospital Application which can be used to view the doctor's schedule, doctor's specialization and make a schedule to consult with a specialist. By using Murni Teguh Hospital Application, patients can make appointments in advance without coming directly to the hospital so that long queues can be avoided and do not take so much time. However, this application also has disadvantages, the available doctor's schedule is sometimes not updated and there are many obstacles in opening the application.

The obstacles encountered when using MTHIS are a factor in complaints to Murni Teguh Medan Hospital. Although the staff of Murni Teguh Medan Hospital have tried their best to overcome the obstacles, it still takes a lot of time to overcome them. Patients can experience difficulties when they want to view or retrieve the information they need or when they want to make an appointment with a specialist. In Murni Teguh Hospital Application, there is an e-complaint feature that can accommodate criticism and suggestions from patients, e-complaint also serves as a forum for Murni Teguh Medan Hospital staff to be able to improve themselves and improve the quality of service in Murni Teguh Medan Hospital. Service quality can be affected by many factors such as information systems and e-complaint.

LITERATURE REVIEW

SERVICE QUALITY

Service quality is the level of excellence expected and control over that level of excellence to fulfill customer desires (Tjiptono, 2016: 59). According to Tjiptono (2014: 282-284) who put forward several indicators of Service Quality, including: Reliability; Responsiveness; Empathy; Warranty; Physical Evidence.

INFORMATION SYSTEMS

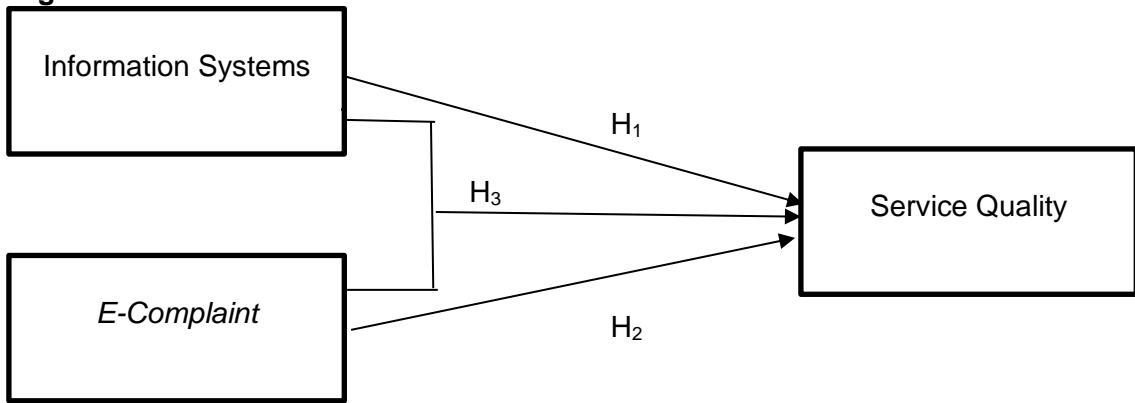
An information system includes a number of components (people, computers, information technology, and work procedures), something is processed (data into information), and is intended to achieve a goal or purpose. (Kadir: 2014). According to Mulyani, et al (2019) who put forward several indicators of Information Systems, among others, are: Human; Organization; Technology

E-COMPLAINT

E-complaint is an online complaint and suggestion submission facility that can be accessed by customers directly or used by hospital officers who receive complaints. (Setyani, et al: 2019). Complaints should be considered as an indicator of organizational performance assessment, which indicates several things problems or failures in internal processes that require rapid recovery to avoid migration in favor of customers. Setyani, et al (2019) which suggests several indicators of E-Complaint, including: Responsiveness; Quality Improvement

Based on the description above and the results of previous research, the variables in this study can be seen in the research framework figure below:

Figure 1. Framework



The hypothesis in this study is :

H₁ : There is an effect of Information Systems on Service Quality

H₂ : There is an effect of E-complaint on Service Quality

H₃ : There is an influence of Information Systems and E-complaints on Service Quality

RESEARCH METHOD

This research was conducted on patients of Murni Teguh Hospital on Jalan Jawa No. 2 Gang Buntu, East Medan District, Medan City, North Sumatra 20231 from January 2023 to October 19, 2023. This research was conducted using quantitative methods by distributing questionnaires to patients using google form. Quantitative research is a type of research that produces findings that can be achieved (obtained) using statistical procedures or other ways of quantification (measurement).

The questionnaire distributed contains statement items related to the research variables with a Likert measurement scale of 1-5 with the following information:

1. Strongly Disagree (STS) with a Likert scale of 1
2. Disagree (TS) with a Likert scale of 2
3. Neutral (N) with Likert scale 3
4. Agree (S) with Likert scale 4
5. Strongly Agree (SS) with Likert scale 5

According to Sugiyono (2016: 93), the Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena.

The data source of this research uses primary data. The population in this study were all BPJS patients of Murni Teguh Medan Hospital, totaling 53,800 patients. The sample in this study were 100 patients of the Teguh Pure Hospital obtained using the slovin formula. According to Nalendra (2021: 27) the slovin formula is a formula or formula for calculating the minimum sample size when the behavior of a population is not known with certainty.

Slovinn Formula :

$$n = \frac{N}{1+N(e)^2}$$

- n = sample size
 N = population size
 e = percentage error (10%)

The tolerated error rate is 10% using purposive sampling data collection techniques. According to Rinaldi (2022: 41) purposive sampling is a sampling method used by selecting subjects based on specific criteria set by the researcher. The criteria set in this study are all BPJS patients at Murni Teguh Medan Hospital who are registered in 2023.

All respondent data that has been collected will be tested and analyzed by analytical techniques. Data analysis uses descriptive analysis and multiple linear regression analysis with the aim of measuring the intensity of the relationship between two or more variables (Bahri 2018: 195).

RESULTS

Validity Test

Table 1. Validity and Reliability Test Results.

Variable	Indicator	Value Validity	Conclusion	Cronbach's Alpha	Conclusion
Information Systems	Human	0,872	Valid	0,863	Reliabel
		0,745	Valid		
	Organization	0,852	Valid		
		0,810	Valid		
	Technology	0,893	Valid		
		0,414	Valid		
E-Complaint	Responsiveness	0,666	Valid	0,611	Reliabel
		0,621	Valid		
	Quality Improvement	0,665	Valid		
		0,760	Valid		
Service Quality	Reliability	0,863	Valid	0,956	Reliabel
		0,761	Valid		
	Responsiveness	0,850	Valid		
		0,854	Valid		
	Empathy	0,906	Valid		
		0,848	Valid		
	Warranty	0,764	Valid		
		0,854	Valid		
	Physical Evidence	0,854	Valid		
		0,894	Valid		

The validity and reliability test results in Table 4.1 show that the correlation value of each indicator for each variable measured through the indicator, $r > 0.3061$ and the Cronbach's Alpha value > 0.60 . This shows that all variables are declared valid and reliable.

Statistical Descriptive Analysis

Table 2. Statistical Descriptive Analysis Test

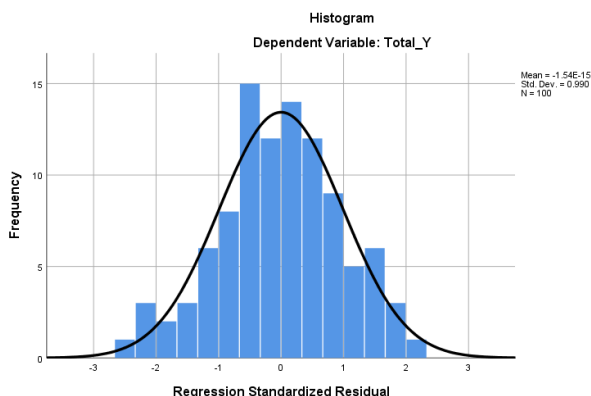
Descriptive Statistics					
	N	Min	Max	Mean	Std. Deviation
Information Systems	100	18	30	26,18	2,904
<i>E – complaint</i>	100	12	20	15,89	1,853
Service Quality	100	33	48	40,36	3,196
Valid N (listwise)	100				

N (Number of respondents) in the study were 100 people. The Mean value of the Information System variable (X_1) is 26.18 with a data variability level of 2.904. Mean variable E - Complaint (X_2) is 15.89 with a data variability level of 1.853. The mean of the Service Quality variable (Y) is 40.36 with a data variability level of 3,196.

Classical Assumption Test

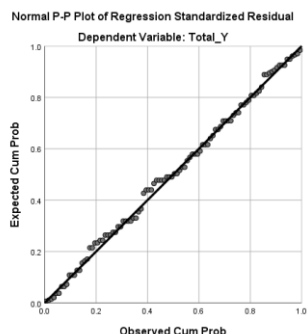
Figure 2. Histogram Normality Test Graph

1) Normality Test



The histogram graph shows the data spreads around the diagonal line and follows the direction of the diagonal line or histogram graph which shows a normal distribution pattern, so the regression model can be considered to fulfill the assumption of normality.

Figure 3. P-P Plot Normality Test Graph



The Probability Plot Of Regression graph shows that the dots (data) approach and follow the direction of the diagonal line which indicates a normal distribution pattern, so the regression model can be considered to fulfill the assumption of normality.

Table 3. One – Sample Kolmogorov – Smirnov Normality Test

One – Sample Kolmogorov – Smirnov Test		
		Unstandardized Residual
N		100
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	1,82551893
Most Extreme Differences	Absolute	.049
	Positive	.031
	Negative	-.049
Test Statistic		.049
Asymp. Sig. (2-tailed)		.200 ^{c,d}
a. Test distribution is normal		
b. Calculated from data		
c. Lilliefors Significance Correction		
d. This is a lower bound of the true significance		

From the normality test with One - Sample Kolmogorov Smirnov, the significance value is $0.200 > 0.10$ (Sig > 0.10), so it can be considered that the residuals (data) are normally distributed.

2) Multicollinearity Test

Table 4. Multicollinearity Test

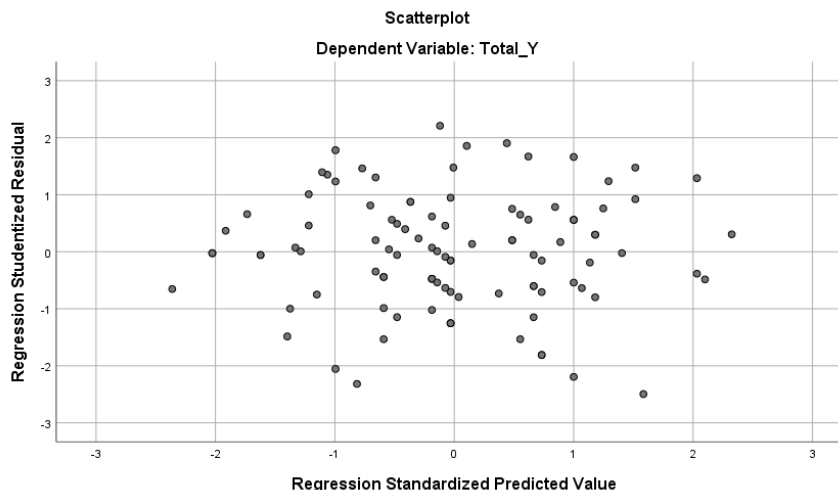
Model		Coefficients ^a					Collinearity Statistics	
		Unstandardized Coefficients		Standardized Coefficients	t	Sig	Tolerance	VIF
		B	Std. Error	Beta				
1	(Constant)	11.174	2.349		4.757	.000		
	Information Systems	1.353	.100	.784	13.515	.000	.999	1.001
	E-Complaint	.294	.064	.267	4.599	.000	.999	1.001

a. Dependent variable: Service Quality

From the multicollinearity test, the VIF value for the Information System variable (X_1) and the E-Complaint variable (X_2) is $1.001 < 10$ so it can be concluded that the X_1 and X_2 variables do not occur multicollinearity.

3) Heteroscedasticity Test

Figure 4. Scatterplot Heteroscedasticity Test Chart



The heteroscedasticity test graph with Scatterplot shows that the dots (data) do not form a clear pattern and the dots spread above and below the number 0 on the Y axis so it can be concluded that the regression model does not occur heteroscedasticity.

Multiple Linear Regression Analysis

Table 5. Multiple Linear Regression Analysis Test

Model		Coefficients ^a	
		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)	11.174	2.349
	Information System	1.353	.100
	E-Complaint	.294	.064

a. Dependent Variable : Service Quality

The test results are seen in the Unstandardized Coefficient section in column B. This result is obtained using the following formula:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

$$\text{Service Quality} = 11.174 + 1.353 \text{ Information System} + 0,294 \text{ E-Complaint} + e$$

The following is an explanation of the above equation:

- 1) Constant (α) = 11,174, meaning: if the value of the independent variables, namely the Information System and E-Complaint, is 0, the Service Quality is still worth 11,174.
- 2) Coefficient X_1 (b_1) = 1.353 means: every increase in the Information System aspect (X_1) by 1 unit, the Service Quality will increase by 135.3%.
- 3) Coefficient X_2 (b_2) = 0.294 means: every increase in the E-Complaint aspect (X_2) by 1 unit, the Service Quality will increase by 29.4%.

HypothesisTest

- 1) Statistic test (t test)

Table 6. Statistic Test of t

Coefficients ^a						
Model		Unstandardized Coefficients		Standardize d Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.174	2.349		4.757	.000
	Information System	1.353	.100	.784	13.515	.000
	E-Complaint	.294	.064	.267	4.599	.000

a. Dependent Variable: Service Quality

The t value of the Information System variable count (X_1) 13.515 > t table value 1.661 with a significance level of 0.000 < 0.1. So it can be concluded that the Information System has a positive and significant partial effect on Service Quality at the Murni Teguh Medan Hospital. Thus, H_1 is accepted.

The t value of the E-Complaint variable count (X_2) 4.599 > t table value 1.661 with a significance level of 0.000 < 0.1. so it can be concluded that E-Complaint has a positive and significant partial effect on Service Quality at the Murni Teguh Medan Hospital. Thus, H_2 is accepted.

- 2) F Statistic Test (F test)

Table 7. F Statistical Test

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	681.121	2	340.580	100.129	.000
	Residual	329.919	97	3.401		
	Total	1011.040	99			

a. Dependent Variable : Service Quality
 b. Predictors: (Constant), Information System, E-Complaint

Because the calculated F value is 100.129 > F table 2.36 and the sig value is 0.000 < 0.1, it can be concluded that the Information System and E-Complaint simultaneously affect Service Quality at Murni Teguh Medan Hospital. Thus, H_3 is accepted.

Test Coefficient of Determination (R^2)

Table 8. Determination Coefficient Test

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.821 ^a	.674	.667	1.844
a. Predictors: (Constant), Information System, E-Complaint				
b. Dependent Variable: Service Quality				

The R Square determination value in measuring the dependent variable is 0.674. The results of this test indicate that 67.4% of Service Quality at Murni Teguh Medan Hospital is influenced by the Information System and E-Complaint variables, while the remaining 32.6% is influenced by other variables not examined in this study.

DISCUSSION

Information Systems on Service Quality at Murni Teguh Medan Hospital

The Information System variable has a regression coefficient value of 1.353 and a calculated t value of 13.515 > t table 1.661 with a significance value of 0.000 < 0.1. So it can be interpreted that the Information System variable has a partially significant positive effect on Service Quality at the Murni Teguh Medan Hospital. The value of 1.353 also gives the conclusion that every increase in the Information System aspect (X_1) by 1 unit, the Service Quality will increase by 135.3%. Based on these results, it can be concluded that H_1 is accepted. The results of this study are in line with previous research conducted by Mulyani et al (2019) in their journal entitled "The Effect of Information Technology Systems on Data and Information Management in Nursing Services: Literature Review" and Rumambi et al (2020) in their journal entitled "Identifying the Impact of Using Hospital Information Systems (SIRS) on Health Services Using the 2006 Hot-Fit Model".

E-Complaint on Service Quality at Murni Teguh Medan Hospital

The E-Complaint variable has a regression coefficient value of 0.294 and a calculated t value of 4.599 > t table 1.661 with a significance value of 0.000 < 0.1. So it can be interpreted that the E-Complaint variable has a partially significant positive effect on Service Quality at Murni Teguh Medan Hospital. The value of 0.294 also gives the conclusion that every increase in the E-Complaint (X_2) aspect by 1 unit, the Service Quality will increase by 29.4%. Based on these results, it can be concluded that H_2 is accepted. The results of this study are in line with previous research conducted by Setyani, et al (2019) in his journal entitled "Management of Hospital Customer Complaint Using E-Complaint".

Information System and E-Complaint on Service Quality at Murni Teguh Medan Hospital

The Information System and E-Complaint variables have a calculated F value of 100.129 > F table 2.36 and sig 0.000 < 0.1. So it can be interpreted that the Information System and E-Complaint variables have a significant positive effect simultaneously on Service Quality at the Teguh Pure Hospital Medan. Then, from the results of the coefficient of determination (R^2) test, the R Square value for the dependent variable (Service Quality) is 0.674 which concludes that 67.4% of Service Quality at Murni Teguh Medan Hospital is influenced by the Information System and E-Complaint variables. While the remaining 32.6% is influenced by other variables not examined in this study. Based on these results, it can be concluded that H_3 is accepted. The results of this study are in line with previous research conducted by Mulyani et al (2019) in their journal entitled "The Effect of Information Technology Systems on Data and Information Management in Nursing Services: Literature Review", Setyani et al (2019) in their journal entitled "Management of Hospital Customer Complaint Using E-Complaint", and

Rumambi et al (2020) in their journal entitled "Identifying the Impact of Using Hospital Information Systems (SIRS) on Health Services Using the 2006 Hot-Fit Model".

CONCLUSION

Website-Based Information Technology System and E-Complaint at Murni Teguh Medan Hospital have a positive effect on Service Quality, this is indicated by significant positive results through multiple linear regression analysis, t test, F test and Coefficient of Determination (R^2) test. This positive result means that the utilization of a Website-Based Information Technology System is the right method to be applied at the Murni Teguh Medan Hospital. With the development and improvement of information systems at Murni Teguh Medan Hospital, patient complaints will also certainly decrease and this will be an advantage for Murni Teguh Medan Hospital. Their service quality will certainly be much better and can provide efficiency in its use, especially if the Murni Teguh Medan Hospital always develops its Website-Based Information Technology System to provide integrated services for patients.

REFERENCES

- Andi, Sinaga, H. D. E., & Nainggolan, E. (2023). *Analisa Pengaruh Kualitas Pelayanan, Fasilitas dan Harga Terhadap Kepuasan Orang Tua Murid di Sekolah Guang Ming*. STIE Eka Prasetya.
- Christ, Rezeki, S., & Maryati M, D. E. (2023). *Pengaruh Kepercayaan, Kualitas Pelayanan dan Potongan Harga Terhadap Keputusan Pembelian Spare Part Motor di Market Place Shopee SJ Motopart*. STIE Eka Prasetya.
- Engeline, F., Gultom, P., & Lazuardi, D. (2023). *Analisis Pengaruh Kepercayaan, Kualitas Pelayanan dan Harga Terhadap Kepuasan Konsumen pada PT Masterban Berkat Indonesia*. STIE Eka Prasetya.
- Fandi, Tjiptono. 2014. *Service, Quality & Satisfaction*. Edisi 3. Yogyakarta: Penerbit Andi
- Fandy, Tjiptono. 2016. *Service, Quality & satisfaction*. Yogyakarta : Andi
- Kadir, Abdul. (2014). *Pengenalan Sistem Informasi*. Yogyakarta : CV Andi Offset
- Livyanty, Gultom, P., & Situmorang, I. R. (2023). *Pengaruh Personal Selling, Sales Promotion dan Kualitas Pelayanan Terhadap Loyalitas Pelanggan pada CV. Kilau Permata Sejati*. STIE Eka Prasetya.
- Mulyani, I., Zamzami, E. M., & Zendrato, N. (2019). Pengaruh Sistem Teknologi Informasi pada Manajemen Data dan Informasi dalam Layanan Keperawatan: Literature Review. *Inspiration: Jurnal Teknologi Informasi dan Komunikasi*, 9(2), 137–142. <https://doi.org/10.35585/inspir.v9i2.2526>
- Nalendra, Aloysius Rangga Aditya. 2021. *Statistika Seri Dasar dengan SPSS*. Bandung: CV Media Sains Indonesia.
- Olivia, Rezeki, S., & Gultom, P. (2023). *Pengaruh Harga dan Kualitas Pelayanan Terhadap Kepuasan Konsumen Menggunakan Jasa pada CV Indo Prima Medan*. STIE Eka Prasetya.
- Prof.Dr.Sugiyono. (2016). *Metode Penelitian Kuantitaif, Kualitatif, dan R&D* (M. Dr. Ir. Sutopo. S.Pd (ed.); 1st ed.). Alfabeta.
- Prof.Dr.Sugiyono. (2022). *Metode Penelitian Kuantitaif, Kualitatif, dan R&D* (M. Dr. Ir. Sutopo. S.Pd (ed.); 2nd ed.). Alfabeta.
- Renawati, V., Gultom, P., & Akbar, M. A. (2023). *Pengaruh Harga, Promosi, dan Kualitas Pelayanan Terhadap Keputusan Pembelian Ban Motor Merek FDR di PT. Masterban Berkat Indonesia*. STIE Eka Prasetya.

- Rumambi, Frendy Rocky, Salahudin Robo, Citra Amalia.(2022). Identifikasi Dampak Penggunaan Sistem Informasi Rumah Sakit (SIRS) Terhadap Pelayanan Kesehatan Menggunakan Hot-Fit Model 2006. *Jurnal Media Informatika Budidarma*, 1,216-224
<https://ejurnal.stmik-budidarma.ac.id/index.php/mibDOI10.30865/mib.v4i1.1973>
- Rinaldi,S.Pd,M.Si, Muammar dan Ihdina Gustina SE.,MM. (2022). *Pengantar Statistika*. Medan : LARISPA INDONESIA
- Setyani, A. F., Widjanarko, B., & Agushybana, F. (2019). Management Of Hospital Customer Complaint With E-Complaint. *Jurnal Medicoeticolegal dan Manajemen Rumah Sakit*, 8(2), 129–137. <https://doi.org/10.18196/jmmr.8298>
- Veronika, Gultom, P., & Akbar, M. A. (2023). *Pengaruh Harga, Promosi dan Kualitas Pelayanan Terhadap Keputusan Pembelian Laptop Merek Asus pada PT Adhimukti Karya Bersama*. STIE Eka Prasetya.
- Wenny, Rezeki, S., & Nainggolan, E. (2023). *Pengaruh Kualitas Pelayanan Jasa dan Word Of Mouth Terhadap Keputusan Menggunakan Jasa pada CV. Central Solution Indonesia*. STIE Eka Prasetya.
- Wijaya, J., Rezeki, S., & Maryati M, D. E. (2023). *Pengaruh Kepercayaan Konsumen dan Kualitas Pelayanan Terhadap Kepuasan Konsumen PT. Sumber Karya Teknik*. STIE Eka Prasetya.
- Yodo, F., Gultom, P., & Nasution, L. E. (2023). *Pengaruh Promosi, Harga dan Kualitas Pelayanan Terhadap Kepuasan Pengguna Jasa Transportasi Ojek Online (Studi Kasus pada Pengguna Goride di Kecamatan Medan Area Kota Medan)*. STIE Eka Prasetya.
- Zalogo, Z., Gultom, P., & Rinaldi, M. (2023). *Pengaruh Harga, Lokasi dan Kualitas Pelayanan Terhadap Minat Beli Mie Pangsit Acen*. STIE Eka Prasetya.