

Analysis of Information Quality, Security Level and Quality of Mobile Application Systems and Its Effects on Customer Satisfaction and the Impact on Customer Retention of T-Cash Applications Telkomsel

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Abstract: T-Cash is one of the Pioneers of provider-based e-money services. Although T-Cash is declared successful, consumers are still afraid to use it Because Cultivating trust and attracting customers will save money on apps is not an easy thing. The purpose of this research is to know the result of testing the influence of information quality, security and quality of T-Cash e-money payment service application system to customer satisfaction and customer retention and partially simultaneously. This research uses AMOS Structural Equation Model (SEM) software. From the results of the data analysis can be known variable quality of information, security and application system Significantly Affect quality customer satisfaction and retention and customer satisfaction itself Significantly variable variable influences customer retention.

Keywords: E-money, security, quality of information, the quality of the application system, the T-Cash.

**INTRODUCTION
 PRELIMINARY**

The development and use of technology in Indonesia showed an increasing trend, one means of technology users in Indonesia is the internet [1]. Until 2017, the number of Internet users reached 143.26 million, this number rose by more than 10 million users compared to the previous year as many as 132.7 million. The device used by most internet users are mobile phone or a mobile phone that is as much as 47.6%.

One of the conveniences offered is the provision of electronic money or e-money. E-money is an effort to support the National Movement of Non-Cash (GNNT) launched by the government on August

14, 2014. During 2016, the number of non-cash payment instruments also increased quite a lot. In the non-cash payment transactions.



Fig-1: Number of non-cash transactions tool; Source: HaloMoney.co, 2016

The technological advances in the payment system to shift the role of cash as a payment instrument to the form of non-cash payments more efficient and economical [2]. Bank Indonesia noted, there are two types of electronic money that is currently circulating in the community, namely; chip-based and server-based. Chip-based electronic money is a non-cash payment issued by the bank, while the server-based electronic money many released by telecommunications providers. One is the T-Cash from Telkomsel. Currently the T-Cash is based on e-money providers are most favored by customers provider in Indonesia. Currently the T-Cash can be used by all customers both prepaid and postpaid Tekomsel.

Indonesia there are three major players in the business of electronic payments via mobile operators, namely; T-Cash Telkomsel, Indosat and XL Cash wallet. With increasing competition in the market, do improvement is not enough to get a superior competitiveness so that needs to be done by an organization is doing more leading edge innovation strategies to improve competitiveness [13]. In the provider-based technology, these systems need to have a good quality start of the feature, type of service and security must be guaranteed. Therefore, many players

provider that seeks to provide quality and innovation in this regard.

Telkomsel is one provider that has the most customers, reaching 157.4 million subscribers in 2016, but the application of T-Cash based on the number of names Near Field Communication (NFC), which is registered in 2016 only reached 6 million, which means the amount of the is still considered small at only 3.8% when compared with total subscribers of Telkomsel. Although Telkomsel is the pioneer of electronic money provider-based procurement is declared successful, consumers are still afraid to use it because it fosters trust will save money in the application is not easy. Moreover, T-Cash is an application that uses NFC and relatively new, so consumers are still studying the benefits of using T-Cash.

The growth of consumers who give a 5 star rating, the rating for the consumers who were satisfied with the electronic services of T-Cash application, for T-Cash service is quite an increase. In the picture is also known that an increase in consumers who give a rating or down the middle rank given by consumers who are less or not satisfied with the electronic services of T-Cash applications is also increasing. It was identified that not all customers are satisfied with the services provided by this application.

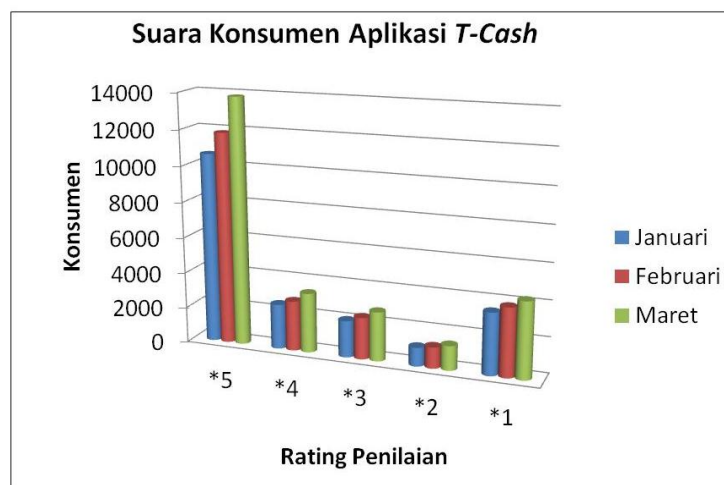


Fig-2: Consumer voice application T-Cash
source: Googleplaystore, 2018

In the pre-study levels of interest that was conducted to 30 people Telkomsel customers who use T-Cash application and uses several variables, obtained

an average yield of the most important variables to be improved is application system quality, followed by a level of security and quality of information.

Table-1: Data pre-study

No	Atribut	Kadar Kepentingan (%)				
		STS	TS	N	S	SS
Kualitas Informasi						
1	Informasi pada aplikasi T-Cash up to date	10	23	53	7	7
2	Program dan fitur T-Cash sudah tepat sasaran	3	13	53	20	10
3	Kualitas informasi pada aplikasi T-Cash sudah baik	10	47	20	23	-
Keamanan						
4	Keamanan aplikasi T-Cash dari hacker (peretas)	7	23	53	17	-
5	Keamanan perubahan data pelanggan	3	23	43	23	7
6	Keaslian data pemilik akun sudah terverifikasi	3	10	50	17	20
7	Informasi konten pada aplikasi T-Cash	7	20	43	20	10
8	Tingkat keamanan untuk akses pada aplikasi	10	17	40	17	17
9	Keamanan transaksi pada aplikasi T-Cash	10	13	60	10	7
Kualitas Sistem Aplikasi Mobile						
10	Proses layanan transaksi pada aplikasi T-Cash lancar	10	27	33	20	10
11	Informasi data pengguna pada aplikasi T-cash mudah dirubah	7	27	40	27	-
12	Informasi dan fitur –fitur pada aplikasi T-cash telah digabungkan dengan baik berdasarkan jenis dan karakteristik produk	3	3	43	27	23
13	Aplikasi mobile T-Cash nyaman untuk digunakan	-	10	43	20	27
14	Akses layanan pada aplikasi T-Cash cepat dan mudah	3	23	53	17	3
Hubungan Konsumen						
15	Terdapat layanan informasi konsumen pada aplikasi T-Cash	-	47	23	23	7
16	Promosi layanan aplikasi T-Cash yang proaktif	3	13	47	30	7
Responsif						
17	Perlakuan dan kecepatan dalam pengajuan komplain	3	13	13	57	13
18	Perlakuan dan kecepatan dalam penyelesaian komplain	3	17	23	50	7
19	Pelanggan dapat berinteraksi dengan cepat dengan perusahaan melalui aplikasi T-Cash	7	10	20	47	17
Pemenuhan						
20	Kegagalan transaksi pada aplikasi T-Cash dapat terkoreksi	3	7	57	23	10
21	Ketersediaan alat tap pada merchant	-	10	23	53	13

Source: Data processed, in 2018

Consumers expect the fit between the services received and expected. If the service exceeds expectations or the expectations of customers, customer satisfaction will arise. Consumers who are satisfied with the product or service will make transactions on an ongoing basis and even recommend to others. Therefore the quality of electronic services is very important to be done by the owners of this provider. Companies that can provide quality electronic services and promotions are attractive to customers will lead to ongoing transactions by customers.

As described above, the purpose of this study are as follows:

- To find out the test results on the influence of information quality electronic money payment services (e-money) T-Cash on customer satisfaction and customer retention.
- To find out the test results on the effect of the level of security of electronic money payment services (e-money) T-Cash on customer satisfaction and customer retention.
- To find out the test results on the effect of the quality of mobile application system of electronic

money payment services (e-money) T-Cash on customer satisfaction and customer retention.

- To find out the test results on the effect of consumer satisfaction payment services electronic money (e-money) T-Cash on customer retention

This study is expected to be a reference in the application of theoretical studies related to the dimensions of information quality, security level and quality of mobile application system and its development strategy in Indonesia, can be a reference for the management of PT. Telkom Indonesia in improving the quality of electronic money payment services strategy (e-money) T-Cash, and can provide information in writing as well as references to information quality, security level and quality of mobile applications on the application system T-Cash.

LITERATURE, FRAMEWORK FOR THINKING AND HYPOTHESES

According Ogunnaik *et al.*, [4], customer retention is higher than merely satisfying customer expectations at this time, but is helpful in anticipating their expectations so that they become loyal and promoters to recommend the company's brand.

Customer retention is probably the most important thing in earnings growth, and a key that consumers can be interested in buying or using the company's products [5]. Customer retention not only meet consumer expectations but about how to provide service exceeding their expectations so that they can become loyal customers.

Satisfying customer needs is the goal of all companies. This is a crucial factor for the creation of customer satisfaction, it will improve the existence of the products / services offered by the company. According to Solomon [6], consumer satisfaction is an overall feeling of consumers about products or services that have been purchased by consumers. Consumer satisfaction is also defined as a state achieved when the product according to the needs or expectations of consumers and free from want [7]. Therefore it can be concluded that customer satisfaction is a response or a response to the positive / negative comes after consumer use of products / services.

According to Barnes in Rosania [8], the quality of information includes things such as information that is accurate, reliable information, the information is up to date or later, the information in accordance with the topic, the information easy to understand, very detailed information, and information presented in a format appropriate design. Based on the definition that has been tested, the quality of information to consider fitness for use of the information, while the trust information can be defined ability of a trust can protect user information against him, and includes characteristics such as competence and predictability of resources [9]. According Obrien and Maracas [10], there are three (3) dimensions of quality of information, namely Waku dimension, the dimension of the content and dimensional shapes.

The definition of information security by Sarno and Iffano [11] is an attempt to secure information assets against threats that may arise. Park

and Kim [12] defines safety or security as an online store capabilities in controlling and maintaining the security of the transaction data. They found that security guarantees are important in making the trust to reduce consumer concern about the misuse of personal data and transaction data that can be easily damaged. Therefore it can be said that the safety or security is the ability of a mobile application to control, maintain and ensure the confidentiality of personal data and transaction security. According to Raman and Annamalai [13], the security indicator includes security and confidentiality of data.

Development of an application or software is needed to do the testing on the quality of the application, it is intended that when the application is used by the user, such as a mismatch error or mistake can be avoided features [14]. DeLone and McLean in Widodo *et al.*, [15] suggested that the quality of the application system is a characteristic of the inherent information regarding the application system itself which application system quality refers to how well the ability of the hardware, software and policy procedures of the application system of information that can provide the information needs of the user. From the definition above it can be concluded that the quality of mobile application system is the totality of the performance of an internet-based mobile application that includes software and hardware to provide the needs of the user. In the quality system of the mobile application is referred to the several dimensions of quality measurement systems from Nelson [16], the reliability of the system (reliability), flexibility (flexibility), system integration (system integration), the accessibility of the system (system accessibility) and system response time (respond time system).

In this study, the proposed framework that includes the variable quality of information, the level of security and quality of mobile application system as shown in Figure 2.1.

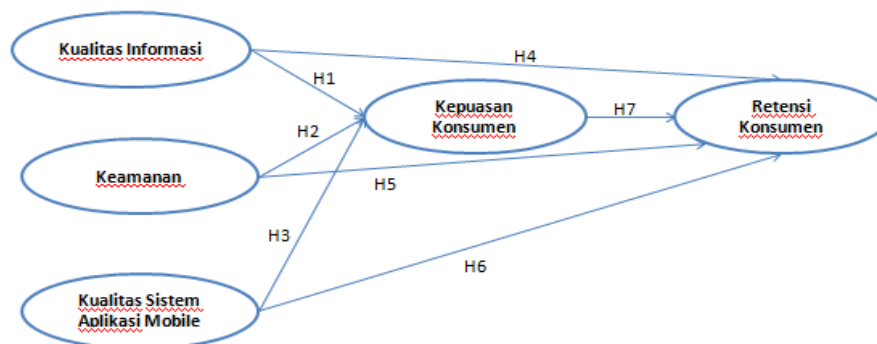


Fig-3: Framework of thinking
Source: Data processed, 2018

In the study presented several hypotheses of the study and the framework as follows; H1: there are positive influence between the quality of information to customer satisfaction T-Cash, H2: there is a positive influence between security on customer satisfaction T-Cash, H3: there are positive influence between the quality systems of mobile applications to customer satisfaction T-Cash, H4: there are significant positive between the quality of information on customer retention T-Cash, H5: there are positive influence between security against customer retention T-Cash, H6: there are positive influence between the quality systems of mobile applications on the retention of customers of T-Cash and H7: there are positive influence between customer satisfaction the retention of customers of T-Cash.

METHOD RESEARCH

This research is an explanatory study using a quantitative approach. Each variable research is a variable quality of information, the level of security and quality of mobile application system is defined as an independent variable (exogenous), and customer satisfaction as the dependent variable (endogenous) and

customer retention as an intervening variable. The population is the number of active registered Telkomsel customers using T-Cash service application. Total population recorded in 2016 amounted to 6 million people in order to obtain a sample using the formula Slovin amounting to 400 people. The sampling technique using simple random sampling (simple random sampling).

In addition to interviews, the authors also gather information through questionnaires using Likert scale. Data processing activities include data entry, editing, coding, scoring, and safety data. Before performing advanced analysis, researchers to test the reliability of the data obtained. Furthermore, researchers using descriptive analysis and analysis *Structural Equation Model* (SEM) with AMOS software. SEM can provide an analysis based on the Confirmatory Factor Analysis (CFA) a model that combines the correlation analysis, regression analysis, traffic analysis, and factor analysis [17]. At this stage the suitability of the model is evaluated through a review of the various criteria Goodness of Fit as shown in Table-3.

Table-2: Testing the overall goodness of fit models

Goodness of fit	Information
Chi-Square (X2)	The smaller the better. Used Chi-Square values are small in order $H_0: \Sigma = \Sigma (0)$, not rejected
Root Mean Square Residual (RMR)	Used for large n
Root Mean Square Error Approximation (RMSEA)	A value approximating the average root squared error
Goodness of Fit Index (GFI)	Similar to R2 in the regression
Adjusted Goodness of Fit Index (AGFI)	Similar to the regression-adjusted R2
Normed Fit Index (NFI)	The model states that among the variables in the model were estimated unrelated
Tucker Lewis Index (TLI) or Non-normed Fit Index (NNFI)	The size of the model to measure the suitability of NFI

Source: Farizi, 2013 [19]

RESULTS AND DISCUSSION

Data is said to be valid if the significant value of > 0.5 and testing said to be reliable if it has a value construct reliability > 0.7 [18], The results obtained from testing the quality of the instrument to test the validity and reliability of the CFA with AMOS version 22 indicates that the entire indicator questions representing the 5 variables declared invalid with a value of > 0.5 and CR value for each variable is greater than 0.7. Based on the results it can be concluded that the entire instrument is valid and reliable research so that it can be used in this study.

The initial process of this research is the analysis of the characteristics of respondents by sex, age, marital status, income and education last. Most of the respondents were males between the ages of 32-41 years old, unmarried status with revenues ranging from 5-10 million per bulan. Pendidikan mostly undergraduate D3 / S1.

The input covariance matrix is used and correlation. Estimation model used is the maximum likelihood estimation (ML) Figure-4 is an estimated CFA standardized solution.

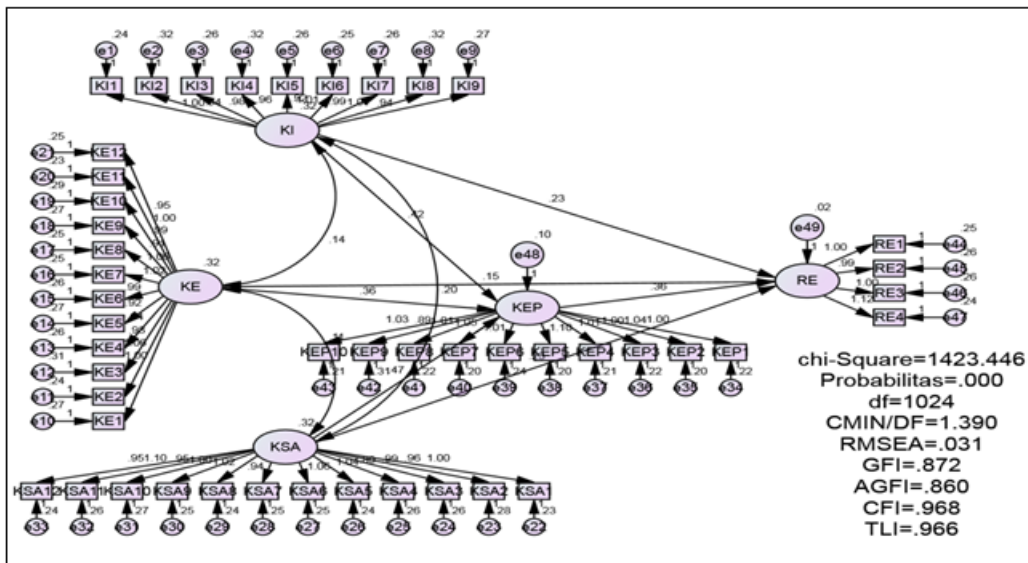


Fig-4: Output AMOS

Normality test is done by using the z value (critical ratio or CR in output AMOS 22.0) of skewness and kurtosis distribution data. The critical value of ± 2.58 at a significant level of 0.01 [18]. Based on the table shows the univariate test for normality in the majority of normal distribution for the value of the critical ratio (cr) for kurtosis (kurtosis) and skewness (skewed), were within ± 2.58 . While in multivariate data meet normal assumptions for the value of -1.361 fall within ± 2.58 .

Evaluation of the multivariate outliers can be seen through AMOS output Mahalanobis Distance. The criteria used at the level of $p < 0.001$. The distance is evaluated using X^2 on the degrees of freedom of the number of measurable variables used in the study. In the table above shows that there is a value of Mahalanobis Distance from the processed data is not

detected value is greater than the value of 82 720. Therefore it can be concluded that the data no outliers.

Some ways to see whether there is a problem of identification is to look at the results of the estimation. SEM analysis can only be done if the results of the identification of the model shows that the model is included in the category of over-identified. This identification is done by looking at the value of the model created df. AMOS output results that showed the value of df models by 1024. This indicates that the model including the category of over-confident because it has a positive df. Therefore, data analysis can proceed to the next stage.

Assess the goodness of fit into the main objectives in the SEM to determine to what extent the hypothesized model "Fit" or matched to the sample data.

Table-3: Test results goodness of fit index

Goodness of fit index	Cut-off value	Research model	Model
significant probability	$\geq 0:05$	0,000	marginal
RMSEA	$\leq 0:08$	0,031	Good Fit
GFI	≥ 0.90	0.872	marginal
AGFI	≥ 0.90	.860	marginal
CMIN / DF	≤ 2.0	1,390	Good Fit
TLI	≥ 0.90	0.966	Good Fit
CFI	≥ 0.90	0.968	Good Fit

Source: data processed 2018

CMIN / DF is an index that measures the suitability parsimonious goodness of fit models to estimate the number of coefficients that are expected to achieve conformity. Results CMIN / DF in this study shows that 1,390 research model fit.

Goodnes of Fit Index (GFI) indicates the level of overall fitness model calculated from the squared residuals of the model to predict than actual data. GFI value in this model is 0.872. Values close to the recommended level of ≥ 0.90 indicates marginal research model fit.

RMSEA is an index used to compensate for the chi-square value in a large sample. RMSEA value of this study is 0,031 with the recommended value is ≤ 0.08 It shows the research model fit.

GFI AGFI is adjusted by the ratio between the degree of freedom that is proposed and the degree of freedom of null models. AGFI value in this model is 0.860. Values close to the recommended level of ≥ 0.90 indicates marginal research model fit.

TLI is a suitability index is affected less sample size. TLI value in this study was 0.966 with the recommended value is ≥ 0.90 It shows the research model fit.

CFI is an index that is relatively insensitive to sample size and complexity of the model. CFI value in this study was 0.968 with the recommended value is ≥ 0.90 , it indicates the research model fit. Based on the overall goodness of fit above measurements indicate that the model proposed in this study received.

Hypothesis testing is done is to answer the questions on this study or analyze the relationships of structural models. The data analysis hypothesis can be seen from the value of standardized regression weight that shows the influence coefficient between variables in Table 4.2.

Table-4: Relationships between variables

			estimate	SE	CR	P	hypothesis
Customer satisfaction	<---	Quality Information	.418	.054	7756	0,000	Significant positive
Customer satisfaction	<---	Security	.355	.044	8143	0,000	Significant positive
Customer satisfaction	<---	Quality Systems	.473	.052	9089	0,000	Significant positive
Customer retention	<---	Quality Information	.234	.049	4,830	0,000	Significant positive
Customer retention	<---	Security	.148	.038	3,887	0,000	Significant positive
Customer retention	<---	Quality Systems	.231	.047	4887	0,000	Significant positive
Customer retention	<---	Customer satisfaction	.358	.058	6159	0,000	Significant positive

Source: Data processed, 2018

Relationship Quality Information to Customer Satisfaction

Parameter estimation of standardized regression weight coefficient obtained at 0.418 and CR 7756, this shows that the link quality information with positive customer satisfaction. This means that the better the quality of information it will increase customer satisfaction. Testing the relationship between both variables indicate a probability value of 0.000 ($p < 0.05$), so that (H1), which states that "there are positive influence between the quality of information to customer satisfaction T-Cash" supported and can be declared if there is influence between the quality of information to customer satisfaction

Security Relationship to Customer Satisfaction

Parameter estimation of standardized regression weight coefficient obtained at 0.355 and CR 8143, this shows that the security relationship with the positive customer satisfaction. This means that the better the security will increase customer satisfaction. Testing the relationship between both variables indicate a probability value of 0.000 ($p < 0.05$), so that (H2) which states that "there are positive influence between security on customer satisfaction T-Cash" supported and can be declared if there is influence between security and customer satisfaction.

Relationship Quality System Application to the Customer Satisfaction

Parameter estimation of standardized regression weight coefficient obtained at 0.473 and CR 9089, this shows that the relationship quality

application system with positive customer satisfaction. This means that the better quality of the application system will improve customer satisfaction. Testing the relationship between both variables indicate a probability value of 0.000 ($p < 0.05$), so that (H3) which states that "there are positive influence between the quality of the application system to customer satisfaction T-Cash" supported and can be declared if there is influence between the quality of the application system customer satisfaction.

Relationship Quality Information on Customer Retention

Parameter estimation of standardized regression weight coefficient obtained at 0.234 and CR 4830, this shows that the link quality information with positive customer retention. This means that the better the quality of information it will increase customer retention. Testing the relationship between both variables indicate a probability value of 0.000 ($p < 0.05$), so that (H4) which states that "there are positive influence between the quality of information on customer retention T-Cash" supported and can be declared if there is influence between the quality of information to customer retention.

Security Relationship to Customer Retention

Parameter estimation of standardized regression weight coefficient obtained at 0.148 and CR 3887, this shows that the security relationship with the positive customer retention. This means that the better the security will improve customer retention. Testing the relationship between both variables indicate a

probability value of 0.000 ($p < 0.05$), so that (H5) which states that "there are positive influence between security on the retention of customers of T-Cash" supported and can be declared if there is influence between security with customer retention.

Relationship Quality on Customer Retention System Application

Parameter estimation of standardized regression weight coefficient obtained at 0.231 and CR 4887, this shows that the relationship quality application system with positive customer retention. This means that the better quality of the application system will improve customer retention. Testing the relationship between both variables indicate a probability value of 0.000 ($p < 0.05$), so that (H6), which reads "there are positive influence between the quality of customer retention application system to T-Cash" supported and can be declared if there is influence between the quality of the application system customer retention.

Relations Customer Satisfaction to Customer Retention

Parameter estimation of standardized regression weight coefficient obtained at 0.358 and CR 6159, this shows that the relationship of customer satisfaction with the positive customer retention. This means that the better customer satisfaction will improve customer retention. Testing the relationship between both variables indicate a probability value of 0.000 ($p < 0.05$), so that (H7) saying "there are positive influence between customer satisfaction to customer retention T-Cash" supported and can be declared if there is influence between customer satisfaction with customer retention.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSION

From the above description, in this study we can conclude several things. The variable quality of information significantly positive effect directly on customer satisfaction. Even this variable is also significant effect on customer retention. The quality of the information referred to improve and enhance the quality of content in the application of T-Cash. Variable security levels significantly positive effect on customer satisfaction and customer retention. These variables are referred to improve and enhance the performance of the security quality of applications the T-Cash, whereas for the variable quality of the application system is referred to improve and enhance the network and the access of the application. Variable quality T-Cash application system also directly have a significant positive effect on customer satisfaction and customer retention. As well as customer satisfaction variables, variables even this significant positive effect on customer retention.

In order to improve customer satisfaction, the company can make improvements variable quality of information with more frequent updates to the content / information / design, the company should also be more cooperation with merchants who attract others to make the program and the different features and targeted design changes that can be tailored to the characteristics of customers is very important to make customers feel comfortable in using T-Cash service.

Repair and improvement of customer satisfaction can be done with the procurement of double pin or password to access and transact, conduct physical security systems (photographs, finger prints, etc.), the password to change the security of customer data or double use technology more modern information systems. Procurement of modern security systems over very important to maintain the quality of security, such as using google authenticator or finger prints system with security / crowded eye is being used based on online transactions.

Improving the quality of T-Cash application system can be done through the improvement of services, improvement of the efficiency of the system as well as features in the application, bonuses or rewards that attract, as well as the handling of complaints more quickly. This is done to make the T-Cash customers are more satisfied and feel comfortable using this T-Cash service and encouraged to use it everyday even recommend it to others

SUGGESTION

According to the research conducted, the researchers propose some good advice that suggestions for future research and advice to companies in this case is PT. Telekomunikasi Indonesia Tbk as the developer of the application service T-Cash. For companies are expected to improve and enhance the quality of research variables. The company can also make a comparative study with competitors or similar companies to seek benchmarking against the study variables.

Suggestions for further research can be used to continue researching seputaran variables influence consumer perception research after repair. In addition, researchers can examine the variables of research to other similar companies. Future studies may investigate more in depth research variables influence on satisfaction or consumer perception.

REFERENCES

1. Pawirosumarto, S. (2016). Effects of system quality, information quality, and service quality to user satisfaction e-learning system. *Scientific Journal of Management*, 4(3): 416-433.
2. Parastiti, D. E., Mukhlis, I., & Haryono, A. (2015). Analisis penggunaan uang elektronik pada mahasiswa fakultas ekonomi universitas negeri

- malang (studi kasus: uang elektronik brizzi). *Jurnal Ekonomi dan Studi Pembangunan*, 7(1), 75-82.
3. Ridzqi, R. M. (2013). Analysis of the needs of the communication media services Facebook Amanda Brownies with e-service quality methods and models Kano. [Thesis]. Bandung (ID): Telkom University.
 4. Ogunnaike, O. O., Salau, O. P., Adeniyi, S., & Tairat, B. T. (2014). Evaluation of customer service and retention; a comparative analysis of telecommunication service providers.
 5. Singh, R., & Khan, I. A. (2012). An approach to increase customer retention and loyalty in B2C world. *International Journal of Scientific and Research Publications*, 2(6), 1-5.
 6. Solomon, M. R. (2013). *Consumer Behavior: Buying, Having and Being*. 10th ed. England (UK): Pearson education limited.
 7. Daryanto, S. (2014). *Consumers and Excellent Service*. Yogyakarta (ID): Gava Media.
 8. Rosania. (2016). Effect of usability, kualitasinformasi and quality of service interaction Riau University Library website on customer satisfaction. *Journal of Social UR*. 3 (2): 1-15.
 9. Nurse, J. R., Rahman, S. S., Creese, S., Goldsmith, M., & Lamberts, K. (2011). Information quality and trustworthiness: a topical state- of- the- art review. In *The International Conference on Computer Applications and Network Security (ICCANS) 2011* (pp. 492-500). IEEE.
 10. Alam Napitupulu, T. O. G. A. R., & Kartavianus, O. (2014). A Structural Equations Modeling Of Purchasing Decision Through E-Commerce. *Journal of Theoretical & Applied Information Technology*, 60(2).
 11. Sarno, R., & Iffano, I. (2009). *Information Security Management System*. Surabaya (ID): ITS Press.
 12. Park, C. H., & Kim, Y. G. (2006). The effect of information satisfaction and relational benefit on consumers' online shopping site commitments. *Journal of Electronic Commerce in Organizations (JECO)*, 4(1), 70-90.
 13. Raman, A. (2011). Wet Annamalai services and e-shopping decision: a study on Malaysia e-consumer. *IJCA Special Issue on: Wireless Information Networks & Business Information System*, 54- 60.
 14. Rosa, S. (2011). *Learning Model Software Engineering (Structured and object-oriented i)*. Bandung: Modula.
 15. Widodo, P., & Nurchayati, H. R. D. (2016). The effect of the quality of the application system and the quality of information on user satisfaction RTS application system (Rail Ticketing System) with trust as mediating variables (study on passenger "KAI" 4 operating economy Semarang). *Media Economics and Management*, 31(2): 160-181.
 16. Nelson, W. B. (2005). *Applied life data analysis*, 577. John Wiley & Sons.
 17. Suharjo, B., Ardana, N. K., & Mbau, L. (2014). Comparison of parameter estimation method in structural equation modeling. Proceedings of the Seminar *Mathematics and Statistics Faculty UNTAN*.
 18. Ghozali, I. (2011). *Multivariate Analysis Application with IBM SPSS 19 Program*. Semarang: BP Undip.
 19. Farizi, A. (2013). Factors Analisis which effect e-tailer credibility. [Thesis]. Bogor (ID): Bogor Agricultural Institute.