



Analysis of User Satisfaction on Batam Online Supermarket Application in Batam

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Abstract

Pandemic Covid-19 is going on in Indonesia have a major impact changing patterns of consumption of goods and services from offline to online. The distance restrictions that must be carried out to prevent the spread of Covid-19 transmission and break the chain of the spread of this virus, require the public to avoid crowds from crowded places. The presence of the Batam Online Supermarket online market application in the city of Batam is certainly one of the efforts to prevent Covid-19 and as an example of the rapid development of digitalization of technology. The biggest challenge in the market online lies in customer satisfaction, so this research adopts the Technology Acceptance Model (TAM) and D&M IS Success Model. Of the 370 respondents who were obtained from the Slovin formula and taken using probability sampling technique, then they were tested for validity test analysis, reliability testing, multiple regression analysis and hypothesis testing, t test and F test on variables using SPSS 23. Based on the result, this study showed that the variable of system quality, information quality, service quality were significant on the user satisfaction, meanwhile the variable of perceived easy of use and perceived usefulness were not significant on the user satisfaction in using BOS application.

Keywords: Online Market, TAM, D&M IS Success Model, Covid-19

I. INTRODUCTION

Rapid technological developments have a major influence on various aspects of life, one of which is shopping style. Thus encouraging a change in the consumption patterns of goods and services from offline to online. Especially during the Covid-19 pandemic that is happening in Indonesia, it has a huge impact on the economy in all business sectors. The distance restrictions that must be carried out to prevent the spread of Covid-19 transmission and break the chain of the spread of this virus, require the public to avoid crowds from crowded places, of course, one of which is the market. The article [1] mentions that the fruit and vegetable market in Canada was significantly affected by the spread of the coronavirus (SARS-CoV-2 and Covid-19), starting in March 2020. The closure of restaurants, bars, and schools, required farmers and distributors to be forced to shift supplies almost entirely from food service to retail channels.

In the city of Batam itself, traditional markets have also begun to switch to markets *online*. One of them is the emergence of the application *Batam Online Supermarket* (BOS). BOS is hereby maximizing technology and excellent service to customers through an application on Android and IOS devices. BOS has become an alternative for consumers in addition to traditional markets that can accommodate the needs of

consumers, namely relatively cheap goods, safe and fast delivery services. With the various conveniences that are presented, the BOS application certainly continues to innovate in the form of payment which is also available in 2 (two) options, namely cash and transfer, which makes the payment transaction process easier and the availability of various delivery sessions by couriers so that products reach consumers' homes quickly. Initially, the BOS application was not widely used, but as time went on and more product choices were offered, this application became a lot of interest.

However, consumers have complained about several problems when using the BOS application, such as products that cannot be displayed, products that are not available, and failure to check product availability. So it is necessary to see user satisfaction in using the BOS application because the biggest challenge in this BOS application lies in customer satisfaction, where the products offered are expected to be by the wishes of the customer and product distribution is faster when the product reaches the customer. So when running this BOS, it is necessary to have system and technology transparency that is always updated in real-time when there is a transaction process with the seller. This system can further strengthen the trust of customers.

This study uses the theory of the Technology Acceptance Model (TAM). TAM has become a key model in understanding predictors of human behavior towards technology acceptance or rejection [2]. TAM has five constructs [2], namely perceptions of perceived ease of use, perceptions of perceived usefulness, attitudes toward using, behavioral intention to use, and conditions of use. As well as the DeLone and McLean model which forms a framework for measuring and assessing the impact of information systems on individuals and organizations. The most widely used model as a measure of the success of information systems. An information system that has quality can be viewed from three aspects, namely system quality, information quality, and service quality [3]. Because the success of using the information system can affect the level of consumer satisfaction because consumers will certainly continue to use the BOS application if they are satisfied with the use of the service.

According to [4] with his research entitled “The Effects of User Experience Factors on Satisfaction and Repurchase Intention at Online Food Market”, The results showed that among online food market user experience factors, the quality of the product and brand characteristics have a significant impact on satisfaction. This means that consumers decide to purchase food through online food markets by considering high-quality products and brand value together.

According to [5] research entitled “User Satisfaction Model for e-Learning Using Smartphone” the factors that influence to explore and make user satisfaction model for e-learning using smartphone applications in Mulawarman University are service quality, information quality, user participation, and benefits.

Research conducted by [6] entitled “User Satisfaction of e-homestay portals in Malaysia”, The study reports that the antecedents of information quality, system quality and electronic service quality positively correlates with user’s satisfaction.

Meanwhile, the research entitled “Study of User Acceptance and Satisfaction of a Mandatory Government-Regulated Information System” by [7], shows that the aspects of performance expectancy, effort expectancy, social influence, and information system quality affect the user acceptance. The four aspects are equally important.

Meanwhile [8] research entitled “A Study on the Factors Affecting Satisfaction and Reuse Intention among Customers Using O2O Delivery Platform in China” shows the results that information quality, customer service quality, product quality and delivery quality has a significant positive impact on customer satisfaction.

Based on the data above [4]–[8], there are no studies that combine the TAM and DeLone and Mclean models which are one of the models of technology use

and acceptance. Especially online supermarkets in Batam, Indonesia.

II. THEORETICAL FOUNDATION

A. Online Market

The online market is divided into two words, market and online. According to the Big Indonesian Dictionary (KBBI), the market can be defined as a place where people buy and sell, there are supply and demand activities, and a place for sellers who want to exchange goods or services for money or buyers who want to exchange money for goods or services. While the definition of online according to the KBBI is a network, connected through computer networks, the internet, and so on. So from these two linguistic understandings, we can interpret the online market as a place where trading activities or buying and selling of goods are connected to a network, in this case, the internet network.

B. Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is a model to predict and explain how technology users accept and use the technology in the user's work [9]. TAM is defined as one of the models built to analyze and understand the factors that influence the acceptance of technology users [2].

The TAM model adapts the TRA (Theory of Reasoned Action) model, which is a theory of reasoned action that aims to explain individual attitudes towards the use of technology. Technology Acceptance Model (TAM) describes that two factors dominantly affect technology integration. The first factor is the perception of usefulness. While the second factor is the perceived ease of use of technology [2].

According to [10] until now TAM is a model most widely used in predicting technology acceptance information. The purpose of this model is to explain the main factors of behavior of information technology users towards acceptance of use information technology itself. TAM model in more detail explain the acceptance of information technology with certain dimensions that can affect its easy acceptance information technology by users.

C. DeLone and Mclean

Of the several models of information system success, the one that has received more attention from researchers is the DeLone and McLean model. The DeLone and McLean model is a model used to measure the success of information systems, this model is known as a simple model but is considered quite valid by researchers. The DeLone and McLean (1992) model was created based on theoretical and empirical studies of information systems created by researchers in the 1970s and 1980s. There are 3 variables that most support the success of information systems, namely, system quality, information quality and service quality [3].

D. Perceived Ease of Use

Perceived ease of use is a level where a person believes that the use of a particular system can reduce a person's effort in doing something [2]. Construct this perceived ease of use is also is a belief about the

process of taking decision. If someone feels confident that information systems are easy used then he will use it. On the other hand, if someone feel confident that the information system is not easy to use then he will not use it [11].

E. Perceived Usefulness

[2] perceived usefulness is a level where a person believes that the user of a particular system will improve that person's work performance, or it can be interpreted as a measure where the use of technology is believed to bring benefits to the people who use it. From the definition, it is known that the perceived use fullness is a belief (belief) about the process decision-making. Thus if one feels confident that the information system is useful then he will use it. On the other hand, if someone believes that the information system is lacking, useful then he won't use it [11].

F. System Quality

According to [3] system quality is a characteristic of the desired quality characteristics of the information system itself and the desired quality of information on product characteristics. System quality means the quality of the combination of hardware and software in an information system. The indicators for measuring system quality from DeLone and McLean are: adaptability, availability, response time, usability, and reliability.

G. Information Quality

According to [3] The quality of information in a system aims to see the extent to which information can meet the expectations of people who need information on the system. In terms of the quality of information perceived by the user, it can be measured by the level of accuracy of the information, the information conveyed is easy to understand, the information is explained in a complete and relevant. Information quality refers to the quality of information and content. It usually refers to the level of consumer use of information provided by the information system [8].

H. Service Quality

The quality of information system services is a service that users get from information system developers, services can be in the form of updating information systems and responses from developers if the information system has problems. DeLone and McLean service quality measurement indicators, namely: quick responsiveness, assurance, and empathy [3]. Therefore, service quality is the key to the success of the company and is considered to be an important factor influencing customer satisfaction with the service platform [12].

I. User Satisfaction

System user satisfaction is a response and feedback that is raised by users after using the information system [3]. The user's attitude towards the information system is a subjective criterion of how much the user likes the system used. The indicator items used to measure user satisfaction in this study use indicator items [3], namely, repeat repurchases, repeated visits, and user surveys.

III. RESEARCH METHODELOGY

A. Research Model

The current research framework adopts TAM model and D&M IS Success model. The below model shows perceived easy of use, perceived usefulness, system quality, information system, service quality which in turn influences user satisfaction.

The research model is illustrated in Figure I.

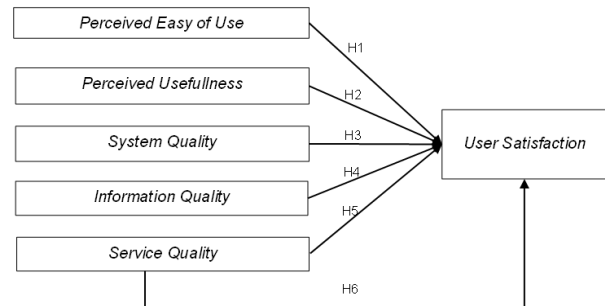


Fig I. Research model

The following hypotheses can be concluded based on framework above:

H1: Perceived Easy of Use affects the User Satisfaction

H2: Perceived Usefulness affects the User Satisfaction

H3: System Quality affects the User Satisfaction

H4: Information Quality affects the User Satisfaction

H5: Service Quality affects the User Satisfaction

Table 1. The Advantages and Disadvantages Previous Research

Journal Title	Advantages Research	Disadvantages Research
The Effects of User Experience Factors on Satisfaction and Repurchase Intention at Online Food Market [4]	In this study, it was studied the impact of consumer experience factors on satisfaction and repurchase intentions so that online food markets can be competitive in the online food market, reflecting consumers' desire to buy food safely through the time of COVID19. The user experience factors were set as system quality, product quality, brand characteristics, and economics, and this is a factor based on actual consumption experience, so it is meaningful to study consumer psychology more specifically and empirically.	In this research journal points out that the need to research a wider area.
User Satisfaction	The research is to make user satisfaction	The conclusions in this study are not

Model for e-Learning Using Smartphone [5]	model for e-learning using smartphone, and to produce and to recommend e-learning content for research and e-learning. The components that would be evaluated in this research are focused on the following matters: user satisfaction for e-learning using smartphone, service quality, information quality, user participation, and benefit.	explained in more detail.
User Satisfaction of e-homestay portals in Malaysia [6]	This research drawing from DeLone and McLean's Theory of Information System Success, this study examines the effects of information quality, system quality, and electronic service quality on user's satisfaction of e-homestay portals.	There are some limitations in this study, namely geographical constraints which can also limit the generalizability of the study. The research location was only carried out in Malaysia. Where possible can be applied in other countries
Study of User Acceptance and Satisfaction of a Mandatory Government-Regulated Information System [7]	This paper discusses the user acceptance of a mandatory government-regulated information system. The study concludes that the aspects of performance expectancy, effort expectancy, social influence, and information system quality affect the user acceptance. The four aspects are equally important.	There are limitations and shortcoming. Firstly, the sample size is relatively small. Only 65 out of 76 respondents return completely filled questionnaires. Secondly, at the time of study, the DAPODIK operators are busy with another mandatory government-issued application, so called PMP.
A Study on the Factors Affecting Satisfaction and Reuse Intention among Customers Using O2O Delivery Platform in China [8]	this study proposes management implications for Online-to-Offline delivery platforms in the catering industry, so as to improve customers' dining experience and reuse intention, increase customer loyalty, further improve the quality of Online-to-Offline delivery platform, enhance the competitiveness of the platform, and ensure the sustainable development of the Online-to-Offline delivery market. This variables research are system quality, information quality, customer	In this research, the questionnaire survey samples are too small, resulting in inaccurate empirical analysis. It is recommended that there should be more variables in the later stage and increase the Korean sample to obtain comparative data between China and South Korea. At the same time, there should be more authoritative models to improve this research.

service quality,	product quality,
delivery quality,	customer satisfaction,
reuse intention.	

Research data collection is done through literature studies and questionnaires. Researchers use primary data collected directly from respondents by using Google Forms which are distributed to users of the BOS application. After distributing the questionnaire, the data will be analyzed using The IBM Statistical Package for Social Sciences (SPSS) 23 program which aims to see the results of the validity test, reliability test, f test, t-test. The population in this study were all active users of the BOS application in the city of Batam as many as 5000 people. Data on the number of users on the BOS application in the city of Batam was obtained from the last number of users on the Play Store on November 26, 2021. The sample was taken based on the probability sampling technique. To determine the sample of this study using a random sampling method. The sampling technique of this study used the Slovin formula. The number of samples to be used in this study amounted to 370 people with a sampling error rate of 0.05.

B. Analysis Model

To find out the amount of independent influence, the number is more than two variables known as multiple linear regression analysis. Multiple regression analysis in this study is used to determine the independent variable that has an influence on the dependent variable, through the following equation:

$$US = \alpha + \beta_1PE + \beta_2PU + \beta_3SQ + \beta_4IQ + \beta_5SE + \beta_5EQ$$

IV. RESULT AND DISCUSSION

A. Test Results for Validity of Research Instruments

The useful of the validity test is determine the validity or suitability of the questionnaire used by researchers to measure and obtain research data from respondents [13]. To find out our research valid or not is to look at the value loading factor of more than 0.6 [14]. The results of the validity test can be seen in table 2.

Table 2. Results of validity test

Variable	R Count	R Table	Conclusion	
Perceived of Easy of Use (PE)	PE1	0,78	0,60	Valid
	PE2	0,76	0,60	Valid
	PE3	0,79	0,60	Valid
	PE4	0,78	0,60	Valid
	PE5	0,76	0,60	Valid
Perceived Usefulness (PU)	PU1	0,79	0,60	Valid
	PU2	0,81	0,60	Valid
	PU3	0,73	0,60	Valid
System Quality (SQ)	SQ1	0,81	0,60	Valid
	SQ2	0,71	0,60	Valid
	SQ3	0,79	0,60	Valid
	SQ4	0,85	0,60	Valid
	SQ5	0,82	0,60	Valid
Information Quality (IQ)	IQ1	0,77	0,60	Valid
	IQ2	0,85	0,60	Valid
	IQ3	0,78	0,60	Valid
	IQ4	0,85	0,60	Valid

Service Quality (EQ)	EQ1	0,81	0,60	Valid
	EQ2	0,86	0,60	Valid
	EQ3	0,75	0,60	Valid
User Satisfaction (US)	US1	0,82	0,60	Valid
	US2	0,83	0,60	Valid

From the table above, it showed that all indicators instrument in this study are valid. Because the value of R loading factor variable Perceived of Easy of Use, Perceived Usefulness, System Quality, Information Quality, Service Quality, and User Satisfaction more than 0,6.

B. Test Results for Reliability of Research Instruments

The reliability test was carried out after the questionnaire items were declared valid. A reliability test was conducted to determine whether the questionnaire had consistency if the measurements were repeated. Reliability test can be carried out together on all questionnaire items in the research variables. The questionnaire is said to be reliable if the Cronbach alpha value is ≥ 0.6 (more than 0.6) [15]. The result of reliability test can be seen in table 3.

Table 3. Results of reliability test

Variable	Cronbach's Alpha	N of Items	Min Value	Conclusion
Perceived of Easy of Use (PE)	0,92	5	0,60	Reliable
Perceived Usefulness (PU)	0,83	3	0,60	Reliable
System Quality (SQ)	0,89	5	0,60	Reliable
Information Quality (IQ)	0,89	4	0,60	Reliable
Service Quality (EQ)	0,86	3	0,60	Reliable
User Satisfaction (US)	0,89	2	0,60	Reliable

From the table above, it can be concluded that all variables have a Cronbach's Alpha value of more than 0.6. So that all the variables in this study are reliable.

C. Hypothesis Testing

1) T test

T test is used to determine the extent of the influence of the independent variables used individually in explaining the dependent variable partially. The hypothesis can be concluded accepted or rejected, it from the significant. if significant $\leq 0,05$ (less than 0,05), the hypothesis is accepted and vice versa [15].

Table 4. Research instrument t test results

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Collinearity Statistics			
						B	Std. Error	Beta
1	(Constant)	.543	.271		2.003	.046		
	PE	.051	.026	.111	1.941	.053	.236	4.244
	PU	-.019	.040	-.027	-.479	.633	.237	4.220
	SQ	.182	.031	.406	5.832	.000	.160	6.242
	IQ	.103	.039	.191	2.636	.009	.148	6.742
	EQ	.144	.041	.212	3.539	.000	.217	4.607

a. Dependent Variable: US

Based on the results of the analysis using SPSS above, the test results of the hypothesis can be displayed as follows:

a) The influence of perceived of easy of use on the user satisfaction

The table above shows that perceived of easy of use variable has a significance value (0,053) $> 0,05$, it can be concluded that perceived of easy of use has a negative effect on the user satisfaction. This is because users of the BOS application still feel foreign to the

features in the application. Users often still find it difficult to function from the features available in shopping. Meanwhile, when registering the application, still requires a slightly complicated procedure. Sometimes some activation codes are not sent and take a long time to enter the email or SMS to the consumer's number.

b) The influence of perceived of usefulness on the user satisfaction

The table above shows that perceived of usefulness variable has a significance value (0,633) > 0,05, it can be concluded that perceived of usefulness has a negative effect on the user satisfaction. Users of the BOS application feel that while using the application they still spend a short amount of time until the final process of ordering goods. There are still many problems found, such as failing to check product availability. So it is necessary to log out from the application and re-login again. For the availability of goods delivery hours, it still takes a long time, because the goods cannot be delivered on the same day if the delivery time has passed. So that application users cannot shop when in an urgent situation.

c) The influence of system quality on the user satisfaction

The table above shows that system quality variable has a significance value (0,000) < 0,05, it can be concluded that system quality has a positive effect on the user satisfaction. BOS application users feel that the quality of the BOS application system is quite good. Users feel that the BOS application has provided a lot of user needs that are very complete. The BOS application system also responds quickly to instructions from the user when using it and the application is not prone to errors.

d) The influence of information quality on the user satisfaction

The table above shows that information quality variable has a significance value (0,009) < 0,05, it can be concluded that information quality has a positive effect on the user satisfaction. Users of the BOS application feel that the product information presented in the BOS application is accurate, complete, easy to understand, and according to user needs. Meanwhile, information on other features such as delivery hours is also provided in a clear and easy-to-understand manner. For the price of the products displayed are also able to compete with prices in supermarkets. Of course, users are satisfied when shopping using the BOS application.

e) The influence of service quality on the user satisfaction

The table above shows that service quality variable has a significance value (0,000) < 0,05, it can be concluded that service quality has a positive effect on the user satisfaction. BOS application users are satisfied with the application service. When a problem occurs, the admin section of the application provider is responsive and fast in solving problems and explaining information. BOS application users also feel safe for their data while accessing the application.

2) *F test*

The f statistic test in this study was used to determine whether all the independent variables in the

model were simultaneously the dependent variable [15].

Table 5. Research instrument f test results

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	719.907	5	143.981	184.472	.000 ^b
Residual	284.104	364	.781		
Total	1004.011	369			

a. Dependent Variable: US

b. Predictors: (Constant), EQ, PU, PE, SQ, IQ

Testing the feasibility of the model is done by analyzing the significance value of 0.000 which is less than α (0.05). This shows that the independent variables used, namely perceived of easy of use, perceived usefulness, system quality, information quality, and service quality, together or simultaneously have an influence on the user satisfaction variable.

V. CONCLUSIONS

Based on the research conducted. So researchers can draw several conclusions, including the BOS application to make it easier for people to shop for household needs. Especially when the Covid-19 pandemic is still happening today, the people of Batam can shop more easily. The BOS application also directly provides a delivery system for goods to consumers' homes, even though there is a time limit on delivery hours. However, the goods are still delivered according to schedule. In addition, the BOS application can also be accessed for Android and/or IOS users. Meanwhile, the products in the BOS application are also complete, each product has also been qualified for its respective product type.

However, users still find it a little difficult to use the BOS application. This is because users feel that the application is a bit complicated with the steps when shopping. Sometimes users also complain about activation code problems that are not sent and take a long time to enter email or SMS to consumer numbers. And there are still many problems found, such as failing to check product availability. So it is necessary to log out from the application and re-login again.

However, if BOS application users experience difficulties or problems when using the system, the application provider admin is quick and responsive in responding to user complaints. So that overall BOS application users feel satisfied when shopping at the BOS application.

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