THE INFLUENCE OF PAYMENT SYSTEM SECURITY, SERVICE QUALITY, AND PRODUCT QUALITY ON THE EFFECTIVENESS OF E-COMMERCE

(A Case In The Faculty of Economics and Business Brawijaya University)

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ABSTRACT

The objective of this research is to assess the influence of payment system security, service quality, and product quality on the effectiveness of e-commerce which is measured as customer satisfaction. The model used as the foundation of this study, that is to measure the effectiveness of the system is the model in the Theory of Information System Success, developed by DeLone & Mclean (2003). The sample of this research is 254 students of Accounting Department in the Faculty of Economics and Business of Brawijaya University. This research uses multiple linear regression analysis in hypothesis testing. The result of the regression model analysis shows that payment system security, service quality, and product quality simultaneously influence the effectiveness of e-commerce. The facts above shows that the effectiveness of e-commerce is directly influenced by security and quality variables.

Keywords: payment system security, service quality, product quality and effectiveness of e-commerce.

BACKGROUND

By using E-commerce, customers can easily find the items they want to buy. Devi (2011) explained that by using e-commerce, users can easily access and
make purchases anywhere and anytime. Customers can also get and choose the items from many products offered, customers can also find the items that customers want by a given large selection of products and brands, and also can compare one brand to another getting a product with better quality.

E-commerce is growing very rapidly in this modern era where everything must be faster, more effective, and efficient. Nowadays, most companies/organizations use e-commerce, but only a few can satisfy the customers. To measure the customers satisfaction, a theory called Information System Success Theory is used. In this theory, there are many factors used to measure the success of an information system. Information System Success Theory is a theory that explains the aspects that affect user satisfaction with the information system implemented (Devi, 2011).

One of e-commerce facilities is the payment system. When the customer buy some items, of course, the customer have to pay for the purchased items. Sudarno (2012) explained that payment is an important factor in the purchase transaction, the ease of payment is a convenience factor in shopping. The convenient way to make a payment by the service user is by doing it directly at the store, but in e-commerce of course the customers cannot pay directly to the sellers or companies that have e-commerce system. The easiest way to make the payment would be by online payment system like bank transfer, credit card, m-banking and other ways. Payment system is a system associated with the transfer of a certain amount of money from one party to another party (Sudarno, 2012).

Since the customer cannot pay directly, the main issue is the security in payment and payment privacy. Security is an important prerequisite for the successful development of the Internet Payment System. Potential users of Internet Payment System often mention their concerns about security in payments and financial information, such as credit card transaction numbers and details (Shon & Swatman, 1998).

Service quality according to Devi (2011), referring to the statement from Parasuraman et al (1988), is the difference between the expected service and the service received. Devi (2011) conducted a research on Information Quality, System Quality, and Quality of Services to the Effectiveness of E-commerce. The result showed that the Quality of Service is significantly influenced by the effectiveness of e-commerce. According to Andriyati (2010), the quality of a product is important in order to achieve the company's goals for short and long term. Since e-commerce is a media of purchase and selling done by the company, the product itself is crucial for the company. Therefore, the quality of a product becomes very important to measure the satisfaction of e-commerce customers. Andriyati (2010) has conducted a research on product quality and showed that it has a significant influence on customers satisfaction.

In this research, quality is defined as a standard to measure the effectiveness by looking into the measurement of customers' satisfaction. From the user-based definition, quality is defined as how much a product or service fulfil/pass customer's hope or expectation. The quality of suitability is related to how far a product reaches a standard of particular design (Sebastianelli & Tamimi, 2002). The customer's judgment for the quality of product and service is based on customers' needs or desires (Devi, 2011). Effectiveness, in this research, is defined as the customers' satisfaction. Devi (2011) describes effectiveness, by
referring to Aras (2003), as an ability of a system to fulfil the users needs. Furthermore, Sari (2010) referring to Handoko (1999) states that the effectiveness is an ability to select the right tool to reach the goal that had been set, which is how to do a job appropriately.

THEORITICAL FRAMEWORK

Information System Success Theory

The measurement of information system (IS) success or effectiveness is very important for our understanding regarding value and success against management action and investment of information system (DeLone & McLean, 2003). Based on the research by Ba & Johansson (2006), explaining customers satisfaction is really needed, and Luo, Ba, & Zhang (2012) also stated that product, service, and price are affecting customers satisfaction. Garrity et al (2004) explained that web based information system success is measured by using users satisfaction. To measure information system success is by measuring customers satisfaction or user. Laudon & Laudon (2002) explained several variables to measure information system success, are the usage level of system, users satisfaction, beneficial attitude, objective achievement, and financial benefit.

Payment System Security

According to Sudarno (2012) payment is an important factor in buying-selling transaction, easiness in transaction is one of the convenience factor in shopping especially in payment, the most convenient payment method for users is by doing the payment directly to the sellers, however in e-commerce, customers are unable to pay directly to the sellers or company that has e-commerce system, the easiest way is by using online payment system such as bank transfer, credit card, m-banking, etc. Payment system is a system that relates to transferring several amounts of money from one party to another (Sudarno, 2012). The major reason that emerge in e-commerce is payment security problem such as privacy security and security payment. Shon & Swatman (1998) proposed that security is an important requirement for the success of Internet Payment System (IPS) development due to user prospects or the users themselves are making security as the important issue that must be faced. According to Ozkan, Bindusara, & Hackney (2010) security becomes the major issue for e-payment, because money and information that is traded by online means without any direct involvement with the receiver.

Service Quality

Devi (2011) also explained based on Putra (2007) that service quality can be measured by comparing expected service perception, if the accepted service is the same like what is expected, the service quality perceived is good and satisfying, and if accepted service exceeds the expected service quality perceived as ideal quality. Otherwise, if the accepted service quality is lower than what is expected, then the service quality perceived is bad and unsatisfying.
Product Quality

In e-commerce, product is an important factor. A product is tangible and intangible attribute asset including packaging, colour, price quality of a brand plus seller’s service and reputation (Staton, 1996). The characteristic of a product is an important factor affecting consumers ability to make sure and assess the value of an online product traded, where those will directly influence their satisfaction (Luo, Ba, & Zhang, 2012). Product quality is the important aspect in e-commerce, because it is one of the important aspect that made up an e-commerce company to be more competitive, in other words, company must show the added value of a product to compete in the market, especially in online market.

The Influence of Payment System Security on the Effectiveness of E-commerce

Based on the research of Shon & Swatman (1998) if payment security system affects effectivity especially customers satisfaction and security mirrors the ability of e-commerce to protect customers transaction from internal and external party. Similarly, Ozkan, Bidusara, Hackney (2010) found that security can influence online purchase intention and security has become the most important issue. Research by Ruppel, Underwood-Queen, & Harrington (2003) explained that every e-commerce must increase security technology to reach short-term goals.

H1: Payment System Security Influences on Effectiveness of E-Commerce.

The Influence of Service Quality on the Effectiveness of E-commerce

Research done by Prattisya (2012) about “The Analysis of Zalora Visitor’s Satisfaction of Using Website Quality Dimension” showed that website and service of Zalora doesn’t satisfy the customer. According to research by Johnston (1995) about “The Determinants of Service Quality: Satisfiers and Dissatisfiers” showed that several dimensions of service quality is a major problem, such as integrity, reliability, and responsiveness for bank’s customer dissatisfaction also responsiveness is a major problem from general service quality. According to Devi (2011) that service quality influences the effectiveness of e-commerce, because e-commerce has fulfilled the needs and hopes of the customers.

H2: Service Quality Influences on Effectiveness of E-Commerce.

The Influence of Product Quality on the Effectiveness of E-commerce

The major aspect in e-commerce is a product because e-commerce is a tool for online trade or through internet and automatically sells item/product. Product quality is the most important factor to measure customers/users satisfaction. The control over product quality must be done carefully because it will fulfill expectation on a product to and become the competitive advantage (Andriyati, 2013). The research conducted by Andriyati (2013) about “Analisis Pengaruh Kualitas Produk Terhadap Kepuasan Konsumen Pada Produk Sepeda motor Yamaha V-ixion di Kota Malang” showed that product quality influences customers satisfaction and the research of
Sudastra (2012) shows that product quality influences to the customers satisfaction and loyalty.

**H3: Product Quality Influences on Effectiveness of E-Commerce**

**RESEARCH METHODOLOGY**

**Sample and Population**

This research uses undergraduate students of Accounting in Faculty of Economics and Business, Brawijaya University registered in 2016 term as population. This is because university students are potential users of e-commerce. The number of active accounting department students in the Faculty of Economics and Business, Brawijaya University is 1233 in 2016, therefore, the amount of population used is 1233 peoples. In this study, sample selection is conducted by using nonprobability sampling and judgment sampling. Rosco (1975) on Sekaran (2016) stated that the appropriate sample size for research is larger than 30 (>30) and less than 500 (<500).

**Data Collection Method and Research Variable**

The type of data in this study is primary data and data collection is carried out using questionnaire. Questionnaire is designed to collect large quantitative data amount. The questionnaire is delivered by online through e-mail and social media, and personally administered by the researcher. Because researcher cannot directly explain the method of filling questionnaire, the questionnaire itself has been given the steps of filling up the questionnaire. This questionnaire is design are mostly in interval scale or more specifically likert scale, which is to measure the scale of arguments. To know the respondent’s answer, the questionnaire of this research gives questions with optional answers. Each alternative answer is given number from 1 to 7, starting from 1 Very Disagree (VNA) until 7 Very Agree (VA). Researcher uses one variable as dependent variable which is E-Commerce Effectiveness (Y). Effectiveness variable in this study uses the construct developed by Devi (2011) that refers to Negash et al (2003) and uses construct from Mulyasari, Dan, & Wijaya (2014) which are, Providing satisfaction as desired, E-commerce interface is attractive, E-commerce quality helps connect with seller, E-commerce is better than expected, Payment system performance is satisfying

This research uses payment security system elements used by Shon & SWATMAN (1998) are security and privacy. From these elements, the researcher makes some modified questions items for the questionnaire that are, system is able to limit unauthorized people to access payment system so that they cannot fully able to enter/hack the system, system does not show/save private data for consumers and sellers (ex: Account password), system does not show history of important data entered by users (ex: account number and password). This research uses service quality dimension elements (SERVQUAL) that has been used by Devi (2011) based on Negash et al (2003) and Parasuraman et al (1998) which are
tangibles, reliability, responsiveness, assurance, and empathy. This research uses product quality elements that has been used by Sudastra (2012) that referring to Kahn et al (2002) which are free of error, concise representation, completeness, consistent representation, and value-added. Based on elements of product quality that stated above, the question items are as follows, there is no damage in e-commerce products, e-commerce product has understandable interface, e-commerce product has completeness, product quality in e-commerce has consistent interface, and E-commerce product has value-added

**Data Analysis Method**

This study uses multiple linear regression analysis as data analysis method. After researcher collects questionnaire, data will be analysed by using multiple linear regression and by statistic tools, SPSS. Data measurement is used to find the influence of Security Payment System, Service Quality, and Product Quality against E-Commerce Activity. Multiple Linear Regression can be measured by using the following formula:

\[ Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 \]

Where the explanations are as follows:

- **Y** = E-Commerce Effectivity
- **a** = Intercept/constants
- **b_1** = Coefficient variable of Security Payment System
- **b_2** = Coefficient variable of Service Quality
- **b_3** = Coefficient variable Product Quality
- **X_1** = Security Payment System
- **X_2** = Service Quality
- **X_3** = Product Quality

In this research uses classical assumption test, such as normality test, multicollinearity test, autocorrelation test, and heteroscedasticity test.

**DATA ANALYSIS AND RESEARCH RESULT**

The number of questionnaires distributed to the Accounting students of the Faculty of Economics and Business Universitas Brawijaya were 280 questionnaires. The number of questionnaires returned to the researcher was 264, one questionnaire, and 15 unfilled. After conducting some checking, there were 10 questionnaires that cannot be used and processed because that did not meet the specified criteria. Thus, the response rate was 94% and there are 254 questionnaires that can be used and processed.
Descriptive Statistics

Descriptive statistics measurement is useful to facilitate the observation because it is able to illustrate the concentration of the sample observation values.

Table 1
Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVG X1</td>
<td>254</td>
<td>2.0</td>
<td>7.0</td>
<td>5.5</td>
<td>1.1</td>
</tr>
<tr>
<td>AVG X2</td>
<td>254</td>
<td>3.0</td>
<td>7.0</td>
<td>5.5</td>
<td>0.8</td>
</tr>
<tr>
<td>AVG X3</td>
<td>254</td>
<td>1.4</td>
<td>7.0</td>
<td>4.8</td>
<td>1.0</td>
</tr>
<tr>
<td>AVG Y1</td>
<td>254</td>
<td>3.4</td>
<td>7.0</td>
<td>5.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>254</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Classical Assumption Test

The result of normality test of the entire regression model yields an asymptotic significance value of 0.200 which is greater than 0.05 (> 0.05). It can be concluded that the data is normally. Multicollinearity test result shows that the VIF value of each variable is different, but the VIF value of entire regression model is less than 10 (<10), so there is no multicollinearity among the independent variables. The results of autocorrelation test are du < d < 4-du (1.7990 < 2.039 < 2.201). Therefore, it can be concluded that there is no positive or negative autocorrelation in this regression model. From the result of scatterplot table above, it can be seen that the points on the table produce a spread pattern, so it can be concluded that there is no heteroscedasticity on the regression model used on this research.

Hypothesis Testing

Table 2
Regression Analysis Result (F Test)

<table>
<thead>
<tr>
<th>F</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>98.731</td>
<td>0.736</td>
<td>0.542</td>
<td>0.537</td>
<td>.000</td>
</tr>
</tbody>
</table>

The significant value is 0.000, it can be stated that the significant value is less than (p-value)<0.05. It can be concluded that the variable of payment system security (X₁), service quality (X₂), and product quality (X₃) simultaneously or consecutively has significant effect on the effectiveness of e-commerce (Y).
Table 3
Regression Analysis Result (T Test)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficient</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>6.725</td>
<td>1.261</td>
<td>5.331</td>
</tr>
<tr>
<td>X1</td>
<td>.131</td>
<td>.052</td>
<td>.115</td>
<td>2.535</td>
</tr>
<tr>
<td>X2</td>
<td>.368</td>
<td>.051</td>
<td>.373</td>
<td>7.164</td>
</tr>
<tr>
<td>X3</td>
<td>.322</td>
<td>.039</td>
<td>.416</td>
<td>8.179</td>
</tr>
</tbody>
</table>

The significance value is 0.012 which is lower than (p-value)<0.05. Therefore, the payment system security (X₁) has a significant influence to effectiveness of e-commerce (Y). Based on the result above, **Hypothesis 1 is valid (accepted)**. The significant value is 0.000, which is lower than (p-value) <0.05. Hence, the service quality (X₂) has a significant influence to effectiveness of e-commerce (Y). Based on the result above, **Hypothesis 2 is valid (accepted)**. The significant value of X₃ is 0.000, which it is lower than 0.05. Hence, the service quality (X₂) has a significant influence to effectiveness of e-commerce (Y). Based on the result above, **Hypothesis 3 is valid (Accepted)**.

**Discussion**

1. Payment System Security Influences the effectiveness of e-commerce

The result of regression analysis showed that the security of payment system had a significant influence to the effectiveness of e-commerce. This result is consistent with the research done by Mulyasari *et al* (2014), Ozkan *et al* (2010), Ruppel *et al* (2003) and Shon & Swatman (1998). However, it is inconsistent with the one done by Sudarno (2012). It can be concluded that the security in payment system security is one of the most important element in *e-commerce* shopping because every transaction happened right now are done via online system in which the customers are unable to interact directly with the seller to pay. In addition, when the customers need to put some personal data in order to complete their transaction via online payment system, they will consider the security of the payment system in protecting their money and privacy. Therefore, the security in payment system becomes the customers' primary priority before involved in an e-commerce transaction. Based on the research results above, the payment system security in e-commerce given to the customers have been guaranteed and fulfilled.
2. Service Quality Influences the effectiveness of e-commerce

Based on the regression analysis result, it is shown that the quality of the service affects the effectiveness of e-commerce. This result is consistent with the research done by Devi (2011), Hanum (2007), and Setyaningsih (2014). However, this result is inconsistent with Prattisya (2012) and Negash et al (2003). Hence, the users and customers expected higher quality of e-commerce, one of it, is the service quality. The service quality of E-commerce in this research is influential to the customers' (students) satisfaction. Therefore, it can be concluded that e-commerce gives the easiness and security in transaction, easiness in communicating with the seller and uniqueness to the customers. Based on the discussion above and the previous research that condition and factor giving the satisfaction to the customers and make the customers comfortable to do transactions in e-commerce.

3. Product Quality Influences the effectiveness of e-commerce

Based on the regression analysis result, it showed that the product quality significantly affects the effectiveness of e-commerce. This result is supported by the research done by Andriyanti (2013), Sudastra (2013), but is inconsistent to the one done by Luo et al. (2012). As what had been generally known, e-commerce is a part of online business which automatically becomes a part of product or service transactions. A products quality needs more attention from an e-commerce company in order to fulfil the customers’ demands and expectations. Hence, in this research, it is concluded that the quality of a product affects the effectiveness of e-commerce, which is the customers (students) satisfaction. It can be concluded that e-commerce provide a product that was free of error, concise representation, completeness, consistent representation, and has value-added to the customers.

CONCLUSION AND SUGGESTION

Conclusion

Based on the result, the effectiveness of e-commerce affected by the security and quality variable, that the all factors itself also influences the decision, loyalty, and satisfaction of the customers.

Suggestion and Limitation

Every e-commerce company needs to increase and considers the payment system security elements since customers pay attention to the security in doing e-commerce transaction. They especially expect e-commerce ability to keep the security and privacy of their transactions in payment system. It is expected from e-commerce companies to increase other factors that influence its effectiveness, such as the quality elements: service and products. Regarding the service quality, e-commerce needs to have an attractive display and provides. Every e-commerce company should considers the factor in the security and quality as consideration factors to make the future decision, so that make the e-commerce getting improved and abroad.
The lack of interest from the respondents, especially from the accounting students batch of 2015 and 2016 in filling the research's questionnaire, made the data collecting process of the research took a long time. In addition, not all questionnaires could be retrieved so it is impossible for the researcher to process the data.
REFERENCE LIST


