ISSN : 2302 - 1590
E-ISSN: 2460 – 190X

ECONOMICA

Jurnal Program Studi Pendidikan Ekonomi
STKIP PGRI Sumatera Barat Vol.8 No.1 (12-19)

HOW DOES ELECTRONIC PAYMENT SYSTEMS AFFECT THE DEVELOPMENT OF E-COMMERCE BUSINESS

By

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Submitted: 2019.09.18 Reviewed: 2019.10.18 Accepted: 2019.10.29

<https://doi.org/10.22202/economica.2019.v8.i1.3604>

Abstract

Current technological developments have changed the pattern of public payment transactions. Over the past 5 years electronic payment transactions have risen rapidly to 81%, while the use of checks and demand deposits has dropped by 30%. The ease of transactions with this electronic payment system certainly affects the level of consumption and productivity of the community, especially the trade sector. This study aims to analyze the effect of the electronic payment system on the development of e-commerce business in Indonesia. This study uses a random-effect panel data regression analysis method using quarterly data obtained from Bank Indonesia, the Badan Pusat Statistik, and various survey institutions related to e-commerce activities. The results of this study indicate that the long-term outcome, simultaneously variable electronic payment and real GDP has a positive and significant influence on the development of online business (e-commerce) in Indonesia. Conversely, in the short term, no significant relationship was found between the three variables.

Jel Classification:

E42; L81

Keywords: electronic payment, e-commerce

INTRODUCTION

The development of the use of money as a means of payment is currently not limited to cash only, but also includes non-cash payment instruments such as debit/credit cards, checks, crossed checks, proof of debit, and electronic money. Electronic money is a form of development in the current digitalization era. Pramono, et al. (2006) suggested that the development of information and technology encouraged banking and non-banking institutions continue to innovate in providing safer, faster, more efficient, and global payment alternatives. At the beginning of its development, electronic payment instruments were always directly related to customer accounts at banks that used them, but over time, electronic payment instruments continued to grow so that they did not always require authorization processes with customer accounts at banks. In fact, now it is not only a card (chip base) but also be a server base. Recently, there are 38 electronic money issuers that are officially

registered at Bank Indonesia. The electronic money issuing company, consists of 12 banks and the rest are non-banking institutions (Bank Indonesia, 2019). In addition, Tazkiyyaturrohman (2018) shows that there is a change in the lifestyle of people who are more interested in e-commerce activities to be one of the factors causing an increase in electronic payment transactions.

Harahap and Amanah (2018) in their research on online shopping behavior in Indonesia, showed that the existence of e-banking made online shops develop rapidly. Supporting the research, Fatonah, et al. (2018) proves that the electronic payment system can provide various facilities in transactions, provide transparency in transactions making it easier to trace transactions, save time and transaction costs. However, e-payment also carries a very high risk and level of security that is not always guaranteed. In addition, Klapper, L. (2017) told the pros and cons in using the electronic payment method as shown in Table 1 below.

Table 1. PROS dan CONS in the Use of E-Payment

PROS	CONS
<ul style="list-style-type: none"> - Increase profits through safer and cheaper transactions - Safer payment of wages (for employees) & more efficient (for employers) - Increase employers' access to credit - Gives greater control for women entrepreneurs 	<ul style="list-style-type: none"> - Requires a stronger financial infrastructure - Many employers and employees do not have complete government documents, such as identity cards, which are a requirement for using digital services - Both employers and employees still lack of financial literacy and ability to think quantitatively so that the use of digital financial products cannot be efficient

The existence of several problems in electronic payment that cannot be separated in relation to e-commerce become the basis of researchers in choosing this research topic.

In addition, Indonesia is one of the countries with the largest e-commerce market in Asia, this is also the reasons why researchers choose case studies in Indonesia.

Figure 1. Business market e-commerce in ASEAN

Source: Google, Temasek (2019)

Figure 1 shows the development of e-commerce business in ASEAN based on Google survey results. From Figure 1 it can be seen that, compared to other ASEAN countries (such as Singapore, Malaysia, the Philippines, Thailand, and Vietnam), Indonesia has the largest e-commerce market and e-commerce business development compared to other ASEAN countries in the year 2018. However, there are still less studies that analyze the development of e-commerce and electronic payment business using macro data tested with econometrics models. With this background and referring to the results of previous studies, this study analyzes the impact of electronic payments on the development of e-commerce business in Indonesia using the econometric method of panel data regression

Furthermore, the structure of this research is as follows: Part 1 Introduction explains the background and objectives of the study; Part 2 Literature Review explains theoretical study of electronic payment and e-commerce; Section 3 Research Methodology shows an explanation of the data and methods used for data analysis; Section 4 Results and Discussion explains the results of data estimation and analysis; Section 5 closing

which Concludes, the conclusions of the results of the study in brief, suggestions, and limitations of the study.

According to Pramono, et al. (2006) electronic payment is a payment that utilizes information and communication technology. Types of electronic payments that are developing in society today include mobile banking, internet banking, and debit cards. The three types of electronic payments above are directly related to customer accounts at the bank. While the types of electronic payments that are not directly related to the customer's account at the bank are e-money, go-pay, ovo, link-aja, and so on. Furthermore, Hascaryani (2013) defines electronic payment as a payment mechanism that uses electronic media without involving cash.

In some previous literature (Laudon & Laudon, 1998; Bajaj & Nag, 2000; Ustadiyanto, 2002; McLeod & Schell, 2007; Grant & Meadows, 2008; and Febriantoro, 2018) e-commerce defined as business activities using electronic media and internet technology as an intermediary for business transactions. So e-commerce can be concluded as a process or transaction of exchanging goods and services involving information technology.

The development of e-commerce business in Indonesia continues to increase from year to year. Harahap and Amanah (2018) prove that current consumer behavior in Indonesia tends to prefer online shopping

over offline shopping. This is supported by a graph of the development of e-commerce transactions in Indonesia during the period 2014-2018 as shown in figure 2 below

Figure 2. E-commerce Transaction in Indonesia (2014-2018)

(Source: Databooks-Katadata, 2019)

From Figure 2 above, it can be seen that the value of e-commerce transactions in Indonesia has positive trend that continues to increase during the period of 2014 to 2018. This shows that e-commerce business in Indonesia is currently very popular with both producers/sellers and by buyer.

METHODS

The data used in this study are quarterly data from Q1 2017 to Q4 2018

obtained from the website of Bank Indonesia, Badan Pusat Statistik (BPS), and *iPrice* insight. The dependent variable of the development of e-commerce in Indonesia is proxied by the number of visitors to the Top 10 e-commerce in Indonesia obtained from the *iPrice* Indonesia website. The selection of the marketplace is based on the number of most popular visitors per Q2 2019 as shown in the following table.

Table 2. Top 10 E-commerce most favourable

No	Market place	Visitors (2 nd quarterly, 2019)
1	Tokopedia	140.414.500
2	Shopee	90.705.300
3	Bukalapak	89.765.800
4	Lazada	49.620.200
5	Blibli.com	38.453.000
6	Orami	9.813.100
7	Bhinneka	7.678.900
8	JD.ID	7.102.300
9	Blanja	5.511.600
10	Zalora	5.218.300

Source: iprice, 2019

The independent variable of e-payments uses data on the number of nominal e-payment transactions obtained from Bank Indonesia, while for the real GDP control variable uses the 2010 constant base year data obtained from BPS. This research uses panel data regression analysis method. In panel data regression, it is possible to use one of three panel data methods consisting of the common effect, fixed effect, and random effect methods. The selection of the method uses Chow-test and Hausman-test. The hypothesis used for the Chow-test is as follows (Baltagi, 2008: 298).

$H_0 = y_1 = y_2 = \dots = y_{N-1} = 0$ (*common effect*)

$H_1 = y_i \neq 0 ; i = 1, 2, \dots, N-1$ (*fixed effect*)

If $F_{\text{test}} > F_{(N-1, NT-N-K)}$ or $p\text{-value} < \alpha$, then H_0 rejected and the method chooses is *fixed effect*.

Meanwhile, the Hausman-test is used to choose between the random effect or fixed effect method. Hausman-test, examine whether there is a relationship between errors in the model with one or more independent variables in the model. The hypothesis used in this test is as follows (Baltagi, 2008: 310)

$H_0 = E(u_{it} | X_{it}) = 0 \rightarrow \text{random effect}$

$H_1 = E(u_{it} | X_{it}) \neq 0 \rightarrow \text{fixed effect}$

If $p\text{-value}$ less than significant level (α), then H_0 rejected, so the method chooses is *fixed effect*.

Estimation model uses in this research is as follows.

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \varepsilon_{it}$$

Where,

Y = average monthly visitors

α = constant

β_1 and β_2 = regression coefficient

X_1 = real GDP

X_2 = e-payments transaction

i = *marketplace* data

t = *period*

ε = *error term*

RESULTS AND DISCUSSIONS

Model Selection

Before conducting the model estimation test, the first step that must be performed in panel data regression is to perform a chow-test and a ha-man test with the following results.

Table 3. Model Selection Test Results

<i>Chow-test</i>	<i>Hausman-test</i>
H0=Common effect	H0=Random effect
H1=Fixed effect	H1=Fixed effect
Result:	Result:
H0 rejected	H0 accepted

Based on Table 3, in this study using random-effect model or the Generalized Least Squared (GLS) model to analyze how electronic payment and real GDP can

influence the development of e-commerce in Indonesia. The estimation results of the model in this study can be seen in Table 4 below

Table 4. Results of Estimation

Dependent Variable : VISITORS					
Independent Variable	coef.	t-Statistic	Prob.	F-Statistic	Prob.
Real GDP	21.340	0.575	0.5663	4.9732	0.009304
<i>E-Payment</i>	3.587	1.635	0.1061		

Sourcer: Data processed, eviews 10 (2019)

Figure 3. E-commerce Transaction and e-Payment in Indonesia 2013-2018

Source: Statista (2016) and Bank Indonesia (2019)

From the estimation results shown in table 2, it can be seen that partially both the real GDP variable and the e-payment variable do not have significant relationship to the number of

e-commerce users in Indonesia. However, simultaneously, found a positive and significant relationship between the two variables on the number of e-commerce users

in Indonesia. This shows that the increase in electronic payment transactions accompanied by an increase in real GDP will have a positive effect on the development of e-commerce business in Indonesia. As can be seen in Figure 2, the value of electronic payment transactions tends to have the same trend as the value of e-commerce transactions over the past 5 years. This proves the existence of a positive relationship between the two variables.

CONCLUSION

Finally, this study concludes, In a partial test, no significant relationship was found between real GDP and electronic payment to the development of e-commerce in Indonesia. Based on the results of simultaneous testing, found a positive and significant relationship between real GDP and electronic payments to the development of e-commerce in Indonesia.

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