

## Method of Payment Adoption in Indonesia E-Commerce

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**Abstract.** *The emergence of e-commerce nowadays needs a payment method that supports speed and easiness of the transaction. Payment options that are provided by the e-commerce platform influence the customer purchase decision making, but the security of data still becoming an issue for seller and buyer in the e-commerce system. There are popular methods of payment in Indonesian e-commerce, they are transfer, cash on delivery, point of service, virtual account, credit card, and prepaid account. This research aim is to explore the behaviors of Indonesian e-commerce customers based on their ownership and preferred method of payment. This research used a quantitative approach, researchers have surveyed 492 Indonesian e-commerce customer that have shopping experience in e-commerce platforms (website, phone application, etc.). The proposed model in this study has five independent variables from the UTAUT (Unified Theory of Acceptance and Use of Technology) model and its development from other research. The findings of this research are the method of payment that needs less effort to use is used more often in e-commerce transaction, financial benefit is not a factor that attracts an e-commerce customer to have a method of payment, but they very consider fee that is charged because of using a method of payment, and the higher an account holder perceived security of a method of payment, the higher they keep the account balance.*

**Keywords:** *E-commerce, payment adoption, payment fee, prepaid payment, UTAUT*

### 1. Introduction

The biggest industry that has been changed since financial technology phenomena occurred is the payment. The massive emerging of e-commerce creates a big opportunity in the payment system. Some conventional methods like cash, transfer, and card still exist, but many innovations in the payment system have emerged.

One of innovation in payment is the prepaid account, where account holders keep some money in the account before a transaction happen. Prepaid payment creates some benefits especially for online merchant and bank. The merchant can keep the funds

without giving interest to the account holder and keep the customer transaction in their platform because of the money in prepaid account usually hard to withdraw. Bank will have the fund under management from account balance and transaction fee. These benefits make them pursue to provide this service to increase revenue and profit.

Telecommunication sector is the pioneer of Indonesia prepaid account providers, start with TCASH by Telkomsel that launched in 2007 (Iman, 2018), followed by other telecommunication providers, Indosat with Dompetku and XL with XL-Tunai (Junadi & Sfenrianto, 2015). Nowadays, other sectors compete to get the market share of

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Indonesian prepaid account. Some of the prepaid payment that still established in Indonesia market is the prepaid card from banking (e-money from Bank Mandiri, Flazz card from BCA, etc.), the prepaid account from transportation on-demand provider (Go-pay and Grab-pay) and online retail (Tokopedia and Bukalapak). Even, crowdfunding platform like Kitabisa.com and Gropal create a prepaid account for the easiness of their customer.

The objective of this research is to explore the behavior in adopted a method of payment of Indonesian e-commerce customer. Understanding this behavior can help regulator, online merchant, banking and other players to understand Indonesian customer behavior and create regulation, strategy, product, and service that relate to e-commerce payment.

Indonesia is a developing country with high growth of middle-income population. With over 255.18 million peoples in 2015 (Badan Pusat Statistik, 2015) Indonesia is a big market for e-commerce and its payment system. Changing regulation in Indonesia payment system has a big effect on the fund management because the transaction circulates money among customer, merchant, and bank.

Bank Indonesia has established the Bank Indonesia Fintech Office to improve technology-based financial innovation in Indonesia while maintaining the rules of consumer protection and risk mitigation (Hutabarat, 2016). Not only large internet companies (Google, Facebook, Paypal, and Apple) are attracted to the payment industry, there are currently 12,000 start-up companies engaged in the payment industry (Dietz et al., 2014).

So far, fashion products are considered difficult to be marketed online because the products displayed on the screen do not necessarily fit the size of the consumer's body. Warby Parker, an online shopping site, toppled this stigma by achieving 2015

revenues of USD 100 thousand from selling glasses online. Warby Parker provides a choice of payment methods that are convenient for consumers. Consumers can order some eyeglass frames sent home to try without paying anything. Consumers do the payments after they have received the eyeglass frame that suits them. Convenient payment methods increase online sales of fashion products (Grant, 2016).

Alipay and WeChat Pay dominate the Chinese payment market. Alipay is a part of Ant's Financial. Ant's largest mutual fund, Tianhong Yu'e Bao has almost 600 million investors, over \$168 billion in funds, and offers short term interest of over 2% (Klein, 2019). The growth of this fund, mirroring the growth of Alipay as a prepaid payment, highlights the opportunity to attract new user in a method of payment with financial benefit.

Behavioral intention to use and actual use behavior is questioned as preference and usage a method of payment in an e-commerce transaction. Effort expectancy is an important factor of a method of payment used in e-commerce. A buyer who buys in e-commerce wants to transact with less effort than an in-store transaction.

Almost all payment provider did not give the interest to balance in the account. Interest in balance is not important for the prepaid account holder. Perceived security is an important factor in a method of payment usage, including in prepaid payment.

There are three research questions explored in this paper. (RQ1) Which method of payment preferred and used most by e-commerce customer? (RQ2) Is financial benefit a factor of a method of payment usage in an e-commerce transaction? and (RQ3) Is higher perceived security can increase the balance in a prepaid account?

Contribution of this research to literature is to create an understanding of Indonesian e-commerce customer adoption to a method of payment. The offering that is succeed in

another country, probably will not be used in Indonesia because the value and culture is not similar.

In the second section, we will explore the literature review and hypotheses development of this research. The third section explains the methodology. The fourth section is finding and discussion. The last section is the conclusion.

## 2. Literature Study and Hypotheses Development

This section will divide into three subsections. The first subsection explores about behavior toward the e-payment, the second subsection explores some methods of payment. The last subsection explores about adoption model.

### 2.1. Behavior toward the e-Payment

UNCTAD (2001) in Yang et al. (2015) said that the United Nations Conference on Trade and Development (UNCTAD) defines e-payment as “the process of finance or payment mainly using the medium of the Internet. Kousaridas et al. (2008) said that in comparison to the traditional payment methods, e-payment techniques have several favorable characteristics, including security, scalability, reliability, acceptability, anonymity, efficiency, privacy, and convenience.

Shen & Chiou (2010) argued that factors like intentions, attitudes, trust, and perceived risk of the website and payment system are critical in influencing consumer decisions in online shopping. In the context of online payment, the definition of perceived risk given by Featherman and Pavlou (2003), “the potential for loss in the pursuit of the desired outcome of using an e-service.”

Gholami et al., (2010) argued that demographics variables, perceived benefits, social influence, effort expectancy, awareness, and trust affected individuals’ intention to adopt e-Payments. Venkatesh et al. (2008) said that Consumer demographics (such as age and gender) and experience usually influence

their risk perceptions and trusting beliefs and are used as control variables related to consumer behavioral expectations in information privacy concern. Liébana-Cabanillas et al., (2014) argued that age of the user introduces significant differences in the relationships between the perceived trust in the system and its ease of use, between influences from third parties and ease of use of the payment system, as well as between trust and a favorable attitude towards its use. Corbitt (2003) used income and education as the control variables to test the trust model of e-commerce.

The future success of e-commerce depends not only on the integration of business models and service delivery but also on the effectiveness and security of e-payments (Zalan & Toufaily, 2017). Arango et al. (2015) said that it will require significant incentives to change customer payment habits because e-commerce seller will see that customer tend to be quite sensitive to issues about convenience and security of e-payment. Woo (2006) said that concerns about privacy and security might deter people from participating in e-commerce.

Kim et al. (2010) said that both technical protections and security statements that are posted on the websites are significant factors for improving consumers’ perceived security. Consumers’ perceived security at the end will increase the chances of consumers’ purchasing and e-payment system use.

Consumers in e-commerce are particularly fearful of damages to their reputation and financial losses (Sproule & Archer, 2007). Hille et al. (2015) said that the fear of financial losses dimension is defined as the fear of unethical or illegal usage and appropriation of personal and financial data by a cyber-criminal or other entity to gain financial benefits such as buying products on behalf of the victim. Morse and Raval (2008) said that in consumer protection from liability for unauthorized charges is one important dimension of consumer trust.

Yang et al. (2015) found that system-dependent uncertainty risk is more or less ignored by consumers pursuing usefulness and convenience of e-payment. This finding indicates e-banking or third-party payment platform should focus more on reducing transactional risk.

### 2.2. *Methods of payment*

Grüschow et al., (2016) argued that for a seller, transfer invoices are the most cost-efficient payment method for small transaction sizes, while prepaid payments dominate for large transaction sizes. Electronic payments in terms of both PayPal and credit card cause higher payment costs and do not show scale efficiency in e-commerce.

The effects of e-banking services on performance on account of the innovative-related products explain innovations on bank performance significantly (Akhisar et al., 2015). Morse and Raval (2008) said although competing payment forms, such as Paypal, have emerged, payment cards continue to be an important part of the business model of the payment industry.

Chou et al (2004) said that credit cards are the most frequently used form of e-payment. Morse and Raval (2008) said that following the disclosure of major data leakage or credit card fraud, the entire payment card industry suffers from consumer hesitancy to use payment cards. To the extent that customers are sensitive to security risks, they may seek out alternatives that provide the greatest protection and avoid those who do not.

Zinman (2009) said that debit cards offer similar payment attributes to credit cards on other margins- security, acceptance, portability, and time costs- and hence the pecuniary cost of a marginal credit card charge is the key economic difference between credit cards and debit cards for many households.

When consumers pay with the debit card, money is automatically deducted from their

bank accounts. Bergström (2015) said using debit cards in online payment is surrounded by logins and passwords, which measures indicate a quite high level of control among buyers and tightly related to personal integrity.

Pre-paid cards are issued for a particular value by a particular merchant. After many types of cards that are offered by payment providers, most people in emerging economies do not have a checking account nor a credit and debit card (Evans and Pirchio, 2015). These people do e-commerce transaction through another method of payment like Cash on Delivery (COD), supermarket channel, et cetera.

### 2.2 *Adoption Model*

Unified Theory of Acceptance and Use of Technology (UTAUT) is proposed by Venkatesh et al. (2003) to measure the influence of information technology on user adoption behavior as the development of Technology Acceptance Model by Davis et al. (1989) (Tak and Panwar, 2017). In the UTAUT model, user adoption is affected by social influence, performance expectancy, effort expectancy, and facilitating conditions. Cao and Niu (2019) have found that performance expectancy, effort expectancy, and perceived risk play a role in Alipay user adoption.

Tak and Panwar (2017) have found that deal proneness positively influences use behavior of consumers toward mobile shopping apps using the UTAUT model. Deal proneness effects the usage behavior positively, which suggests that better deals would increase the likelihood of use among respondents in mobile app-based shopping (Tak and Panwar, 2017). The respondents like taking advantage of the promotional deals, as it helps them in saving money and derive more value.

Different in the offline transaction, Stavins (2018) found that consumers are less likely to deviate from their preferred payment methods to get a discount or to avoid a surcharge. Both merchants' reluctance to offer price discounts and consumers' limited response to financial incentives lead to the low

observed occurrences change the method of payment (Stavins, 2018).

A survey on the potential adoption of mobile payments finds that perceived risk is a direct cause of their willingness to use mobile phones (Chen, 2008 in Cao and Niu, 2019). Junadi and Sfenrianto, 2015 has proposed to add perceived security as a new factor in the UTAUT model in the e-payment adoption system.

Tak and Panwar (2017) have found that behavioral intention to use mobile shopping apps positively influences use behavior of consumer toward mobile shopping apps. Research by Putri et al (2017) modified Junadi & Sfenrianto (2015) research about consumer's intention to use e-payment system. Putri et al (2017) proposed to divide the adoption independent variables into behavioral intention to use electronic payment instruments as intervening variable and the actual use behavior of e-payment instrument as the dependent variable.

### 3. Methodology

Researchers surveyed 501 respondents, then eliminate nine respondents that never did a transaction in e-commerce, then analyzed data from 492 respondents. Demographics of respondents is in Table 1. About 71.95 % of

respondents are woman, who usually decide to buy. About 68% of the respondents are young ages (20-30 years). About 40% of respondents are the employee who has the income to do e-commerce transaction, and about 39% of them are the student who is potential to be an early adopter of a new method of payment.

Table 1.  
Demographics of Rrespondents

	Option	Frequency	%
Gender	Male	138	28.05
	Female	354	71.95
Age	Less than 20	49	9.96
	20-25	207	42.07
	25-30	129	26.22
	30-35	84	17.07
	35-40	18	3.66
	Over 40	5	1.02
Employment	Housewife	48	9.76
	Employee	203	41.26
	Student	192	39.02
	Entrepreneur	49	9.96

To answer RQ1, researchers asked methods of payment that have been preferred and used by the respondent. Methods of payment that has been asked are options that have been offered by Indonesian e-commerce, they are cash on delivery (cod), transfer, point of service, prepaid account, virtual account, and credit card. Then, we use descriptive statistics to analyze the data.

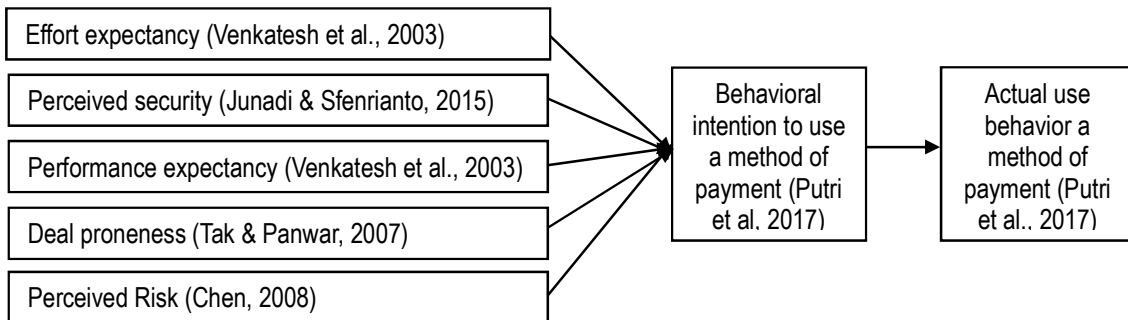


Figure 1.  
Research Model

Align with constructs in Unified Theory of Acceptance and Use of Technology (UTAUT) and its development, to answer

RQ2 researchers combined some factors that become variables into a research model of method of payment usage in e-commerce

transaction (Figure 1). In this research, researchers questioned respondents about performance expectancy (Venkatesh et al., 2003), effort expectancy (Venkatesh et al., 2003), perceived risk (Chen, 2008), perceived security (Junadi & Sfenrianto, 2015), deal proneness (Tak & Panwar, 2007) and financial benefit of e-payment and prepaid account usage in e-commerce. Data from the survey was analyzed using mean-comparison test (t-test) methods with a confidence level of 95%.

To answer RQ3, respondents are questioned about perceived security and their nominal in prepaid account top-up. Spearman's rank correlation used to analyze the relationship between the variables.

#### 4. Finding and Discussion

Methods of payment that have been preferred and used by e-commerce customers are in Table 2. Overall methods of payment that need minimal effort (transfer, cash on delivery, point of service) more preferred and used than methods of payment that need more effort and ownership (prepaid account and credit card).

Table 2.  
*Preference and Usage Method of Payment*

No	Method of payment	Preference (%)	Usage (%)
1	Transfer	93.10	96.80
2	Cash on delivery	71.25	64.47
3	Point of service	49.90	53.69
4	Prepaid	48.30	47.50
5	Virtual Account	35.12	38.32
6	Credit Card	19.36	24.15

The transfer is the highest preferred and most used by e-commerce customers because it need not much effort than other methods of payment and the option is almost always available to use this method of payment in e-commerce. About 71.85 % of the respondent having a debit card, and 89.72% of them using

e-banking facility make the transfer is the most preferred method of payment.

Cash on delivery is in the second preferred and used after transfer in e-commerce transaction maybe because of the method of payment not always available in an e-commerce transaction. The number of customers who like this method is higher than the number of customers that have been used this method because e-commerce customer like the idea of paying an e-commerce transaction after the good has arrived, but they never used this method.

Point of service is in the third preferred and used because e-commerce customer needs the effort to visit the counter to finish an e-commerce transaction. This method of payment can be used by any e-commerce customer without ownership of any bank account.

Prepaid payment is in the fourth preferred and used method of payment in e-commerce transaction because customer needs to keep the money in advance before the transaction, and not all e-commerce provides this method of payment. Preference in prepaid payment is strongly correlated with the usage, because the process using prepaid payment is fast and convenient, align with the character of an e-commerce transaction. Emerging price discount in prepaid payment provider in Indonesia lately makes the idea of prepaid payment is preferred more than the number that has used this method of payment.

Receiver account and nominal of the invoice are given to the customer before the transaction in the virtual account. High perceived security makes this method preferred strongly correlated with the usage, but this method only offered in a regular transaction.

Credit card is the last method of payment that has been preferred and used by the e-commerce customer. Data from the survey, only 21.15% of the respondent have a credit card account. The annual fee of credit card

relatively high than other methods of payment. In the other side, the credit card has security issues that made the owner did not easy to let other people using it to pay online transaction. The buyer that did not have a credit card account tend to choose another method of the transaction in an online transaction.

Researchers analysis t-value from six variables in Table 3. Five variables, they are effort expectancy, perceived security, performance expectancy, deal proneness, and perceived risk, have t value above the critical value (1.96) with 95% significance level (Hair et al., 2006). Less effort, security, performance, deal proneness, and perceived risk are the

significant factors why e-commerce customer chooses a method of payment. Findings are similar to the work of Cao and Niu (2019) in China and Tak and Panwar (2019) in India.

Based on the mean-comparison test in Table 3, the t-value of financial benefit is below the critical value (1.96) in a 95% significance level. It means that e-commerce customer did not have any different behavior to a method of payment if they give interest in the balance or not. Interest in a method of payment is not important for e-commerce buyer. The financial benefit in a method of payment is not a factor usage in an e-commerce transaction.

Table 3  
*Factors of Usage Method of Payment in e-Commerce*

No.	Factors	Items	Std. error	t-value
1	Effort expectancy	I consider the fee when using a method of payment in e-commerce	0.041	41.70
		I consider free top-up fee feature in using a prepaid account	0.026	25.50
2	Perceived security	I am sure that the money in the prepaid account is safe	0.045	22.45
		Password is an important feature in the payment method	0.024	32.55
3	Performance expectancy	A call center is an important feature in the payment method	0.024	28.97
		Cash withdrawal is an important feature in a prepaid account	0.027	23.50
		A balance transfer is an important feature in a prepaid account	0.027	23.43
4	Deal proneness	Discount if using a certain method of payment is an important feature in the e-commerce transaction	0.027	23.41
5	Perceived risk	I am worried about the safety of my data when paid the transaction using a payment method	0.042	20.95
6	Financial benefit	Interest is an important feature of a method of payment	0.039	0.467

Using Spearman's rank correlation method, researchers found a moderate correlation (Spearman's rho 0.5942) between perceived security about his balance in the prepaid account and nominal of top-up. We conclude that there is a relationship between perceived security of a method of payment with the nominal an account holder put money in.

## 5. Conclusion

The conclusions of the results of this study are: (1) Method of payment that needs less effort to use is used more often in e-commerce transaction (2) Financial benefit is not a factor that attracts an e-commerce customer to have a method of payment. (3) The higher an account holder perceived the security of a method of payment, the higher they keep the account balance.

To increase the acceptance of a method of payment in the e-commerce era, the provider must consider effort expectancy, perceived security, performance expectancy, deal proneness, and perceived risk. Interest for balance in payment service is not an attractive promotion for Indonesian e-commerce customer, but they very consider the fee that is charged because of using a method of payment. To increase the balance in the prepaid account, the payment company need to increase customer perceived security. Result of this research implies in developing a method of payment in the e-commerce era, especially prepaid payment that grows significantly in Indonesia. More insight about the financial benefit for the customer and the effect of integration e-payment in the e-commerce platform will be an interesting research agenda for the future.

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