

# Consumer Preference of Choosing E-Payment System for Online Shopping Using Conjoint Analysis

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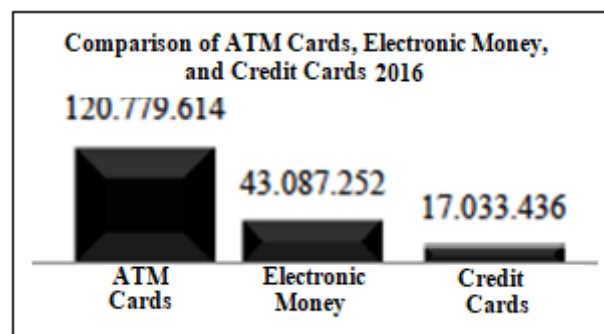
**Abstract:** *The development of electronic payment nowadays is very rapid. Almost all developed and developing countries follow the development of electronic payment as a promising opportunity for the aim of less-cash society. Indonesia as a developing country also has a high potential for the innovation and improvement of their electronic payment industry. This can be seen from the use of electronic payment to shop online that vary with their own advantages and disadvantages. The purpose of this research is to know which combination of electronic payment characteristics that has the highest customer value index and find out which attributes are the value driver of the electronic payment characteristics. This research is a quantitative research using conjoint method with SPSS 24. The method of data collection through questionnaires online. Respondents studied in this study amounted to 400 people who are the user of electronic payment to shop online. The results of this study indicate the highest customer value index is found in the combination of profile card. E-payment system with the specification of the attributes "Discount", "Minimum Balance", "Payment Tools in the application", "Using Password", "Top up balance", and "Cash" are the most popular combinations of attributes by respondents. And it is known attributes that become value driver is minimum balance with usefulness of -2,413. Suggestions from this study are costs are the main preference of consumers in choosing an e-payment system. Followed by the level of privacy and security and payment methods are also value drivers that can drive an e-payment system to be superior to its competitors. Therefore, costs are one of the main concerns and are optimized by the e-payment system industry. e-payment system must ensure minimal and easy administration costs for e-payment system users by creating a similar program are similar to the most popular attributes.*

**Keywords:** Conjoint, Customer Value Index, E-payment, Online shopping

**JEL Classification:** F0

## 1. Introduction

The development of the financial sector is inseparable from the role of financial institutions. Bank Indonesia not only maintains monetary stability, but also financial system stability in the banking system and payment system. According to Bank Indonesia (2006) the use of cash in Indonesia has a variety of problems, especially the risk of robbery or theft, health, practicality and circulation of counterfeit money. When viewed from the perspective of the economy at large, the use of cash in very large quantities with a long period of time will create a burden on the economy mainly related to cash handling and the low velocity of money. Data that was first released by Bank Indonesia in 2007 showed that the number of users of electronic money amounted to 165,193 thousand users and experienced a significant increase until 2013 amounting to 36,225,373 million users. However, the number of users of electronic money decreased in 2014 and 2015 with the value of users of electronic money amounting to 34,314,795 million users and again increased with the highest number of users until 2016 with a total of 43,087,252 million users.



**Figure 1:** Comparison of ATM Cards, Electronic Money and Credit Cards

Figure 1 shows the number of comparisons of ATM users, electronic money and credit cards. ATM cards have the largest users of 120,779,614 million users and electronic money of 43,087,252 million users and the last is Credit Cards of 17,033,436 million users. ATM transactions with the highest number of transactions were cash withdrawals with a total number of transactions amounting to 441,025,993 million times with a total value of money of 484,744,381,000,000 trillion. From these data it can be seen that the use of ATM cards is still very high especially in cash withdrawals through ATM cards while Bank Indonesia as the economic supervisory body in Indonesia seeks to use more non-cash payments compared to cash payments through work program initiatives and accounting and system directorate initiatives. payment (DASP) since 2006. This study uses a sample of people who have the potential to use electronic money, according to the criteria described by Bank Indonesia in the 2006 working paper that potential users of electronic money with the following criteria for

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cellphone users with prepaid cards, preferably students and students, middle and upper income groups, and users of mass transportation modes, toll roads, and gas stations. Based on the description, this study questions namely how consumer preferences for electronic money are seen from the level of security, ease to use, benefits, level of promotion with conjoint analysis method.

## 2. Literature Review

Marketing is a process when companies create value for customers and build strong relationships with customers in order to get information from customers in return. In determining a choice at first the decision-making process starts with the introduction of the problem based on the general description of the attitude, impression, intuition or discovery at one time. Then someone needs to find the information they want. Information seeking requires more specific knowledge or attributes before a choice is made and it involves a comparison between the attributes found on several products, the comparison involves more effort and time. The high participation in choosing a product, the ease of product information and situational factors such as low time pressure increases choice based on attributes. Decision making is the action of consumers to use or not for a product to be purchased. Internal factors, namely perception, learning, memory, motives, personality, emotion attitudes and externals, namely culture, subculture, demographics, social status, reference group, family, marketing activity greatly influence the process of one's purchasing decisions so that this becomes a special interest that needs to be considered. marketers or marketers.

Preference is a consumer attitude towards the choice of products formed through evaluation of various kinds of

products based on the choices displayed. Preference is any process of grabbing that can be consumed with the aim of obtaining a choice of goods and services. There are stages that are passed by consumers so that they can describe their sense of power towards a product, three patterns of preferences that can be formed, namely, homogeneous preferences show the situation in the market where all consumers roughly have the same preferences, scattered preferences indicate conditions in markets where consumers have choices very different, group preferences show conditions in markets where groups of consumers have very different preferences.

Product attributes are developing a product or service involving the definition of the benefits of the product to be offered. This advantage is then communicated and conveyed by the product attributes such as quality, features, style and design. Electronic money security is obtained through Cryptography, which is an art of writing code, an electronic money programmer must use a series of mathematical algorithms to manipulate data so that anyone who does not have access to the data cannot use it. ease of use is the perception of ease of use as a form where when someone believes that information technology can be easily understood. Perceived of Benefit is the level at which one believes that the use of certain technologies can improve one's performance. Promotion is one of the sales techniques aimed at making the marketing program run successfully. Promotion can be defined as sales, advertising, relationships to the community, or directly to individuals.

## 3. Methods

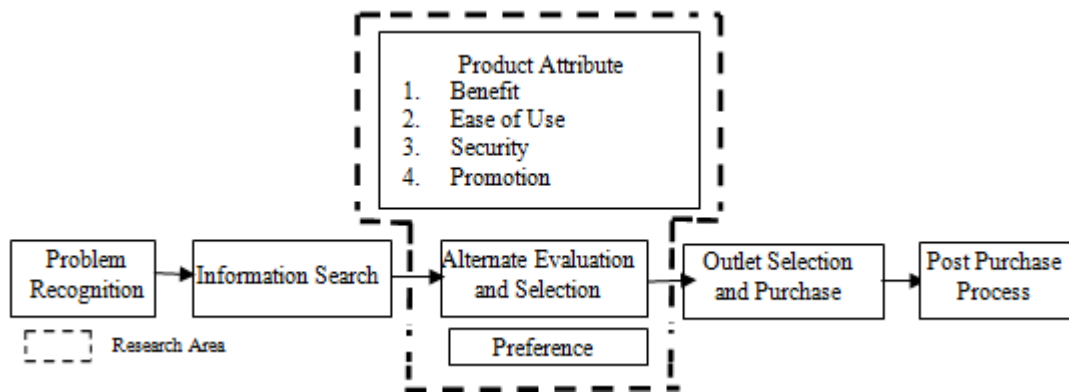


Figure 2: Research Framework

Figure 2 is a model of the thinking framework of researchers adopted by the model (Hawkins) by adding attribute benefits, ease of use, and security and promotion. Evaluative Criteria are various kinds of features or benefits that will be obtained by consumers to solve certain problems. Regulations in product selection are how consumers compare two or more choices. Conjoint analysis is a quantitative analysis method that in business research is used to determine consumer preferences for a combination of products that provide the greatest value of value that they feel or will feel, so that it will affect them in the process of selecting these products to be purchased <sup>[12]</sup>. There are

several stages in carrying out conjoint analysis, including the determination of the objectives of conjoined analysis. The purpose of conjoint analysis in this study is to find out the preferences of Indonesian people for electronic money. The results of this study can be taken into consideration by issuers of electronic money in creating further electronic money so that ultimately electronic money products can be more in demand by consumers, especially in Indonesia. The conjoint method design used is traditional conjoint while the presentation method used in this study is a full-profile. The profile is then created with the help of the SPSS 24 application. Attributes and levels are designed orthogonally

and produce a plan card combination that will be used as a profile. With the help of SPSS 24, these attributes and levels produce stimuli (profile cards) which are used as questionnaires.

**Table 1:** Results of the Conjoint Profile

Profile	Electronic Money Balance	Improve Performance and Productivity	Paying bills with a low nominal	Reloadability	Authentication	Confirmation Display	Promotion
1	Rp 1.000.000.	Telephone, Electricity, Water Bill Payment.	Under Rp 100.000.	Transfer between users	Using Username and Password.	SMS	Discount
2	Rp 1.000.000.	Telephone, Electricity, Water Bill Payment.	Rp 100.000 – Rp 300.000.	Transfer from Personal Account	Using Username and Password.	SMS	Earn Points for Exchange.
3	Rp 1.000.000.	Telephone, Electricity, Water Bill Payment.	Rp 301.000 – Rp 600.000.	Transfer between users	Use your Username and Password and Account Identity Number.	SMS and E-mail	Get Direct Gifts.
4	Rp 1.000.000.	Telephone, Electricity, Water Bill Payment.	Rp 301.000 – Rp 600.000.	Through the Top Up Outlet.	Account ID Number.	E-mail	Earn Points for Exchange.
5	Rp 1.000.000.	Freeway Payment (Toll)	Under Rp 100.000.	Transfer from Personal Account	Use your Username and Password and Account Identity Number.	E-mail	Discount
6	Rp 1.000.000.	Freeway Payment (Toll)	Rp 100.000 – Rp 300.000.	Transfer between users	Use your Username and Password and Account Identity Number.	SMS and E-mail	Earn Points for Exchange.
7	Rp 1.000.000.	Freeway Payment (Toll)	Rp 100.000 – Rp 300.000.	Through the Top Up Outlet.	Account ID Number.	SMS	Get Direct Gifts.
8	Rp 1.000.000.	Freeway Payment (Toll)	Rp 301.000 – Rp 600.000.	Transfer from Personal Account	Using Username and Password.	E-mail	Get Direct Gifts.
9	Rp 1.000.000.	Pay Cinema, Merchant, Online Shop.	Under Rp 100.000.	Transfer between users	Account ID Number.	E-mail	Earn Points for Exchange.
10	Rp 1.000.000.	Pay Cinema, Merchant, Online Shop.	Under Rp 100.000.	Through the Top Up Outlet.	Use your Username and Password and Account Identity Number.	SMS	Get Direct Gifts.
11	Rp 1.000.000.	Pay Cinema, Merchant, Online Shop.	Rp 100.000 – Rp 300.000.	Transfer from Personal Account	Account ID Number.	SMS and E-mail	Discount
12	Rp 1.000.000.	Pay Cinema, Merchant, Online Shop.	Rp 301.000 – Rp 600.000.	Through the Top Up Outlet.	Using Username and Password.	SMS and E-mail	Discount
13	Rp 5.000.000.	Telephone, Electricity, Water Bill Payment.	Under Rp 100.000.	Transfer from Personal Account	Account ID Number.	SMS and E-mail	Get Direct Gifts.
14	Rp 5.000.000.	Telephone, Electricity, Water Bill Payment.	Rp 301.000 – Rp 600.000.	Through the Top Up Outlet.	Use your Username and Password and Account Identity Number.	E-mail	Discount
15	Rp 5.000.000.	Freeway Payment (Toll)	Under Rp 100.000.	Through the Top Up Outlet.	Using Username and Password.	SMS and E-mail	Earn Points for Exchange.
16	Rp 5.000.000.	Freeway Payment (Toll)	Rp 301.000 – Rp 600.000.	Transfer between users	Account ID Number.	SMS	Discount
17	Rp 5.000.000.	Pay Cinema, Merchant, Online Shop.	Rp 100.000 – Rp 300.000.	Transfer between users	Using Username and Password.	E-mail	Get Direct Gifts.
18	Rp 5.000.000.	Pay Cinema, Merchant, Online Shop.	Rp 301.000 – Rp 600.000.	Transfer from Personal Account	Use your Username and Password and Account Identity Number.	SMS	Earn Points for Exchange.

This conjoint research consists of 7 attributes and 20 sub-attributes or commonly called levels. Then the possibility of a combination profile that can occur is  $2 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 = 1458$  possible profiles. This number is obtained from multiplying the number of levels in each attribute. But the amount is too much. After going through the Stimuli processing through SPSS 24, it was found that this study had 18 profile choices. In this study, the author uses conjoint analysis techniques by using the full profile conjoint model,

with a full profile presentation method, consumers must provide a rating of each profile that has been provided. The data obtained is numerical data which is then processed with the help of SPSS 24 application. Furthermore, Pearson R correlation numbers, Kendall know, and Kendall's know in determining profile reliability and measuring predictive accuracy. The interpretation of conjoined results in this study contained numbers from importance score and part-worth. Importance Score refers to the value of the

respondent's interests from each attribute that exists, the higher the value of importance, the more important these attributes are for consumers. While part-worth refers to the utility number of each existing point.

The results of this study are to determine the preferences of consumers, therefore, in this study what is seen is the value of part-worth and relative importance.

**4. Results**

The results of data processing with the help of SPSS on 230 community samples domiciled in Indonesia and knowing information about electronic money can be seen in the following tables. The results of the correlation analysis and significance of conjunctions are shown in Table 3.1.

**Table 2:** Pearson R Correlation Value, Kendall's Tau

Value		Sig
Pearson'sR	.896	.000
Kendall'stau	.779	.000

Can be seen in table 2, the value of Pearson R and Kendall's knows to produce numbers 0.896 and 0.779. states that the correlation of data obtained in the field belongs to a very high group and indicates that the opinion of 230 respondents is acceptable to describe the desires of the population. Whereas for the significance value of the results of the field data if it produces the number 0,0. The value is below 0.05 so the significance is accepted because it is below the maximum value set, which is 0.05. This proves that there is a strong relationship between estimation and actual results or there is a high predictive accuracy in the conjoint analysis process and is acceptable to describe the preferences of the people in Indonesia for electronic money.

The following is the output of data for the part-worth value of the attributes and level of Indonesian people's preference for electronic money:

**Table 3:** Results of Utility Values

	UtilityEstimate		Std.Error
Electronic Money Balance	Rp1.000.000	-.053	.031
	Rp5.000.000	.053	.031
Improve Performance and Productivity	Telephone, Electricity, Water	-.006	.041
	Bill Payment. Freeway	-.009	.041
	Payments (Toll)	.015	.041
	Payment for Cinema Entertainment, Merchants, Online Shop.		
Paying bills with a low nominal	UnderRp 100.000.	-.073	.041
	Rp 100.000 – Rp 300.000	.040	.041
	Rp 301.000 – Rp 600.000	.033	.041
Reloadability	Transfer Between Users	-.026	.041
	Through the top up counter.	.045	.041
	Transfer from Personal Account.	-.020	.041
Authentication	Username and Password.	.008	.041
	Account ID Number.	-.040	.041
	Username and Password, Account Identity Number.	.032	.041
Confirmation Display	Via SMS (short message).	-.026	.041
	Through E-Mail (electronic mail).	-.050	.041
	Through SMS and E-Mail.	.076	.041
Promotion	Get Discounts for Getting	-.026	.041
	Direct Gifts	-.055	.041
	Earn Points for Exchange	.081	.041

Table 3 shows the results of conjoint analysis for electronic money attributes desired by consumers. From the estimation of the part-worth value, it can be seen that the electronic money balance desired by consumers is IDR 5,000,000 with part-worth value of 0,053. Whereas from attributes increasing performance and productivity, consumers want to use electronic money for cinema payments, merchants, and online shops as part-worth values of 0.015. The attribute of paying a bill with a low nominal that the consumer wants is Rp. 100,000 - Rp. 300,000 indicated by the part-worth value of 0.040. The way to refill the attributes that consumers want is through the top-up part-worth outlet of 0.045. Authentication attributes that consumers want are username, password, account identity number which is indicated by part-worth value of 0.032. The confirmation display attribute

that the customer wants is through SMS and e-mail indicated by the part-worth value of 0.076. While the promotional attributes desired by consumers are to get points to be exchanged which are indicated by part-worth value of 0.081.

Attributes that have the highest relative importance value indicate that these attributes are most noticed or liked by respondents. The attributes with the lowest relative importance value indicate that the attribute is not liked or noticed by the respondent. The following is the result of calculating conjoint analysis data which gives the value of the relative importance of the electronic money attributes in this study:



**Table 4:** Value of importances

ImportanceValues	
Paying bills with a low nominal	8.267
Reloadability	16.573
Authentication	16.166
Confirmation Display	14.242
Promotion	13.870
Improve Performance and Productivity	13.540
Electronic Money Balance	8.267

Table 4 shows that respondents prefer the attribute of paying bills with a nominal low compared to other electronic money attributes. In the table the most important attribute considered by respondents in general was to pay bills with a low nominal value of 17,343%, then how to refill by 16,573%, authentication at 16,166%, confirmation display that is 14,242%, promotion 13,870%, improve performance and productivity of 13,540% and the last is the electronic money balance with the smallest gain of 8,267%.

## 5. Conclusion

This research aims to find out the preferences of the people in Indonesia for electronic money regarding electronic money attributes, which are expected by banks, companies that publish electronic money services can create electronic money that suits consumers' interests and attributes so that the presence of electronic money can reduce the use of cash in Indonesia. The best combination preference for Electronic Money attributes is Paying Bills with a Low Nominal with a transaction value of IDR 100,000 - IDR 300,000, how to top up via top up outlets, Authentication via username, password, account ID number, confirmation display via SMS and e-mail, promotions get points to be exchanged, improve performance and activities for payment of cinema entertainment services, merchants, online shops, electronic money balances of Rp. 5,000,000.

Electronic money issuing companies should be able to provide information and education to prospective users or those who already use electronic money that electronic money can pay bills with a low nominal value without the prohibition on setting the minimum value of electronic money in accordance with article 13A of Bank Indonesia regulation number 16/8 / PBI / 2014.

It is hoped that electronic money issuers can open more top-up outlets. It is not only centered on headquarters or branch offices but also places that are often passed by the community such as small shops (Indomaret, Alfamart, etc.), markets, airports, stations, facilities for teaching and learning and etc.

We recommend that electronic money issuers improve supporting facilities and infrastructure in increasing security in electronic money products. Authentication through a username, password, and account identity code must be kept confidential the information only to authorized users. Electronic money issuers can implement policies such as changing passwords regularly, are not allowed to use passwords with sequential numbers or letters, are not allowed to create passwords based on birthdays.

- 1) After the user makes a payment transaction, the issuer of electronic money should be fast without delay informing the transaction process via E-mail or SMS. If the e-mail is not active, then you can use SMS as well as vice versa so that users are not expected to worry that the transaction done is not in accordance with the actual transaction conditions.
- 2) The issuer of electronic money should increase the choice of promotional gifts according to the points that the user has obtained using electronic money. Prizes can be adjusted from the lowest to the highest point value. So that all electronic money users can exchange points that have been collected and actively participate in the use of electronic money on an ongoing basis.
- 3) Electronic money issuers should establish cooperation with cinema entertainment service providers (21 Cinemaplex, XXI, CGV Blitz, IMAX and others), merchants, online shops (Lazada, Bhinneka, Olx, Tokopedia, Bukalapak and others) who exists throughout Indonesia.
- 4) Electronic money issuers should provide information to prospective users or those who have used electronically that the limit for electronic money balances is IDR 5,000,000 for users who have registered according to regulations from Bank Indonesia. With a balance limit of IDR 5,000,000, users are expected to be able to use electronic money continuously compared to carrying cash.

In this study also has limitations that are expected to be improved by conducting further research. Some suggestions for further research are:

- 1) This study focuses more on respondents in urban / urban areas, so it is better for further research to be carried out in rural / rural areas to find out the preferences of rural people for electronic money.
- 2) This study discusses the general attributes of electronic money in Indonesia. Research can then examine electronic money more specifically based on electronic money products issued by electronic money issuers found in Indonesia.
- 3) There are other factors such as the level of trust that is suspected to be another important factor in electronic money preferences because it has a relationship to the benefits (benefits) which in this study benefit (benefit) is one of the most important factors that influence people's preferences for electronic money.
- 4) When choosing the attributes that will be used in further research, it is better to use factor analysis to find out the electronic money attributes that are most suitable for use and then carry out conjoint analysis to determine preferences for electronic money.

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