# Factors Affecting Consumer Perception Using E-Payments

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**Abstract**
*Electronic payment (e-payment) is one of the conveniences of the current development of financial technology innovation. The existence of e-payment causes changes in consumers' behavior in making payments, from conventional to electronic. The research aims to determine the factors that affect consumer perceptions of e-payments for transactions. The difference with other research is determining the dominant factors that influence consumer perceptions. This research uses a quantitative descriptive method with a survey approach to e-payment users with a research sample of 100 people. The data obtained were processed and analyzed using a Confirmatory Factor Analysis approach with the factors studied: benefits, trustworthiness, self-efficacy, ease of use, and safety. The results showed that two dominant factors influence consumer perceptions of e-payment: self-efficacy and benefits. The conclusion is consumers who use e-payment are influenced by their perception of making payment transactions. Hence, companies that issue e-payment systems need to adopt these factors to improve the quality of their e-payments..*

Keywords— Consumer Perception; E-payment; Financial Technology.

## I. INTRODUCTION

The development of financial technology innovation that is happening today provides many conveniences and advantages in daily activities. Electronic payment (e-payment) is a tangible form of convenience provided by the current development of financial technology innovation (Bank Indonesia, 2021). Electronic payments are slowly becoming more popular in Indonesia, this can be seen from the many e-wallet applications that are present in Indonesia, e-wallet is an electronic wallet in which there is an account with a number of money data that can be used for buying and selling transactions online (iprice.co.id, 2019). Digital technology innovation is no longer a support system but has become a necessity, especially financial technology innovation.

Research on e-payments has been carried out by several researchers, including Octavia & Hafizh (2019), Mandariza et al. (2019), and Sulistyowati et al. (2020) have something in common is that the research aims to determine the effect of independent variables on consumer perceptions with a regression analysis approach, while this research focuses on knowing the dominant factors that influence consumer perceptions with a factor analysis approach.

In Indonesia, there has been a growth in users of payment systems with electronic devices or electronic payments for shopping needs, both online shopping and shopping at retail stores. The Pricewaterhouse Coopers (PwC) survey related to Global Consumer Insights, illustrates that 47% of respondents in Indonesia currently use electronic payments to transact in 2019 (Bisnis.com, 2019). That number is higher than in 2018 which was recorded at around 38%.

The PwC survey involved 21,480 respondents from 26 countries and countries in the Middle East region. In the Southeast Asia region, Indonesia is one of the countries that participated as respondents along with Thailand, Singapore, the Philippines, Malaysia, and Vietnam. PwC pays special attention to the rapid growth of mobile payment users in Vietnam. Based on data from Bank Indonesia, 38 e-wallets have been officially licensed. In 2018, e-wallet transactions in Indonesia reached US $ 1.5 billion and are predicted to increase to the US $ 25 billion by 2023. (Bisnis.com, 2019; Malik, 2020 ).

iPrice Group collaborated with data analysis company App Annie, to summarize processed data regarding the most popular e-wallet applications in Indonesia. Their research uses data on the number of application downloads and monthly active users, this research presents more concrete statistics to find out who are the e-wallet applications in Indonesia. (Selular.id, 2019) The following are 5 e-wallets in Indonesia based on the number of users in the Q2 until 2019 period.

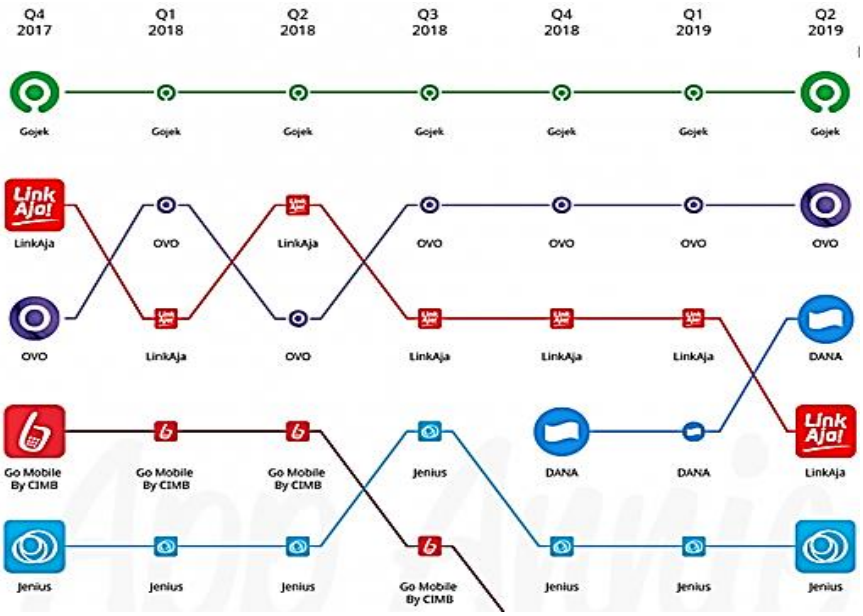


Fig 1. List of E-wallet in Indonesia (selular.id, 2019)

The Fig shows that Go Pay, OVO, and Dana occupy the top three electronic payment applications that are most widely used by Indonesians in the second quarter of 2019. iPrice research shows that Go Pay has the most monthly active users in Indonesia. Research by iPrice Group and App Annie shows that Go Pay has the most monthly active users in Indonesia. As a result, transactions through the digital wallet made by Gojek reached US$ 6.3 billion or around Rp 89.5 trillion as of February 2019. The research company noted that 70% of transactions in the Gojek application use Go Pay as a means of payment. Lippo Group's e-wallet application, OVO, was ranked second based on the number of downloads as of the second quarter of 2019, DANA has been relatively stable since the end of last year. Link Aja occupies the fourth position with the highest number of application downloads in the second quarter of 2019 (katadata.co.id, 2019).

So many advantages to using e-payment, including useless cash to make transactions, only using a smartphone, safer than cash, no need to worry if the wallet is left behind, and there are many bonuses and discounts if you pay using the e-payment application. In contrast to conventional payments, e-payment utilizes internet and smartphone technology as a means of payment by entering a shopping nominal, scanning a barcode, or placing a smartphone device in the space provided.

At this time e-payment has become one of the modern lifestyles of society, because, in addition to having many benefits, e-payment is also very suitable in practical era like now. The decision to use e-payment applications on based on various reasons and perceptions expressing consumers as users of e-payment applications. The phenomena, can be used as a reference to determine the factors that influence consumer perceptions of e-payments related to their use in transactions.

## II. LITERATURE REVIEW

### *a. Consumer Perception*

Perception is a process of selecting, organizing, and interpreting information about a product or service by consumers. Perception does not only occur in the form of physical stimulation but is also influenced by existing marketing conditions. According to Kotler and Keller (2016), perception does not only depend on physical stimuli but also stimuli related to the surrounding environment and the circumstances of the individual concerned.

According to Jalaludin (Ashadi and Salim, 2020), perception is the experience of objects, events, or relationships obtained by inferring information and interpreting messages. The process of perception is not just a psychological process but begins with a physiological process known as sensation.

Perceptions can be negative and positive, if consumers have a positive impression of the products offered by the company then this will result in positive perceptions, and vice versa (Kotler and Keller, 2016). Perception in

a person is strongly influenced by thoughts and the surrounding environment. In addition, perceptions can be substantially different from reality.

*b. E-payment*

Electronic payment is a payment model that makes it easy and offers convenience to its users in making payment transactions (Teoh et al., 2013). Users only need to make transactions using the internet, namely online, without having to meet or come all the way to meet the seller. Electronic payment is representative of all non-cash payments, also interpreted as electronic payment transactions between buyers and sellers using a savings account via the internet or electronic networks (Teoh et al., 2013).

E-Payment is defining as a digital payment instrument that can be represented and transferred in electronic form (Lestari, Purnomo, & Sembiring, 2021). Nugroho (2016) says that e-payment is a payment system that uses internet facilities as an intermediary.

Electronic payments currently used for long-distance transactions such as online shopping, as along the increasing use of the internet and the increasing number of e-commerce, electronic payment is a solution that exists to replace the old method of payment transaction tools. Electronic payments include payment cards, e-wallets, smartcards, e-cash, and e-checks (Apergis, Kunitsyna & Dyudikova, 2020).

## III. RESEARCH METHODOLOGY

This research uses a quantitative descriptive method with a survey approach to e-payment users. The research used primary data obtained through questionnaires distributed to 100 respondents with a non-probability sampling technique using purposive sampling. The data obtained were processed and analyzed using a Confirmatory Factor Analysis approach through the stages of the Bartlett Test, Measure of Sampling Adequacy (MSA), and Rotation Factors. In this research, the investigated factors refer to the research of Teoh et al. (2013) suggested the factors that influence consumer perceptions of e-payment, are benefits, trust, self-efficacy, ease of use, and security.

## IV. RESULT / FINDING

In this research, the factors to be analyzed consist of 5 factors with 25 indicators are online shopping (X1), offline shopping (X2), faster payments (X3), more proper payments (X4), balance storage (X5), understanding and recognizing behavior (X6), consistent with values and beliefs (X7), motivation to become better (X8), problem-solving ability (X9), individual ability standards (X10), difficulty level (X11), faith in overcoming difficulties (X12), valuation of self-skills (X13), ability to maintain behavior (X14), variations in valuation (X15), easy to learn (X16), easy to understand (X17), practical (X18), cuts bureaucracy (X19), used anywhere (X20), used anytime (X21), saving safety (X22), ease of use (X23), convenience of use (X24), and convenience of saving (X25).

*a. KMO and Bartlett's Test*

The factor analysis starts with determining the correlation matrix and assessing the feasibility of all indicators using KMO (Kaiser-Meyers-Oklin measure of sampling adequacy), Bartlett Test of Sphericity, and Anti-Image, the results are as follows:

Table 1. KMO and Bartlett's Test

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) | | .826 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1038.183 |
| | df | 300 |
| | Sig. | .000 |

Based on the results of KMO with an MSA value (0.826) > 0.50 and Bartlett's test of Sphericity with a Sig value. (0.000) < 0.05 (Ghozali, 2019), then these indicators are correlated and feasible for further analysis.

*b. Extraction Factors.*

Factoring process by extracting a set of existing indicators using the Participants Component Analysis (PCA) method, the results are as follows:

Table 2. Communalities

| | Initial | Extraction |
|---|---|---|
| Online shopping | 1.000 | .729 |
| Offline shopping | 1.000 | .817 |
| Faster payments | 1.000 | .669 |
| More proper payments | 1.000 | .605 |
| Balance storage | 1.000 | .692 |
| Understanding and recognizing behavior | 1.000 | .479 |
| Consistent with values and beliefs | 1.000 | .473 |
| Motivation to become better | 1.000 | .721 |
| Problem-solving ability | 1.000 | .707 |
| Individual ability standards | 1.000 | .665 |
| Difficulty level | 1.000 | .707 |
| Faith in overcoming difficulties | 1.000 | .767 |
| Valuation of self-skills | 1.000 | .695 |
| Ability to maintain behavior | 1.000 | .549 |
| Variations in valuation | 1.000 | .690 |
| Easy to learn | 1.000 | .707 |
| Easy to understand | 1.000 | .703 |
| Practical | 1.000 | .421 |
| Cuts bureaucracy | 1.000 | .733 |
| Used anywhere | 1.000 | .587 |
| Used anytime | 1.000 | .713 |
| Saving safety | 1.000 | .745 |
| Ease of use | 1.000 | .624 |
| Convenience of use | 1.000 | .566 |
| Convenience of saving | 1.000 | .624 |

From Table 2, it's known that the extraction value of each indicator that shows the variance of the initial indicators explained by the existing factor's, means that the greater the Communality of each indicator, the closer the relationship with the factor formed. Furthermore, the calculation of Total Variance Explained aims to find out how many factors (components) are formed, the results are as follows:

Table 3. Total Variance Explained

| ***Component*** | ***Initial Eigenvalues*** | | | ***Extraction Sums of Squared Loadings*** | | | ***Rotation Sums of Squared Loadings*** | | |
|---|---|---|---|---|---|---|---|---|---|
| | ***Total*** | ***% of Variance*** | ***Cumulative %*** | ***Total*** | ***% of Variance*** | ***Cumulative %*** | ***Total*** | ***% of Variance*** | ***Cumulative %*** |
| 1 | 8.177 | 32.708 | 32.708 | 8.177 | 32.708 | 32.708 | 2.844 | 11.376 | 11.376 |
| 2 | 1.940 | 7.760 | 40.468 | 1.940 | 7.760 | 40.468 | 2.639 | 10.557 | 21.933 |
| 3 | 1.577 | 6.309 | 46.777 | 1.577 | 6.309 | 46.777 | 2.503 | 10.014 | 31.947 |
| 4 | 1.382 | 5.527 | 52.305 | 1.382 | 5.527 | 52.305 | 2.445 | 9.782 | 41.729 |
| 5 | 1.179 | 4.717 | 57.022 | 1.179 | 4.717 | 57.022 | 2.371 | 9.486 | 51.215 |
| 6 | 1.112 | 4.448 | 61.470 | 1.112 | 4.448 | 61.470 | 1.894 | 7.576 | 58.791 |
| 7 | 1.022 | 4.088 | 65.558 | 1.022 | 4.088 | 65.558 | 1.692 | 6.767 | 65.558 |
| 8 | .997 | 3.986 | 69.544 | | | | | | |
| 9 | .954 | 3.816 | 73.359 | | | | | | |
| 10 | .781 | 3.124 | 76.484 | | | | | | |
| 11 | .726 | 2.903 | 79.387 | | | | | | |
| 12 | .654 | 2.617 | 82.004 | | | | | | |
| 13 | .562 | 2.248 | 84.251 | | | | | | |
| 14 | .536 | 2.145 | 86.397 | | | | | | |
| 15 | .473 | 1.890 | 88.287 | | | | | | |
| 16 | .452 | 1.810 | 90.096 | | | | | | |
| 17 | .419 | 1.675 | 91.771 | | | | | | |
| 18 | .380 | 1.518 | 93.289 | | | | | | |
| 19 | .362 | 1.447 | 94.736 | | | | | | |
| 20 | .290 | 1.159 | 95.895 | | | | | | |
| 21 | .274 | 1.098 | 96.993 | | | | | | |
| 22 | .234 | .936 | 97.929 | | | | | | |
| 23 | .199 | .795 | 98.724 | | | | | | |
| 24 | .181 | .725 | 99.449 | | | | | | |
| 25 | .138 | .551 | 100.000 | | | | | | |

Based on Table 3. there are 25 indicators included in the factor analysis summarized into seven factors, namely Component 1, Component 2, Component 3, Component 4, Component 5, Component 6, and Component 7, where the Eigen Values 1 to 7 have values above 1.

*c. Rotated Component Matrix*

Aiming to find out whether these indicators are included in the seven factors that are formed based on the loading factor value > 0.5 (Ghozali, 2019), the results as follow:

Table 4. Rotated Component Matrix

| | Component | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Online shopping | .103 | .196 | .119 | .235 | .173 | .747 | -.150 |
| Offline shopping | .173 | -.026 | .778 | -.243 | .191 | .236 | .174 |
| Faster payments | .187 | .136 | .487 | .524 | -.008 | .318 | .055 |
| More proper payments | -.002 | .234 | .547 | .342 | .198 | .220 | .215 |
| Balance storage | .153 | .136 | .091 | .121 | .047 | -.037 | .790 |
| Understanding and recognizing behavior | .160 | .063 | .232 | .121 | .591 | .055 | .169 |
| Consistent with values and beliefs | .107 | -.023 | .078 | .019 | .056 | .650 | .170 |
| Motivation to become better | .469 | .387 | .218 | -.109 | -.017 | .461 | .283 |
| Problem-solving ability | .018 | .068 | .333 | .304 | .265 | .309 | .577 |
| Individual ability standards | -.148 | .138 | -.030 | .335 | .666 | .234 | .108 |
| Difficulty level | .440 | .155 | -.016 | -.212 | .203 | .354 | .528 |
| Faith in overcoming difficulties | -.024 | .798 | .188 | .080 | .187 | .224 | -.059 |
| Valuation of self-skills | .079 | .719 | .178 | .266 | -.009 | -.067 | .255 |
| Ability to maintain behavior | .167 | .485 | .010 | -.144 | .506 | .025 | .093 |
| Variations in valuation | .345 | .694 | -.051 | -.088 | .226 | .079 | .145 |
| Easy to learn | .435 | .280 | .370 | .119 | .524 | .090 | -.070 |
| Easy to understand | .347 | .399 | .350 | .141 | .501 | -.032 | -.169 |
| Practical | .182 | .019 | .273 | .333 | .343 | .289 | .042 |
| Cuts bureaucracy | .183 | .199 | .748 | .287 | .121 | -.057 | .026 |
| Used anywhere | .182 | .015 | .060 | .657 | .323 | -.022 | .117 |
| Used anytime | .245 | .050 | .061 | .794 | .063 | .101 | .039 |
| Saving safety | .803 | -.050 | .046 | .264 | .013 | .134 | .086 |
| Ease of use | .656 | .309 | .141 | .163 | .127 | .083 | .173 |
| Convenience of use | .473 | .208 | .246 | .139 | .433 | .130 | .122 |
| Convenience of saving | .593 | .125 | .260 | .372 | .206 | .074 | .066 |

It's known that the colored loading factor values are indicators included in each component in the following table:

Table 5. New Factors Formed

| Factor | Indicator | *Loading Factor* |
|---|---|---|
| Factor 1 | Saving safety | 0.803 |
| | Ease of use | 0.656 |
| | Convenience of saving | 0.593 |
| Factor 2 | Faith in overcoming difficulties | 0.798 |
| | Valuation of self-skills | 0.719 |
| | Variations in valuation | 0.694 |
| Factor 3 | Offline shopping | 0.778 |
| | More proper payments | 0.547 |
| | Cuts bureaucracy | 0.748 |
| Factor 4 | Faster payments | 0.524 |
| | Used anywhere | 0.657 |
| | Used anytime | 0.794 |
| Factor 5 | Understanding and recognizing behavior | 0.591 |
| | Individual ability standards | 0.666 |
| | Ability to maintain behavior | 0,506 |
| | Easy to learn | 0.524 |
| | Easy to understand | 0.501 |
| Factor 6 | Online shopping | 0.747 |
| | Consistent with values and beliefs | 0.650 |
| Factor 7 | P Balance storage | 0.790 |
| | Problem-solving ability | 0.577 |
| | Difficulty level | 0.528 |

In Table 5, each factor has an indicator that is ordered based on the value of the loading factor calculated from the rotated component matrix, which explains the clear and fact distribution of indicator's for each component.

*d. Component Transformation Matrix*

The Component Transformation Matrix aims to know the dominant factors influencing consumer perceptions to use e-payment based on the eigenvalue > 0.5(Ghozali, 2019). The calculation results are as follows:

Table 6. Component Transformation Matrix

| Component | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1 | .463 | .406 | .424 | .340 | .419 | .304 | .242 |
| 2 | .135 | .572 | -.223 | -.759 | .042 | .002 | .164 |
| 3 | .376 | -.481 | -.006 | -.199 | -.380 | .403 | .529 |
| 4 | -.695 | -.023 | .452 | -.242 | .120 | .477 | .109 |
| 5 | -.343 | .212 | -.629 | .396 | .074 | .176 | .498 |
| 6 | .161 | -.155 | -.406 | -.069 | .301 | .626 | -.546 |
| 7 | .005 | -.455 | -.074 | -.220 | .754 | -.309 | .275 |

From Table 6, it's known that the components with a correlation value > 0.5 are the dominant components, namely component 2 of 0.572 and component 6 of 0.626. It proves that two of the seven factors which formed with a high correlation are the most dominant factors.

## V. Discussion

Based on the results of data testing using factor analysis, it's known that the factors affect consumer perceptions using e-payment by two dominant factors, namely self-efficacy factors and benefit factors.

The self-efficacy factor consists of indicators of faith in overcoming difficulties, valuation of self-skills, and variations in valuation. Based on information obtained from one of the respondents, the reason for using e-payment is because it provides its own challenges and to keep up with technological developments that have developed in all sectors including financial services. In addition, because e-payment is relatively easy to use, it provides its own motivation to be used as a means of payment at certain times, even on every occasion.

According to Bandura (in Octavia and Hafizh, 2019), self-efficacy is an individual's belief about his ability to perform tasks or actions needed to achieve results. Meanwhile, according to Dory et al. (in Toeh et al., 2013), defining self-efficacy describes how a user understands and believes in his skills and abilities complete a task.

The benefit factor consists of online shopping and is consistent with values and beliefs indicators. Based on information from respondents, the reason for using e-payment is because of the many benefits they will receive, including the payment process can be done easier and practically, transaction payments do not need to use banking services or minimarket outlets, and are very useful for online buying and selling transactions.

In line with the opinion according to Chandon et al. (in Octavia and Hafizh, 2019), perceived benefits are beliefs about positive outcomes associated with behavioral responses to real or perceived threats. Meanwhile, according to Rogers (in Octavia and Hafizh, 2019). Perceived usefulness refers to the degree to which an innovation delivers more benefits than its predecessor.

## VI. Conclusion and Recommendation

The research concludes that there are two dominant factors, namely the self-efficacy factor with indicators of faith in overcoming difficulties, valuation of self-skills, and variations in valuation, and the benefit factor with online shopping indicators and consistent with values and beliefs that affect consumer perceptions of using e-payment.

Recommendations from the research results are that consumers must pay attention to the type of e-payment that suits their needs and ease of use, and be careful in online transactions.

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