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The Influence of Insecurity, Perceived of Technology Innovativeness, Perceived Ease of Use and Perceived Usefulness on Consumers Intention to Use Electronic Toll Payment Cards

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Abstract

The purpose of this study is to examine how optimism, innovativeness, and insecurity affect perceptions of usefulness and ease of use, as well as how these perceptions affect behavioral intention to use. A descriptive research design was employed in this study. The participants in this study are Jakartan e-toll card customers. With a sample size of 100 respondents, this study combined the judgmental sampling technique with a non-probability sampling method. Questionnaires were randomly distributed using a non-probability sampling technique in order to obtain data. Based on the data processing and analysis outcomes, the following conclusions may be drawn from this study: Because optimism has a positive standard coefficient, it positively affects perceived ease of use. Because innovativeness has a positive standard coefficient, it positively affects perceived ease of use. Because insecurity has a positive standard coefficient, it positively affects how easy something is considered to be. Because perceived ease of use has a positive standard coefficient, it positively affects perceived usefulness. Because perceived ease of use has a standard coefficient of positive value, it positively influences behavioral intention.

Keywords: Innovativeness, Optimism, Insecurity, Perceived Ease Of Use, Perceived Usefulness, Behavioral Intention.

1. Introduction

Indonesia is a country that is currently developing. This is characterized by an increase in people's per capita income every year. Indonesia's per capita income increased from year to year. During the last eight years, the largest increase occurred in the period 2010, namely $200. Along with the increase in per capita income, the rate of population growth in Indonesia also experiences significant growth every year [1]. 10 countries that are members of the ASEAN organization, Indonesia is the country with the highest population, namely around 250 million people. The average rate of growth in Indonesia's population was 1.4%. The highest growth occurred in 2011, namely 1.5%. Meanwhile, the smallest increase occurred in the 2010 period. The average Indonesian population (50%) lives in rural areas, while the other 49% lives in urban areas [2]. Even though the majority of the population in Indonesia lives in rural areas, on average, the social problems that arise originate from urban areas, especially the capital city of DKI Jakarta [3]. The population density of Jakarta province itself has increased quite significantly over the last 15 years. The population in Jakarta continues to increase every year, including men and women [4].

The dense population in the city of Jakarta can be caused by two things, namely the high birth rate (natality) and population movement from villages to cities, or what is often called urbanization, which is also increasing in big cities in Indonesia [5]. Jakarta, as the center of the Indonesian economy, has become the main destination for rural communities that want to change their fate by living in urban areas [6]. The large number of local and foreign companies has become an attraction for rural communities to urbanize in Jakarta [7]. There were around 69,000 people from outside the region who started their careers in Jakarta [8]. The large number of villagers coming to Jakarta not only causes an increase in population density but also adds to problems for Jakarta. The problem that arises as an excess of the high population in Jakarta is the increasing crime rate caused by unemployment, poverty, illegal trade, and traffic jams [9]. Congestion is not a new problem for the Jakarta government. The change in people's consumption patterns who prefer using private vehicles over using public transportation has resulted in increasingly long traffic jams on Jakarta's highways. 90% of the Indonesian population feels embarrassed if they don't have a private car [10]. Apart from that, using cars as a benchmark for a person's career success in the world

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of work is a perception that is currently developing in the minds of some Jakarta residents. 68% of Indonesians view cars as social status [11].

The biggest contribution to traffic jams is caused by privately owned two-wheeled and four-wheeled vehicles. The number of vehicles passing on the highway has exceeded the capacity of the highway itself, causing congestion [12]. The average vehicle that crosses the highway is a motorcycle, namely 13 million, followed by a private car with a total of three million units. Even though the number of motorbikes is greater than that of private cars, the growth rate of motorbikes and private cars is both increasing at 11% per year [13]. Problems related to traffic jams on highways have become a special concern for government officials. One of the efforts that has been implemented to reduce congestion on the roads is by implementing "freeways" or "toll roads." A freeway or toll road is a road that is specifically intended to be crossed only by vehicles with four or more wheels (both private vehicles and public transportation) [14]. All drivers crossing the road are prohibited from stopping anywhere and are required to pay toll rates according to the type of vehicle they drive [15]. The implementation of toll roads in Indonesia was indeed effective in reducing congestion on public roads, especially at the beginning of its implementation in 1970's [16]. However, as time goes by, the number of drivers using toll roads continues to increase significantly, so that congestion, which initially only occurred on public roads, also happens on the toll road [17]. Congestion that occurs on toll roads can be caused by several things, namely traffic accidents and long queues when drivers want to pay toll fees, causing congestion [18].

Long queues at toll booths are the main cause of traffic jams that often occur on toll roads. The slow payment process for each vehicle wishing to pay toll rates at the toll booth causes long queues, resulting in traffic jams. if the average transaction service time (processing time) required by the cashier to process the toll fee payment for one vehicle is six seconds [19]. The service time is still relatively slow compared to the target set. Toll tariff payment transaction service time does not exceed one second. If the processing time for a vehicle at the toll booth is short, then the queue of vehicles wanting to pay the toll fee will not cause congestion [20]. In its efforts to realize a fast transaction process when vehicles pay toll rates, Bank Mandiri launched a new innovation in the form of a payment system using special cards and an Automatic Toll Gate, or GTO. Automatic Toll Gate, or GTO, is a toll gate that is operated with an automatic machine mechanism and can only be operated using certain cards, namely cards issued by the bank (e-money cards and bracelets, e-Toll Card, Indomaret Card, and GazCard). An e-toll card is a special prepaid card (smartcard) produced by the bank specifically for toll operators. Currently, the toll operators that have collaborated are Jasa Marga, Cipta Marga Nusaphala Persada, Marga Mandala Sakti, and the Jakarta Outer Ring Road (LJL). Drivers can buy e-toll cards at all bank and retail outlets in the Jabodetabek area. To top up balances, Bank Mandiri has established a collaborative relationship with PT Indomarco Prismatama so that drivers can top up balances not only at bank branches but also at all Indomaret outlets in Indonesia [21]. Currently, paying toll rates using e-toll cards has been implemented on almost all toll roads in Indonesia, especially areas that are a source of congestion due to long queues at toll gates, such as the Karang Tengah toll gate, the West Cikarang toll gate, and the West Bekasi Toll gate [22].

The toll-rate payment method using e-toll cards is more effective than conventional payment methods. The transaction process is simple. Drivers only need to tap the e-toll card on the GTO machine, and the transaction will be processed quickly [23]. After the transaction has been processed, the GTO barrier will open automatically along with the proof of payment. In this way, drivers no longer need to prepare cash when making payments or calculate the amount of money to be returned. Congestion due to long queues and the risk of discrepancies in receiving change can be prevented by making payments via GTO. As a pioneer in non-cash payment innovation for toll rates in Indonesia, the market share of e-toll cards is still relatively large. It is not difficult for the bank to gain the entire market share in Indonesia [24]. What's more, e-toll cards help speed up the toll rate transaction process, reduce the difference in change, and are easy to use. However, in reality, there are still very few drivers who use e-toll cards or e-money to pay toll rates. Currently, many drivers prefer to pay toll rates at public payment booths using cash. For the bank, this is an issue that needs special attention [25]. This is because selling and topping up e-toll card balances is a source of income for the bank. If the bank is unable to attract the interest (intention) of drivers to continue using the e-toll card or e-money facilities at GTO, the income received will not increase, or worse, it will actually decrease. Apart from that, it also needs to maintain the performance of the e-toll card so that drivers prefer to use GTO and do not experience difficulties when using it. The main basis for an innovation to be accepted by the public is its benefits for its users (usefulness), ease of use (ease of use), and level of readiness to use the technology (technology readiness). Moreover, private banks in Indonesia are currently starting to launch similar products that can be used in GTO [26]. If it is unable to resolve complaints and problems from e-toll card users, the market share of non-cash payment toll rates in Indonesia will be controlled by competing companies.

2. Research Methods

A marketing research project's research design is a structure that guides the processes required to gather the data required to address research challenges. A descriptive research design was employed in this study. The participants in this study are Jakartan e-toll card customers. With a sample size of 100 respondents, this study combined the

judgmental sampling technique with a non-probability sampling method. Primary data obtained from respondents who are part of the target population through surveys is the primary data source that is used to calculate study findings. Questionnaires were randomly distributed using a non-probability sampling technique in order to obtain data. To evaluate the validity and reliability of the measurements on the questionnaire, a pre-test was conducted first. For the pre-test, a total of thirty questionnaires were given out in person. After undergoing pre-test validity and reliability assessments, the questionnaires are disseminated offline.

3. Results and Discussion

Based on respondents' responses, it was found that the OPT1 indicator had a mean value of 4.0. This means that the average respondent's assessment of the statement "non-cash payment technology helps me in managing my daily life" is classified as good. OPT2 has a mean value of 4.1. This means that the average respondent's assessment of the statement "non-cash payment technology is more convenient to use" is classified as good. OPT3 has a mean value of 4.0, which means that the average respondent's assessment of the statement "I prefer to use non-cash payment technology that is useful for me" is classified as good. OPT4 has a mean value of 4.0, which means that the respondent's assessment of the statement "non-cash payment technology can help me do my work more quickly" is classified as good. OPT5 has a mean value of 4.0, which means that respondents' assessment of the statement "non-cash payment technology can increase flexibility in my daily life" is classified as good. The INN1 indicator has a mean value of 3.9, which means that the average respondent's assessment of the statement "People ask for my recommendations regarding non-cash payment technology" is classified as good. INN2 has a mean value of 3.9, which means that the average respondent's assessment of the statement "I feel I understand more about the development of non-cash payment technology compared to my friends" is classified as good. INN3 has a mean value of 3.8, which means that the average respondent's assessment of the statement "I am the first person to know about the use of non-cash payment technology compared to my other friends" is classified as good. INN4 has a mean value of 3.9, which means that the average respondent's assessment of the statement "Without the help of other people, I can use non-cash payment technology by myself" is classified as good. INN5 has a mean value of 4.0, which means that the average respondent's assessment of the statement "I enjoy learning non-cash payment technology" is classified as good.

The DIS1 indicator has a mean value of 3.8, which means that the average respondent's assessment of the statement "I find non-cash payment procedures difficult to understand" is classified as good. DIS2 has a mean value of 3.8, which means that the average respondent's assessment of the statement "Sometimes, I feel that some of the emerging non-cash payment technologies are designed only for certain groups" is classified as good. DIS3 has a mean value of 3.7, which means that the average respondent's assessment of the statement "I will feel embarrassed if, in front of other people, I appear confused in using non-cash payment technology" is classified as good. DIS4 has a mean value of 3.9, which means that the average respondent's assessment of the statement "I feel uncomfortable using non-cash payment technology because I don't know my last balance" is classified as good. DIS5 has a mean value of 3.9, which means that the average respondent's assessment of the statement "I feel uncomfortable when my non-cash payment card is lost because it can easily be used by other people" is classified as good. The INS1 indicator has a mean value of 3.8, which means that the average respondent's assessment of the statement "I feel less safe when using non-cash payment technology because there is a risk that my card will be damaged" is classified as good. INS2 has a mean value of 3.8, which means that the average respondent's assessment of the statement "I feel afraid when the toll sign cannot be opened when making transactions at the automatic toll booth (GTO)" is classified as good. INS3 has a mean value of 3.8, which means that the average respondent's assessment of the statement "I feel afraid that proof of transaction (receipt) will not come out when I make a transaction at GTO" is classified as good.

The PEU1 indicator has a mean value of 3.9, which means that the average respondent's assessment of the statement "According to the function of the e-toll card, it is easy to understand" is classified as good. PEU2 has a mean value of 4.0, which means that the average respondent's assessment of the statement "I easily learn the process of using an e-toll card" is classified as good. PEU3 has a mean value of 3.9, which means that the average respondent's assessment of the statement "How to use an e-toll card is very easy to remember" is classified as good. PEU4 has a mean value of 3.8, which means that the average respondent's assessment of the statement "I think it is easy to top up your e-toll card balance" is classified as good. The PU1 indicator has a mean value of 4.0, which means that the average respondent's assessment of the statement "Using an e-toll card makes transactions on the toll road faster" is classified as good. PU2 has a mean value of 3.9, which means that the average respondent's assessment of the statement "Using an e-toll card means I don't have to queue long at the toll gate" is classified as good. PU3 has a mean value of 4.0, which means that the average respondent's assessment of the statement "Using an e-toll card means I don't have to bother preparing cash when paying tolls" is classified as good. PU4 has a mean value of 4.0, which means that the average respondent's assessment of the statement "e-toll cards make payment transactions on toll roads more practical" is classified as good. The BI1 indicator has a mean value of 4.0, which means that the majority of respondents' assessment of the statement "I plan to continue using e-toll cards" is

classified as good. BI2 has a mean value of 3.9, which means that the average respondent's assessment of the statement "I still use the e-toll card even though there is still a cash booth option" is classified as good. BI3 has a mean value of 3.9, which means that the average respondent's assessment of the statement "I will recommend my friends to use the e-toll card as I have done" is classified as good. BI4 has a mean value of 4.0, which means that the average respondent's assessment of the statement "I will top up my e-toll card balance" is classified as good.

The structural model test results indicate that perceived ease of use and optimism are related. This is consistent with earlier research findings that suggested optimism positively affects perceived ease of use. The structural model test results indicate that perceived usefulness and optimism are influenced. This is due to the respondents' decreased confidence in technology's capacity to improve usability by giving them more freedom and flexibility in their daily lives. These outcomes also support earlier research that found a significant correlation between perceived usefulness and optimism. There is a relationship between perceived ease of use and innovativeness. This is consistent with earlier studies that show innovativeness positively affects perceived usability. The perception of utility and innovativeness are influenced by each other. This occurred as a result of respondents' perception that the advantages offered by e-toll cards lacked any appreciable innovation. Perceived ease of usage and feelings of insecurity are related. This is consistent with other research showing that perceived ease of use is positively impacted by insecurity. The perception of one's usefulness is impacted by insecurity. This occurs because the respondents don't think they should be concerned about the benefits of the e-toll card. Perceived usefulness and simplicity of usage are influenced. This is consistent with earlier research showing that perceived usefulness is positively impacted by perceived ease of use.

The structural model test results indicate that behavioral intention and perceived ease of use are influenced. This is consistent with other research showing that behavioral intention is positively impacted by perceived ease of use. Perceived usefulness and behavioral intention are affected. This occurs as a result of respondents' perceptions that the advantages of e-toll cards do not motivate them to utilize them. According to research from respondents, potential customers have a positive perception of e-toll cards, with each having a mean value of 4.0, 4.1, 4.0, 4.0, and 4.0. Some consumers are still pessimistic about utilizing e-toll cards, though. "Non-cash payment technology can help me do my work more quickly" is shown from the OPT4 indicator, one of this variable's lowest indicators, with a mean value of 4.0. It would be preferable in this situation if e-toll card holders could enter the toll road without tapping by attaching a unique sensor to their card. Users of e-toll cards can now avoid purchasing pricey tools. Consequently, there will be a speedier transaction flow at the toll gate. E-toll cards have a good level of innovativeness in the eyes of potential consumers; namely, each has a mean value of 3.9, 3.9, 3.8, 3.9, and 4.0. However, there are still some users who do not feel innovative when using e-toll cards. It can be seen from one of the lowest indicators of this variable, namely the INN3 indicator, which has a mean of 3.8: "I was the first person to know about the emergence of non-cash payment technology compared to my other friends". In this case, it would be better if the e-toll card could provide the latest design for non-cash payment technology. In my opinion, it would be best if the e-toll card wanted to launch its newest design. The officers could provide salesmen to introduce the new design at each GTO gate. So toll users can learn about the latest e-toll card designs first. Compared to their friends, it is considered appropriate to do this to attract consumers' attention and find out the latest design of e-toll cards.

Based on research from respondents, e-toll cards have a good level of insecurity in the eyes of potential consumers, namely that each has a mean value of 3.8, 3.8, and 3.8. However, there are still some users who do not feel safe when using e-toll cards. It can be seen from one of the lowest indicators of this variable, namely the INS3 indicator, which has a mean of 3.8: "I feel afraid that my balance will be deducted more than once when I make transactions at GTO." It's good if the e-toll card cannot read the same chip in less than 5 seconds. So, e-toll card users no longer need to worry about their balance being deducted more than once. E-toll cards have a good level of perceived ease of use in the eyes of potential consumers; namely, each has a mean value of 3.9, 4.0, 3.9, and 3.8. However, there are still some users who do not find it easy to use e-toll cards. It can be seen from one of the lowest indicators of this variable, namely the PEU4 indicator, which has a mean value of 3.8: "I think it is easy to top up the e-toll card balance". In my opinion, it is good for e-toll cards to top up e-toll card balances using e-banking. So that e-toll card users can top up their balance more easily. It is considered appropriate to do this to attract consumers' attention to top up their balance on their e-toll card. E-toll cards have a good level of perceived usefulness in the eyes of potential consumers; namely, each has a mean value of 4.0, 3.9, 4.0, and 4.0. However, there are still some users who do not find it easy to use e-toll cards. It can be seen from one of the indicators of this variable, namely the PU4 indicator, which has a mean value of 4.0, that "e-toll cards make payment transactions on toll roads more practical." Therefore, it would be better if e-toll cards could record respondents' transaction flows online. So that e-toll card users can see special transactions at toll gates in detail without having to bother collecting transaction receipts at toll gates for days. In this way, it will also be more beneficial for users to use e-toll cards because they can find out how much their monthly budget is to access toll roads. And also, for users who need proof of transactions or receipts, users no longer need to bother saving and collecting receipts; they only need to print the monthly transaction data and then submit it to the company.

4. Conclusion

Based on the outcomes of the data processing and analysis, the following conclusions may be drawn from this study: Because optimism has a positive standard coefficient and a p-value of 0.000 (< 0.05), it explains why consumers find using e-toll cards easier when they are more optimistic. This means that optimism has a positive impact on perceived ease of use. Because innovativeness has a positive standard coefficient and a p-value of 0.000 (< 0.05), it has a positive effect on perceived ease of use. This means that the more innovative a person is, the easier it is for them to utilize payment technology, like an e-toll card. Due to its positive standard coefficient and p-value of 0.000 (< 0.05), insecurity has a positive impact on people's perceptions of how easy it is to use an e-toll card. This means that if someone feels uncomfortable using an e-toll card, they are unlikely to use it and won't feel the need to. Because perceived ease of use has a positive standard coefficient and a p-value of 0.000 (< 0.05), it has a positive effect on perceived usefulness. This suggests that the easier it is to use the technology, the more readily the benefits can be realized. The impact of perceived ease of use on behavioral intention is positive, as seen by its positive standard coefficient and p-value of 0.000 (< 0.050). This suggests that greater ease of use of technology leads to higher intentions.

Through this research, researchers hope to provide input for company strategic decision-making and future e-toll card product development. Apart from that, researchers also hope that future research can be carried out with several improvements to several factors in this research. It would be better if the e-toll card could pay special attention in terms of optimism by creating a new transaction procedure so that users can feel optimistic about trying and using the e-toll card. For example, by inserting a special sensor on the e-toll card, which can be synchronized by machines such as electronic road pricing (ERP). With this, users no longer need to tap on the GTO machine, but drivers can immediately continue their journey without having to stop first, like the usual transaction method at toll gates. It can consider being more innovative in providing varied card designs because, as we know, people's tastes and preferences vary, both in terms of color, cartoon or animated characters, and various card shapes. In this way, people will try to get a card design that they like and will compete to be the first to get it. It can increase the convenience of e-toll card users by providing balance top-up or top-up services via internet banking or mobile banking. In this way, e-toll card users can easily top up their e-toll card balance anytime and anywhere.

Apart from that, it can also increase the usability and benefits of e-toll cards by presenting transaction data on toll roads online. So users who use e-toll cards don't need to bother collecting receipts, but they can see all transactions online in detail and clearly. With this, drivers will find it more useful to make transactions using an e-toll card rather than using cash. In the current research, researchers use the adopted research model from Parasuraman, namely technology readiness, which consists of optimism, innovativeness, discomfort, and insecurity. However, after the researcher conducted the survey, they deleted discomfort because it was considered irrelevant to the object of this research. In this study, the author did not discuss in detail the time of congestion at toll gates and which toll gates are the centers of congestion. Therefore, for further research, the author suggests focusing more on collecting data on toll roads and the operational hours usually used when respondents access the toll road. So researchers can obtain data on which toll roads are experiencing congestion, complete with information on congestion times at toll gates. In this way, researchers can find out the majority of respondents who use e-toll cards at what time and whether the GTO access is still busy or quiet.

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