M-Commerce application acceptance analysis using Technology Readiness Index (TRI) model in Kuningan Regency

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Abstract. Online trading activities through mobile devices (m-commerce) are currently becoming a business trend. Online trading has contributed to making the process of buying and selling goods and services easier and more enjoyable because they are timeless and borderless though these still have negative impacts. Therefore, this study examines retail consumer’s perspectives related to their readiness of using the application mobile commerce (m-commerce) in Kuningan regency. Furthermore, this study aims to examine the impact of optimism, innovation, insecurity, and discomfort on consumers’ shopping intentions from mobile devices through the perceived risks and benefits. To analyze the data, this study applied Parasuraman TRI (Technology Readiness Index) Model with the dimensions of optimism and innovation as variable drivers, the dimensions of insecurity and discomfort as inhibitor variables. Meanwhile, the data was gained through survey methods, questionnaire distribution from 397 m-commerce users in Kuningan as respondents. In addition, SPSS was used to test the validity and reliability of the questionnaire. The result showed that the total TRI value of 3.58 (in the high technology readiness index category), the people of Kuningan Regency tend to have a high level of readiness to adopt m-commerce technology, and the user group segment is in the pioneers group (this segment tends to have high interest through the existence of a new technology, have high optimism and innovation, but at the same time they will easily stop trying if they encounter high inconvenience and insecurity.

1. Introduction

Trade is changing in the era of the industrial revolution 4.0, in terms of operational approaches and processes with the introduction of online businesses through information and communication technology. The latest service for e-commerce applications such as Tokopedia, m-BCA, traveloka, grab and others have been developed from website-based platforms to cellular phones or m-commerce. M-commerce by durlacher 2000 is defined as “any transaction with a monetary value that is conducted via a mobile telecommunication network [1]. As we know several forms of mobile commerce, there are four basic categories of m-commerce (1). Proliferation of mobile devices; (2). Convergence of mobile networks and internet; (3). Transition telecommunication and technology and the higher data support; (4). Emergence of broad set of highly personalized, location sensitive, and context aware applications and services.

The positive role of using cell phones for commerce is that it can enhance the business experience, simplify business processes, but there are some negative impacts in using m-commerce this is the
limitations of the device, inadequate graphics, high rate of data theft (security issues), interruption of internet service (poor connection) which negatively impacts the business experience and the risks m-commerce users will feel and face. Technology Readiness Index (TRI) by Parasuraman defined as “people’s propensity to embrace and use new technologies for accomplishing goals in home life and at work” [2]. TRI model is to measure a person's general beliefs and thoughts about technology. TRI model is able to group users based on technology that is more complex and futuristic (directional) [2].

A person's view of technology can be positive, optimistic about technology and a tendency to feel uncomfortable and skeptical of technology. The research was conducted in Kuningan Regency as the author's place of residence, the aim was to determine the level of readiness of mobile-based information and communication technology for mobile users in this city.

2. Methodology
The research using Technology Readiness Index (TRI) model Version 2.0 with four important dimensions / components [2], namely:

a. Optimism a positive view of technology and a belief that it offers people increased control, flexibility, and efficiency in their lives.
b. Innovativeness a tendency to be a technology pioneer and thought leader.
c. Discomfort a perceived lack of control over technology and a feeling of being overwhelmed by it.
d. Insecurity distrust of technology, stemming from skepticism about its ability to work properly and concerns about its potential harmful consequence.

Here’s a picture Technology Readiness Index (TRI) model (figure 1) and research framework (figure 2):

![Figure 1. The four dimension of TRI](image1)

![Figure 2. Research Framework](image2)

Technology Readiness Index (TRI) model has three categories in applying the results [11] can be seen on table 1.

| Table 1. Categories TRI Model |
|-------------------------------|---------------------|
| Low Technology Readiness Index | If the TRI value <= 2.89 |
| Medium Technology Readiness Index | If the TRI value between 2.90 – 3.51 |
| High Technology Readiness Index | If the TRI value >3.51 |

According to Parasuraman, based on its TR index, it can be divided into five groups of people segments can be seen in table 2.

| Table 2. Segmentation TRI Model |
The research method used is a survey method, namely the source of data and the main information is obtained from respondents as research samples and the data collection tool used is a questionnaire. The research instrument used was adapted from the research instrument carried out by Parasuraman (TRI 2.0). Adaptation was carried out to adapt existing research instruments to the research being carried out. The questionnaire consists of 4 variables and 16 indicators, the amount of each statement can be seen in the Table 3.

|                | Optimism | Innovativeness | Insecurity | Discomfort |
|----------------|----------|----------------|------------|------------|
| Explorers      | High     | High           | Low        | Low        |
| Pioneers       | High     | High           | High       | Low        |
| Skeptics       | Low      | Low            | Low        | Low        |
| Paranoids      | High     | High           | High       | Low        |
| Laggards       | Low      | Low            | High       | High       |

Table 3. Research Instrument Framework

| Optimism | 4 Question |
|----------|------------|
| Innovativeness | 4 Question |
| Insecurity  | 4 Question |
| Discomfort  | 4 Question |

The calculation scale used is the Likert scale, where the Likert scale is a scale used to measure the attitudes and opinions of a person or group towards a social phenomenon where the answer has a value gradation from very positive to very negative for each instrument item [8]. The Likert scale used is as shown in the Table 4.

| Sangat Setuju (SS) – very agree | Score 5 |
|---------------------------------|---------|
| Setuju (S) -- agree             | Score 4 |
| Netral (N) -- neutral           | Score 3 |
| Tidak Setuju (TS) -- disagree   | Score 2 |
| Sangat Tidak Setuju (STS) – totally disagree | Score 1 |

Table 4. Likert Scale

The questionnaire was distributed to respondents with the assumption that the distribution was evenly distributed and represented the people of Kuningan Regency. The population of this research is 4.63 % online business users out of the total population 716.616. Determination of the number of samples using the Slovin formula, with precision values 95%. So that the number of samples obtained is 397 respondents. The sampling technique uses the random sampling method, which is a sampling technique that provides equal opportunities for each element (member) of the population to be selected as sample members [3].

3. Result and Discussion
To ensure that the research instrument used was correct, an instrument test was carried out, namely the validity test and the reliability test. The validity test is a test used to show the extent to which the measuring instrument used in a study measures what is being measured. A questionnaire is said to be valid if the questions on the questionnaire are able to reveal something that will be measured by the questionnaire [9]. The results of the validity test can be seen in tables 5, 6, 7 and 8 below:

Table 5. Validity of Optimism

Table 6. Validity of Discomfort
All question items for each variable are valid because they have a calculated r value > r table and a significance value < 0.05. Which means that the questions on the questionnaire are able to measure what should be measured in this case, namely optimism, innovation, inconvenience and insecurity. The reliability test was carried out to see the consistency of the data collected through a questionnaire conducted by the researcher. A questionnaire is said to be reliable or reliable if a person's answer to a statement is consistent or stable over time. The test technique is using the Alpha Cronbach formula. A construct or variable is declared reliable if it gives a Cronbach Alpha value > 0.70 [9]. The results of the recapitulation of the calculation of the research instrument reliability test can be seen in table 9 below:

| Variable   | Cronbach's Alpha | Reliability |
|------------|------------------|-------------|
| Optimism   | 0.730            | Reliable    |
| Innovativeness | 0.907        | Reliable    |
| Discomfort | 0.775            | Reliable    |
| Insecurity | 0.78             | Reliable    |

All variables are reliable because they have a Cronbach's alpha value > 0.7. This means that the questionnaire shows consistency over the outcome measure, even though it is used to measure it multiple times. TRI model analysis was carried out to determine the level of readiness of the user by grouping data according to research variables. This study aims to obtain the overall TRI value in the form of the mean value [10]. The results of the TRI value can be seen in table 10 below:

| Variable   | TRI value |
|------------|-----------|
| Optimism   | 0.99      |
| Innovativeness | 0.98    |
| Discomfort | 0.82      |
| Insecurity | 0.79      |

| Total Score TRI | 3.58 |

Table 7. Validity of Innovativeness

| Question Item | r count | Significance | Validity |
|---------------|---------|--------------|----------|
| OPT1          | 0.755   | 0.00         | Valid    |
| OPT2          | 0.703   | 0.00         | Valid    |
| OPT3          | 0.703   | 0.00         | Valid    |
| OPT4          | 0.826   | 0.00         | Valid    |

| Question Item | r count | Significance | Validity |
|---------------|---------|--------------|----------|
| DIS1          | 0.754   | 0.00         | Valid    |
| DIS2          | 0.671   | 0.00         | Valid    |
| DIS3          | 0.827   | 0.00         | Valid    |
| DIS4          | 0.835   | 0.00         | Valid    |

Table 8. Validity of Insecurity

| Question Item | r count | Significance | Validity |
|---------------|---------|--------------|----------|
| INV1          | 0.88    | 0.00         | Valid    |
| INV2          | 0.918   | 0.00         | Valid    |
| INV3          | 0.907   | 0.00         | Valid    |
| INV4          | 0.86    | 0.00         | Valid    |

| Question Item | r count | Significance | Validity |
|---------------|---------|--------------|----------|
| INS1          | 0.705   | 0.00         | Valid    |
| INS2          | 0.899   | 0.00         | Valid    |
| INS3          | 0.775   | 0.00         | Valid    |
| INS4          | 0.727   | 0.00         | Valid    |

Table 9. Reliability

| Variable   | TRI value |
|------------|-----------|
| Optimism   | 0.99      |
| Innovativeness | 0.98   |
| Discomfort | 0.82      |
| Insecurity | 0.79      |

| Total Score TRI | 3.58 |
Based on table 10, it can be seen that the optimism variable has the largest contribution of 0.99, which means that the people of Kuningan Regency have a positive view of m-commerce technology, the second largest value of the innovativeness variable is 0.98. Kuningan Regency people have an innovative attitude to adopt and utilize technology. -commerce, the level of discomfort and insecurity has a lower value than the value of optimism and innovation. If added together, the TRI value is 3.58. The TRI value> 3.51 is included in the High Technology Readiness Index category, which means that the people of Kuningan Regency tend to have a high level of readiness to adopt m-commerce technology.

| Variable    | Mean | Value     |
|-------------|------|-----------|
| Optimism    | 3.97 | Middle/High |
| Innovativeness | 3.92 | Middle/High |
| Discomfort  | 3.29 | Middle/High |
| Insecurity  | 3.15 | Middle/High |

For the type of segmentation of respondents, overall the majority of respondents fall into the Pioneers segmentation type, it can be seen in table 11 above. The character of the pioneer’s segment is that they are quickly attracted by the existence of a new technology because it has a high value of optimism and innovation, but at the same time they will easily stop trying if they encounter discomfort and discomfort because it has a high value of insecurity and inconvenience as well.

4. Conclusion

Based on research conducted in Kuningan Regency towards 397 respondents of the community using m-commerce technology, it can be concluded that (1) the TRI score is in the High Technology Readiness Index category of 3.58 which means that the community in Kuningan Regency has a readiness level for the adoption of m-commerce technology. tall one; (2) the segmentation type of respondents is included in the pioneer’s type, which means that people in Kuningan Regency are quickly attracted by the existence of m-commerce technology, but at the same time they will easily stop trying if they encounter inconvenience and insecurity in its use. This can be an input for m-commerce application providers to create user friendly applications.

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