THE PROTOTYPE OF RUPIAH ELECTRONIC APPLICATION FOR RETAILERS

Amina Sukma Dewi¹, Anton Subarno²
¹Department of Management, Faculty of Economics and Business, Sebelas Maret University Indonesia
²Department of Office Administration Education, Faculty of Teacher Training and Education, Sebelas Maret University Indonesia
¹dewiamina15@staff.uns.ac.id, ²antonsubarno@fkip.uns.ac.id

Abstract: Retail traders rarely use rupiah values of less than one thousand rupiah. Moreover, the use of small money under one hundred rupiah is practically no longer used. From the buyer's point of view, a reduction in the price of just one rupiah has been taken into account, especially in purchasing of a large quantity of goods, of course a slight reduction in price is very meaningful. This study aims to create a prototype electronic rupiah application in order to facilitate financial transactions, especially in the payment of goods’ prices with a value below one thousand rupiahs. The research method used is descriptive quantitative. The population of this study was all undergraduate students who visited the “Idaman” canteen at Sebelas Maret University with 32 respondents. The sampling technique used incidental random sampling, while the data analysis used was confirmatory factor analysis (CFA). The results showed that the application prototype of electronic rupiah needs to pay attention to three things, namely feature design, transaction design, and user account’s security design. Feature design is a basic view of display that needs to be made in such a way as to be attractive and easy to understand. Advanced display design is the details of the buttons on the basic view of menu display which contain transaction/arrangement designs. Account security design is a confirmation of account operation via email and data backup to anticipate if the internet connection is lost. Confirmation is used in making payments via password and or SMS (short message service). The details of these three designs will be discussed in this article.

Keywords: e-money, electronic rupiah, non-cash, retailer money.

1. Introduction

Financial transactions in Indonesia can be said to have almost ignored the small changes. It can be seen in micro-commerce that all customers who pay for commodities find it very difficult to get change with small money. From the seller's point of view, it is also difficult to determine prices with a nominal value of tens or rupiah units because when giving change it is also difficult to get change. They usually round off the price to a larger amount. In micro-scale trading, the use of small change has a very large impact on business sustainability because if the commodities being traded are of small scale, it is necessary to change prices on a small scale as well. This situation encourages the need for a system that facilitates the use of small value of money in transactions so that it will support micro businesses. Electronic money (e-money) can be considered as a means of payment to accommodate these needs. The velocity of money circulation and income per capita affects the demand for electronic money, but the amount of money in circulation does not affect the demand for electronic money [1].
The development of technology has facilitated the fulfillment of human needs. The acceptance of technology as a medium in completing human work has started since the 1980s. The technology acceptance model (TAM) was first introduced by Davis (1986) which includes three aspects, namely perceived ease of use, perceived usefulness, and attitude toward usage [2]. Perceived usefulness means the subjectivity of prospective users to use application systems that can facilitate their work in an organization. Perceived ease of use means the level of confidence of prospective users to use the system freely. Attitude toward usage is greatly influenced by a combination of perceived ease of use and perceived usefulness. Behavioral intention is defined as the use of an information system as a reflection of technology acceptance in supporting the work of its users.

2. Research question

2.1 Technology Acceptance Model (TAM)

The TAM model consists of two main principles, namely perceived usefulness and perceived ease of use. These two principles affect attitude toward using (A) and behavioral intention to use (BI) [3]. The model relationship is presented in Figure 1.

The principles of perceived usefulness and perceived ease of use have indicators that need to be explored from respondents according to the topic to be explored. Perceived usefulness includes factors of the intention to use, user training, computer experience, system quality. Perceived ease of use includes computer self-efficacy, perception of external control, ease of use, internet self-efficacy, efficacy of library use, computer anxiety, information anxiety, perceived enjoyment and objective usability, behavior and intention [4]. These two indicators are used as the basis for the creation of an instrument on the prototype design of the electronic rupiah application.

![Figure 1](image)

**Figure 1.** Technology acceptance model (TAM) from Davis (1989)

2.2 Electronic Money (e-money)

E-money is very suitable for micro payments. Furthermore, he explained that the definition of e-money is not the same in various countries. However, there are several features that share the same characteristics,
including: the value of money recorded in the e-money instrument will decrease when the consumer makes a payment [5]. The funds recorded in e-money are fully under the control of the consumer, and the circulation of e-money funds in the form of e-money value can be done offline without having to be connected to the e-money issuer computer.

The potential for the use of applications according to technological updates in e-payment (electronic payments) based on theoretical studies, applications and technology development has been studied. In his study, the concept, application, and development of technology adoption models and theoretical studies provide different directions and interpretations. Technology development will depend on the problem and research objectives, gap analysis, target markets, organizational goals, and understanding of the technology model itself. Mobile users are closely related to an application [6]. This is a line in other studies that who tested motivation, perception, and adoption in taxi applications based on TAM in metropolitan cities. The results of his research showed that TAM, which is about users’ perception, is very significant in relation to the intensity of cellular phone users [7].

Bank Indonesia provides four corridors for payment system development, namely risk control, efficiency, equality of access, and consumer protection. Risk control means the need for a firm stance on the part of the developer operators on the potential risks that arise due to the ease of transferring funds from one party to another. Efficiency means that the development of a payment system is aimed at improving operational mechanisms in order to reduce transaction costs. Equal access means that Bank Indonesia (BI) must pay attention to equality, namely the balance of rights and obligations between all payment performers. Consumer protection means that every payment system operator is required to apply the principle of consumer protection fairly in their operations. Apart from these four principles, every payment system developer needs to maintain financial system stability and monetary stability [8].

3. Methodology

The design of this research is descriptive qualitative-quantitative where the researcher gathers input from various parties, both practical and theoretical in order to design an application prototype of the rupiah electronic. Qualitative data is used to gather information from experts about the design of the e-rupiah application and good system security because it is related to data finance. Quantitative data is used to explore the wishes of Android users who already have experience in using Android applications. All data is collected and described based on events or incidents that exist in the present.

This research was conducted in the “Idaman” canteen at Sebelas Maret University which consisted of android users and retailers who were familiar with using android.

Data collection in this study was conducted using a questionnaire method and literature study method. The questionnaire was given to the respondent containing the perception of the electronic rupiah application design so that it would be known what information needed to be displayed in the application interface. In addition, the type of statement provided by the researcher contains items that are broken down from the TAM principle which is presented in the form of a closed statement in order to explore information on the
level of understanding of participants about the electronic rupiah prototype. Literature study is a data collection technique by reading, studying, and studying materials in the form of books, literature, papers and other library materials that have something to do with the object under study. In addition to the right method, research requires the ability to choose and even compile relevant data collection techniques and tools. This method is used in order to obtain secondary data, namely collecting data in the form of scientific books related to the technology acceptance model and e-money.

Data analysis techniques in this study include item analysis and data analysis. Item analysis is used to check whether the items made in each indicator have closeness between items or not. To check this, the researchers used confirmatory factor analysis (CFA) with a threshold level of 0.4 (Hair et al, 2006). Data analysis in this study is a combination of quantitative and qualitative. Quantitative analysis is used to determine what factors need to be considered in designing an electronic rupiah application. Qualitative analysis is used to validate whether the factors found in quantitative analysis can be applied to an application system.

4. Results and Discussion

4.1 Results

The results showed that the application prototype of electronic rupiah needs to pay attention to three things, namely feature design, transaction design, and user account security design. The prototype of electronic rupiah features includes basic menu impressions and advanced impressions. Basic menu display includes: setup, top-up and send money. Advanced display is details of the buttons on the basic menu display which contain transaction designs/ settings. The settings contain account identity which includes: Full name, identity number, cell phone number, email, and account ID (account number and photo and/ or barcode). Top-up contains account ID and a list of partners who can top-up money. Send money includes: new destinations and registered destinations. New destinations can be done by entering the ID number to be sent, scanning the barcode, and entering the bank account number, all of which can be equipped with an automatic save button. Registered destinations are lists of destinations for sending money that have been saved via auto-save. Account security is a confirmation of account operation via email and data backup in case the internet connection is lost. Confirmation when making a payment is via a password and / or SMS (short message service). The prototype results are presented in Figure 2.
Detailed explanations for each menu are presented in Figure 3.

Figure 2. Prototype of Rupiah Electronic

Figure 3. Main menu and setting explanation of Rupiah Electronic
4.2 Discussion

The main feature of a prototype is the basic display. In the basic display, it is necessary to pay attention to the convenience principle of use of technology. In applying technology, it is necessary to test three aspects of the Technological Acceptance Model (TAM), namely usability, convenience, and satisfaction [9].

The use of a bank account is only for deposits and withdrawals of money as well as proof of ownership [10]. Vlasov explained that the advantages of e-money are "completely immaterial form of money which has no collateral, the inability of state control over crypto currency, the impossibility of carrying out the policy of inflation".

E-money transactions have a positive and significant impact on money demand both in the long and short term. They added that the circulation of non-cash money in Indonesia was only 0.6%. It is very low compared to countries in Southeast Asia that reached 7.7%. Therefore, in Indonesia, the non-cash payment movement needs to be intensified [11]. This is in line with other studies that the use of e-money in Indonesia is still very low, only 17.07% of their research respondents. Even though they have a small percentage, they believe that the use of e-money can increase economic stability and growth. The more you know the benefits of e-money, the more you use e-money [12]. In accordance with the statement that the greater the income, the benefit aspect, the convenience aspect and the safety factor that is obtained, will increase the public's interest in using e-money [13]. Meanwhile, the number of e-money circulating in Indonesia is quite high, namely 37 types of e-money [14]. Because people do not understand the benefits of e-money, it causes a lack of interest in using it. All of this is inseparable from the advantages and disadvantages of each e-money. Ease of use and ease of transactions in various fields are factors that need to be considered for e-money founders.

Account user security needs to be given priority attention. There are many things that must be anticipated in order to reduce the risks that may arise from using e-money. In the analysis of Bank Indonesia, stated that security risk can be categorized into potential security risk and security measures. Potential security risks include duplication of devices, alteration or duplication of data/software, e-money operations, alteration of messages, theft, repudiation of transactions, and malfunction. Security measures include prevention measures, detection measures, and containment measures. These two aspects need serious attention in designing a security system so that it can maintain the security of an e-money account [15].

The aim of the design of this electronic rupiah application is the convenience of operation for all levels of society without having to be limited by the use of bank accounts. Considering that retailers are the largest traders in Indonesia, it is estimated that as many as 9.1 million people where most of their latest education is only high school or equivalent, it is necessary to provide a fairly practical application [16]. As an illustration, the number of street vendors in Surakarta reached 607 traders as of February 2020 [17].
5. Future trends and Conclusion

The application prototype of electronic rupiah needs to pay attention to three things, namely feature design, transaction design, and security design of user accounts. Menu of basic view display include: setup, top-up and send money. Advance displays are details of buttons on the display of the basic view menu. The settings contain the identity of the user’s account. Top-up and money withdrawals can be done at the same interface. The purpose of sending money can be made to e-money accounts and bank accounts. All transactions that have been made can be seen from the transaction history. This prototype still needs to be tested on the general public with a larger number of samples. In addition, this application also needs to be consulted with the application programmer, especially in terms of safety and comfort standards for users.

6. References

[1] Anugrah, N.S. (2017). Analisis permintaan uang elektronik (e-money) di Indonesia [The Analysis of e-money demand in Indonesia]. Skripsi [unpublished article]. Fakultas Ekonomi, Universitas Diponegoro.

[2] Alharbi, S., & Drew, S. (2014). Using the technology acceptance model in understanding academics’ behavioural intention to use learning. International Journal of Advanced Computer Science and Applications, 5(1), 143-155.

[3] Davis, F. D., Bogozz, R. P., & Warshaw, P.R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982-1003.

[4] Durodolu, O. (2016). Technology Acceptance Model as a predictor of using information systems to acquire information literacy skills. Library Philosophy and Practice (e-journal). 1450

[5] Hidayati, S., Nuryanti, I., Firmansyah, A., Fadly, A., & Darmawan, I.Y. (2006). Operasional e-money. Jakarta: Bank Indonesia.

[6] Lai, P.C. (2017). The literature review of technology adoption models and theories for novelty technology. Journal of Information System and Technology Management, 14(1), 21-38.

[7] Liu, Z., Y. (2014). An analysis of technology acceptance model: Exploring user acceptance and intention of taxi-hailing app in Shanghai. Thesis [unpublished article]. University of Gothenburg, Sweden.

[8] Bank Indonesia. (2009). Laporan sistem pembayaran dan pengedaran uang [The report of payment system and money circulation]. Jakarta: Direktorat Akunting dan Sistem Pembayaran, Direktorat Pengedaran Uang.

[9] Abu-Dalbouh, H. M. (2013). A questionnaire approach based on the technology acceptance model for mobile tracking on patient progress applications. Journal of Computer Science, 9(6), 763–770. https://doi.org/10.3844/jcssp.2013.763.770

[10] Vlasov, A.V. (2017). The evolution of e-money. European Research Studies, XX (1), 215-224.
[11] Saraswatin, N., & Mukhlis, I. (2018). The influence of debit card, credit card, and e-money transactions toward currency demand in Indonesia. *Quantitative Economics Research, 1*(2), 87-94.

[12] Wulandari, D., Soseco, T., & Narmaditya, B.S. (2016). Analysis of the use of electronic money in efforts to support the less cash society. *International Finance and Banking, 3*(1), 2374-2089.

[13] Aksami, N. M. D., & Jember, I. M. (2019). Analisis minat penggunaan layanan e-money pada masyarakat kota Denpasar. *E-Jurnal EP Unud, 8*(10), 2439-2470.

[14] Lingga, M.A. (2019, March 23). Ada 37 Uang Elektronik yang Ada di Indonesia, Apa Saja? [There are 37 e-money in Indonesia, what are they?] Retrieved from https://money.kompas.com/read/2019/03/23/063000326/ada-37-uang-elektronik-yang-ada-di-indonesia-apa-saja.

[15] Hidayat, A. (2006). *Upaya meningkatkan penggunaan alat pembayaran non-tunai melalui pengembangan e-money* [The effort of increasing non-cash payment using e-money, working paper]. Jakarta: Bank Indonesia.

[16] Lombokpost. (2020, Agustus 21). Bantuan presiden, pedagang kaki lima bakal diberi Rp 2,4 juta. *Lombok Post*. Retrieved from https://lombokpost.jawapos.com/

[17] Dinas Perdagangan Kota Surakarta [Surakarta City Trade Office]. (2020, November 15). Jumlah pedagang kaki lima per kecamatan di Kota Surakarta tahun 2018 [The number of street traders each district in Surakarta year 2018]. *Badan Pusat Statistik Kota Surakarta*. Retrieved from https://surakartakota.bps.go.id/

[18] Tohari, R. (2014). Model penerimaan teknologi pada rekening Bersama [The model of technology acceptance on a joint account]. *Skripsi [unpublished article]*. Fakultas Ekonomi dan Bisnis, Universitas Sebelas Maret.