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Understanding E-Money Preferences Among Students: A Case Study at FEBI UIN Ar-Raniry, Banda Aceh, Indonesia

Muksalmina Muksalmina*, Israk Ahmadsyah and Azimah Dianah

Faculty of Islamic Economics and Business, Universitas Islam Negeri Ar-Raniry, Banda Aceh 23111, Indonesia

* Correspondence: muksalmina185@gmail.com

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Abstract

As digital financial transactions continue to gain traction globally, understanding the factors that influence the adoption of electronic money (e-money) is crucial. This research paper delves into the behavioral aspects behind the use of e-money within a specific academic community. In a quantitative study carried out at Ar-Raniry State Islamic University's Faculty of Islamic Economics and Business (FEBI), we investigated the impact of utility, convenience, and security on students' interest in selecting e-money as their preferred payment method. The randomized sample of 97 students represented the faculty's diverse population. Our findings emphasize the critical roles of utility and convenience in shaping students' interest in e-money adoption, with attributes like speed, efficiency, and practicality significantly driving their embrace of electronic payment solutions. The research underscores the importance of designing e-money systems that prioritize utility and convenience to attract users, particularly in educational settings, while also providing insights for policymakers and financial institutions seeking to promote digital financial inclusion.

Introduction

Electronic money, often referred to as e-money or digital currency, represents a paradigm shift in the world of finance. It encompasses various forms of digital currency, such as mobile wallets, prepaid cards, cryptocurrencies, and more [1–7]. E-money enables individuals and businesses to conduct transactions, pay bills, and make purchases online or in physical stores seamlessly [8]. It has gained significant traction globally, challenging traditional cash-based systems and contributing to the evolution of the financial industry [9,10].

Indonesia, a diverse archipelago nation in Southeast Asia, has warmly embraced e-money [11]. With a vast population, expanding internet access, and widespread smartphone usage, the country has provided a fertile environment for digital payment solutions. E-money services like GoPay, OVO, and LinkAja have swiftly gained popularity, offering not just payment convenience but also financial inclusion for millions of Indonesians previously excluded from or underserved by traditional banking. The Indonesian government and financial institutions have played a crucial role in developing the national e-money ecosystem and ensuring secure transactions, while also tackling financial sector challenges at both national and international levels [12,13]. In parallel, telecommunication and banking companies, including major banks like Mandiri, BRI, BNI, and BCA, are entering the e-money market. Fintech startups like Tokocash, BukaDompet, and GoPay are also making their mark in the Indonesian financial technology landscape [14–16].

Non-cash payments, crucial in addressing financial transparency and reducing corruption, are typically made through bank transfers, either between banks or within a single bank's network [17–19]. They can also be facilitated by bank-issued tools like ATM cards, debit cards, and electronic money (e-money). As the demand for swift, secure, and efficient fund transfers grows,

payment systems are evolving rapidly with technological innovations that offer user-friendly transaction options to enhance financial security. Additionally, companies are increasingly likely to invest their profits in renewable energy and eco-friendly technologies, addressing challenges posed by natural disasters and climate change [20–25].

A previous study at UIN Sunan Kalijaga revealed that students hold the majority of interest in e-money [26]. This phenomenon may indicate that the advancement of financial technology in Indonesia could undergo a revolution of progress through students. However, many people, including students, already have e-money but do not frequently use it [26]. This is because many students still do not understand how e-money works technically. Several factors that influence students' interest in using e-money, such as utility, convenience, and security, can be considered [27–29].

One of the factors influencing interest is utility, which is the belief that a particular technology enhances work efficiency [27]. This utility has a positive impact on students' interest because e-money expedites transactions for them. According to [30], the utility of e-money lies in eliminating the need for students to carry cash wherever they go and in protecting against the risk of receiving counterfeit money during cash transactions. However, in contrast to the study by [31], e-money usage among students remains relatively low, primarily due to a lack of information about e-money products. Additionally, students are accustomed to using cash, which they perceive as more convenient than e-money. Students also express concerns that e-money usage depends on network availability and fear it may slow down during payments in the event of network disruptions.

Convenience refers to the idea of using information technology systems without any hassle or significant effort [28]. One of the advantages of convenience is that it makes cash transactions more efficient [32]. This is because buyers must carry physical money for purchases, and sellers may find it inconvenient to provide change that matches the item's price. However, as noted by [33], individuals who are not familiar with technology applications, such as e-money, may struggle to use them.

Information security, as defined by Simons, is a method of preventing and detecting fraud in information-based systems [29]. The positive aspect of the security variable is that it protects users from issuer errors that may render e-money cards unusable and also guards against card damage and theft [34].

Aceh, a unique province located at the northern tip of Sumatra Island in Indonesia, presents a fascinating case study in the context of e-money adoption [35–39]. While e-money has made inroads across the province, it bears distinctive characteristics due to Aceh's rich cultural heritage and the unique economic and social factors at play. The province's e-money ecosystem is influenced by its distinct Islamic traditions, which have led to the development of Sharia-compliant e-money services that adhere to Islamic finance principles [40].

Moreover, Aceh's geography and remoteness have given rise to innovative e-money solutions that address the unique challenges of delivering financial services to remote and underserved areas. E-money has not only improved the ease of doing business in Aceh but has also contributed to disaster management efforts, with digital currencies playing a role in aiding disaster-stricken communities [41,42].

In Indonesia, including Aceh, students frequently rely on e-money for various purposes. They commonly use e-money-loaded campus cards for access to buildings and to pay for meals on campus. E-money is also widely used for public transportation, including buses and commuter trains. Students across Indonesia can use e-money for online shopping, such as buying textbooks and study materials, and making payments at on-campus dining facilities. This

electronic payment method enhances convenience, provides security, and assists students in effectively managing their budgets.

In conclusion, e-money has transcended geographical and cultural boundaries to reshape financial systems globally. In Indonesia, it has become an integral part of daily life, enabling financial inclusion and economic growth. In Aceh, its application is influenced by regional dynamics, cultural norms, and the unique challenges faced by the province. E-money's evolution worldwide, in Indonesia, and in Aceh offers a compelling narrative of financial transformation, where technology, innovation, and tradition converge to redefine the way we transact and interact with the world of finance.

This study examines the factors that impact students' interest in e-money at FEBI UIN Ar-Raniry. The researcher's curiosity is driven by the need to understand the level of enthusiasm among students at FEBI UIN Ar-Raniry in using e-money, which serves as an example of the evolution of electronic money in Aceh. We aim to conduct research that can provide solutions to encourage and propel both students and the people of Aceh to stay abreast of technological advancements in the era of Industry 4.0, with a particular focus on the banking sector.

Materials and Methods

Data Collection

The research conducted at Ar-Raniry State Islamic University, specifically in the Faculty of Islamic Economics and Business, employed a quantitative method that involved the study of populations and randomly selected samples. This research followed a quantitative associative approach with the aim of identifying relationships between two or more variables and developing a theory to explain, predict, and control phenomena. The data in this study were obtained from questionnaires collected from a population consisting of students at the Faculty of Islamic Economics and Business at UIN Ar-Raniry. The sample size of 97 students, representing the entire population, was determined using the Slovin formula and selected through simple random sampling, a random and stratification-free method. In our research paper, we investigated how utility, convenience, and security, as independent variables, affect students' interest in using e-money.

Validity and a Reliability Tests

We performed a validity and reliability test before conducting regression analysis in our research study. The validity test helped confirm that our data collection methods and research instruments accurately measured the specific concepts we intended to investigate, ensuring that our research addressed the right questions. Validity is the precision of a measurement tool to achieve a specific goal. Validity is the accuracy and precision of the measurement tool in performing its measuring function [43]. Conversely, the reliability test ensured that our research instruments consistently yielded similar results when applied to the same subjects or under similar conditions, providing us with confidence in the consistency of our data. These tests played a crucial role in enhancing the credibility and trustworthiness of our research findings [43–45].

Multiple Linear Regression

Multiple Linear Regression is a statistical method used to analyze the relationship between multiple independent variables and a single dependent variable. Multiple correlation and regression analysis is the examination of the relationship between one dependent variable and two or more other independent variables [44]. To test its hypotheses, it is conducted using the F-test and the T-test.

The basis for formulating the multiple linear regression model used in this research is as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e \quad (1)$$

Furthermore, Equation 1 transform into our model equation below:

$$INT = \beta_1 UTI + \beta_2 CON + \beta_3 SEC + e \quad (2)$$

Where INT represents students' interest in using e-money, which is the dependent variable. UTI, CON, and SEC denote the independent variables, with UTI denotes utility, CON representing convenience, and SEC signifying security. The variable 'a' serves as the constant, or intercept, while 'b_1,' 'b_2,' and 'b_3' are the regression coefficients for independent variables, respectively. Additionally, 'e' represents the error variable, which accounts for unexplained variance in the model.

In statistical analysis, classic assumptions are rigorously examined, encompassing assessments for normality, homoscedasticity, and multicollinearity, depending on the context of the analysis. Furthermore, in hypothesis testing, T-Tests, F-Tests and Coefficient of Determination Test are employed to evaluate the significance of individual coefficients and the overall model fit in regression analysis. Collectively, these tests play a vital role in upholding the integrity of statistical analyses, enabling the drawing of reliable conclusions, the assessment of relationships or differences in data, and the making of inferences about population parameters based on sample data.

Results and Discussion

Validity Test

The validity test aims to measure whether the data obtained from the questionnaire results is valid or not. The validity of each statement item in the research questionnaire is determined by comparing the correlation coefficient (r_{count}) of each statement to the critical value (r_{table}). The statement item is declared valid if r_{count} is greater than r_{table}. The results of r_{count} are compared with r_{table}, where df = n-2 with a 10% significance level. As seen in Table 1, all question items have a value of $r_{count} > r_{table}$, which leads to the conclusion that all items are declared valid.

Table 1. Results of validity test.

Variable	Question Item	Correlation Coefficient (r_{count})	Critical Value (r_{table})	Conclusion
UTI	UTI_1	0.573	0.168	Valid
	UTI_2	0.664		Valid
	UTI_3	0.717		Valid
	UTI_4	0.577		Valid
	UTI_5	0.488		Valid
	UTI_6	0.486		Valid
	UTI_7	0.699		Valid
CON	CON_1	0.809		Valid
	CON_2	0.726		Valid
	CON_3	0.634		Valid
	CON_4	0.721		Valid
SEC	SEC_1	0.773		Valid
	SEC_2	0.794		Valid
	SEC_3	0.775		Valid
	SEC_4	0.765		Valid
	SEC_5	0.798		Valid
INT	INT_1	0.814		Valid
	INT_2	0.841		Valid
	INT_3	0.886		Valid
	INT_4	0.806		Valid

Reliability Test

The reliability test is intended to measure the consistency of the questionnaire, which serves as an indicator of the research variable. The questionnaire results are considered reliable if the

Cronbach's Alpha value is greater than the critical value of 0.60. As shown in Table 2, the results of the reliability test demonstrate that the utility, convenience, security, and interest variables all have a Cronbach's Alpha value exceeding 0.60. Therefore, it can be concluded that all measurement concepts for each variable in the questionnaire are reliable.

Table 2. Results of reliability test.

Variable	Question Item	Cronbach's Alpha	Critical Value	Conclusion
UTI	7	0.688	0.600	Reliable
CON	4	0.712		Reliable
SEC	5	0.839		Reliable
INT	4	0.856		Reliable

Normality Test

Normality tests are statistical tests used to assess whether a dataset follows a normal distribution. Many statistical methods rely on the assumption of normality, making these tests critical for sound data analysis. They provide a quantitative measure of how closely data aligns with the characteristics of a normal distribution, including symmetry, the spread of data points around the mean, and the shape of the curve. While data rarely adheres perfectly to normality, these tests help researchers determine whether deviations are within an acceptable range. The results of normality tests influence decisions about the choice of statistical methods and may lead to data transformations or alternative techniques when significant deviations from normality are detected, ensuring the validity of statistical analysis.

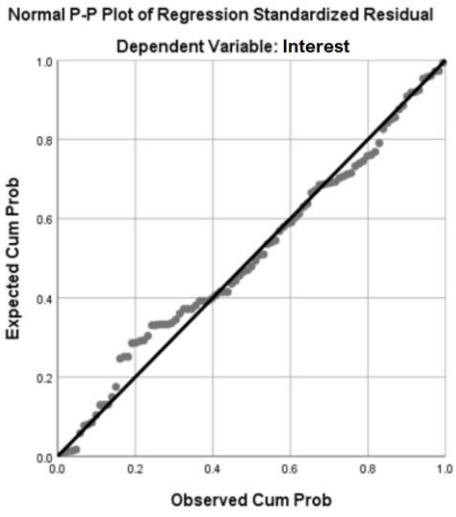

Figure 1. P-P Plot for normality test.

The normal probability plot, as shown in Figure 1, displays data distributed around the diagonal line, following its direction. This indicates that the regression model meets the assumption of normality.

Multicollinearity Test

To determine the presence of multicollinearity, one common approach is to examine Tolerance and VIF (Variance Inflation Factor) values. If Tolerance falls below 0.10 and VIF exceeds 10, it suggests the existence of multicollinearity among the variables. Conversely, when Tolerance surpasses 0.10 and VIF is less than 10, it indicates the absence of multicollinearity. These threshold values help assess the interrelationships among the independent variables in a

regression model, with values in the first set of conditions pointing to potential multicollinearity issues and those in the second set signaling that the model's independent variables are relatively independent of each other.

Table 3. Correlation coefficient and VIF.

Variable	Tolerance	VIF
UTI	0.348	2.869
CON	0.455	2.197
SEC	0.389	2.569

From Table 3, we can see that the VIF test results indicate that each independent variable has a VIF < 10 and a Tolerance value > 0.1. Therefore, it can be concluded that there is no multicollinearity between the independent variables and the dependent variable in this study.

Heteroskedasticity Test

Heteroskedasticity test are used to detect whether the variance of errors in a regression model varies systematically across the range of independent variables, which is important for ensuring the validity of statistical inferences and hypothesis tests.

Table 4. Spearman's rank correlation.

			UTI	CON	SEC	Unstandardized Residual
Spearman's Rho	UTI	Correlation Coefficient	1.000	0.697**	0.720**	-0.118
		Sig. (2-tailed)	-	0.000	0.000	0.251
	CON	Correlation Coefficient	0.697**	1.000	0.653**	-0.026
		Sig. (2-tailed)	0.000	-	0.000	0.801
	SEC	Correlation Coefficient	0.720**	0.653**	1.000	-0.046
		Sig. (2-tailed)	0.000	0.000	-	0.656

Based on Table 4, the results of the heteroskedasticity tests for utility, convenience, and security are 0.251, 0.801, and 0.656, respectively. Each of these heteroskedasticity values is greater than 0.1, indicating that heteroskedasticity is not present in this model.

Multiple Linear Regression

In the context of this study, a multiple linear regression analysis is employed to examine the influence of utility, convenience, and security on students' interest in adopting e-money.

Table 5. Results of multiple linear regression.

Dependent Variable : INT			
Variable	**Standardized Coefficients**	**t-statistics**	**Significant**
UTI	0.479*	4.424	0.000
CON	0.290*	3.057	0.003
SEC	0.091	0.886	0.378

Note : * (significant at 0.01 level)

Based on table 5, UTI has a positive impact on INT with a significance level of 1 percent, where an increase of one unit of UTI will increase INT by 0.335. This means that the factor of utility has a significant increase to influence the interest of students in e-money. Furthermore, CON

has a positive impact on INT with a significance level of 1 percent, where an increase of one unit of CON will increase INT by 0.321. This means that the factor of convenience has a significant increase to influence the interest of students in e-money. Lastly, SEC has a positive but non-significant impact on the interest of students in using e-money.

The value of the coefficient of determination is indicated by the R^2 Adjusted, which is 0.608. This value suggests that 60.8% of the variance in interest is explained by the factors of usefulness, ease of use, and security, while the remaining portion is attributed to unexamined factors.

Simultaneous Test (F-test)

The F-test is used to assess the overall significance of a regression model. It determines whether the independent variables simultaneously have a significant effect on the dependent variable. As seen in Table 6, the output results of the simultaneous test obtained a calculated F count value of 50.587 with a significance value of 0.000. The significance level is 10%, with df1 = 3 and df2 = 93, resulting in an F table value of 2.14. Due to the fact that the F count value (50.587) is greater than the F table value (2.14), it can be concluded that the three independent variables, namely usability, convenience, and security, have a significant simultaneous influence on the dependent variable, namely interest.

Table 6. Results of F-test.

Sum of Squares	df	Mean Square	F_{count}	Sig.
333.236	3	111.079	50.587	.000[b]

Coefficient of Determination (R^2)Test

The coefficient of determination assesses the proportion of the variance in the dependent variable that can be predicted from the independent variable. Since this study involves more than two variables, the reference will be the value of the adjusted R-squared. As shown in Table 7, the magnitude of the coefficient of determination, indicated by the Adjusted R Square value, is 0.608. This signifies that 60.8% of the variation in the value of the dependent variable of interest, which can be explained by the independent variables of usefulness, convenience, and security, while the remaining 39.2% is accounted for by other unexamined factors.

Table 7. Results of the coefficient of determination test.

R	R^2	Adjusted R^2
0.787	0.620	0.608

Influence of Utility on Interest in Using e-Money

The utility variable has a significant influence on interest, with utility factors strongly supporting the increased interest of FEBI UIN Ar-Raniry students in using e-money. According to the analysis of the questionnaires collected by the researcher, the perceived benefits, such as speed, efficiency, and practicality, are strong motivators for students to use e-money. This aligns with related research conducted by [46], which found that perceived utility has a significant positive impact on the interest in using e-money. This statement is supported by [33] research, which suggests that a system perceived as highly useful or beneficial is believed to have a positive relationship between users and the payment tool (e-money) in its performance. In other words, the more utility students perceive, the more interested they are in using e-money.

Influence of Convenience on Interest in Using e-Money

The convenience variable has a significant influence on interest. Convenience strongly supports the increased interest of FEBI UIN Ar-Raniry students in using e-money. Based on the questionnaire analysis, the ease of conducting transactions, the simplicity of replacing cash with

a card that can be carried anywhere, and the ease of understanding are all factors that influence students' interest in using e-money. This is further supported by research conducted by [47], who found that perceived convenience has a positive influence on the interest in e-money usage. This aligns with the conclusions of [46], which suggest that higher perceived convenience leads to higher perceived benefits. It can logically be depicted that a system or product that is more convenient to use provides more utility and benefits. Strong international research support also confirms significant results, as demonstrated by [33] research, which found that convenience has a significant impact on the interest in using e-money, indicating that the convenience and service features of e-money increase its usage.

Influence of Security on Interest in Using e-Money

The security variable does not have a significant influence on interest. The reason for the lack of support for the security factor in increasing the interest of FEBI UIN Ar-Raniry students in using e-money is that students tend to focus less on the security level of a product and are more inclined toward the utility and convenience it provides. This aligns with research by [48], which found that security does not influence an individual's decision to use e-money, likely because some respondents still feel insecure or have experienced issues with e-money security. The quality of security in e-money needs improvement to enhance trust.

Conclusions

The results show that utility and convenience significantly boost students' interest in e-money, with a 1 percent significance level. On the other hand, while security has a positive impact, it is not statistically significant. The research findings underscore the critical role of utility and convenience in shaping the interest of students at FEBI UIN Ar-Raniry in adopting e-money as a preferred payment method. The utility of e-money, with attributes like speed, efficiency, and practicality, is a strong motivating factor, significantly driving students to embrace electronic payment solutions.

To effectively promote e-money adoption among students as a preferred payment method, it is essential to first highlight how e-money enhances speed, efficiency, and practicality in financial transactions through marketing campaigns, educational materials, and workshops to ensure that students better understand and appreciate these benefits. Additionally, continuous improvement of the user experience should be prioritized, ensuring that e-money platforms are user-friendly and offer features that enhance utility and convenience, such as streamlined payment processes and mobile applications, and considering incentives to encourage students to adopt and use e-money regularly. Providing educational resources that inform students about the advantages of e-money, particularly in terms of utility and convenience, through pamphlets, seminars, and online tutorials is crucial to convey how e-money simplifies financial transactions and aligns with their needs. Addressing security concerns transparently, educating students about robust security measures in place, and continuously working to enhance security features to build and maintain trust is also important. Lastly, maintaining an open feedback loop with students to regularly collect their feedback and experiences with e-money can identify areas for improvement and customization, further enhancing the utility and convenience of e-money systems to cater to the specific needs and preferences of students.

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