

Investigation of digital rupiah acceptance using UTAUT-3 model

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ABSTRACT

The adoption of central bank digital currencies (CBDC) has been popular in many countries, especially Indonesia which currently develops its own CBDC called digital rupiah, due to its potential benefits such as financial inclusion. Despite the potential benefits of digital rupiah, there is a lack of understanding regarding factors that affect digital rupiah user acceptance. This research aims to investigate the potential factor affecting the user acceptance of digital rupiah using the unified theory of acceptance and use of technology (UTAUT-3) model, incorporating awareness and privacy as additional variables. There are 218 respondents to this study from five provinces in Indonesia: Jakarta, West Java, East Java, Central Java, and Yogyakarta. The data were analyzed using the SEM-PLS method. The results of this study found that performance expectancy, effort expectancy, habit, personal innovativeness, and awareness are the significant factors that affect the behavioral intention of digital rupiah meanwhile facilitating condition, habit, personal innovativeness, and behavioral intention are the factors that significantly affect the use behavior of digital rupiah. This study identifies key factors influencing the user acceptance of the digital rupiah, providing valuable insights for stakeholders seeking to promote its adoption and use in Indonesia.

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1. INTRODUCTION

One of the technological advancements in recent years is blockchain. Blockchain is a network of decentralized, distributed blocks used to store information with digital signatures [1]. The growing development of blockchain and its usage in cryptocurrencies has led to the development of central bank digital currency (hereafter CBDC). CBDC is defined as an electronic variation of cash issued by a central bank that utilizes encryption and digital ledger technology to offer this digital currency [2]. The popularity of CBDC development was driven by several key benefits such as domestic payment efficiency, financial inclusion, payment safety, financial stability, monetary policy implementation, and cross-border payments efficiency [3]. Indonesia is one of several countries that are trying to gain the benefit of CBDC with the development of their own CBDC called 'digital rupiah'.

The success of digital rupiah as Indonesia's own CBDC hinges on the user acceptance of digital rupiah. Failure to indicate key factors that affect the user acceptance of the digital rupiah might lead to a low adoption rate such as in the case of the eNaira where the rate of eNaira download only represents 0.8% of Nigeria's active bank accounts [4]. The eNaira case emphasizes the gap in understanding the factors

influencing CBDC user acceptance and the gap becomes more apparent for the digital rupiah due to the lack of sufficient literature surrounding user acceptance since the digital rupiah is still only in development state.

Previous research attempt to identify factors that affect CBDC user acceptance was done by Söilen and Benhayoun [5] in 2022 using the unified theory of acceptance and use of technology (UTAUT) method combined with institutional trust theory, which shows that performance expectancy, social influence, and facilitating conditions are the factors that can help foster the continuous adoption of CBDC. Effort expectancy, however, does not affect the behavioral intention of CBDC. The effect of effort expectancy, however, seems to be contradictory as shown by Liu *et al.* [6]. In their study, effort expectancy has positively and directly affected the behavioral intention to use CBDC. This contradiction has also been shown by another study by Jabbar *et al.* [7] where the negative perception of CBDC in terms of privacy can be offset by other factors, including effort expectancy.

This study aims to investigate the public user acceptance of the digital rupiah in Indonesia using one version of the UTAUT model which is the UTAUT-3 model. UTAUT-3 model was used because it offers a more comprehensive understanding of technology adoption compared to its predecessors, UTAUT and UTAUT-2 by additional constructs of personal innovativeness. The addition of construct from UTAUT-2 and personal innovativeness provide a more holistic view when compared to previous research which only investigates based on the UTAUT model on the search for the factor that will impact the adoption of digital rupiah. The results of this research will contribute to the existing literature about the emergence of the digital rupiah with a specific focus on the user acceptance field. Furthermore this research can be used to guide policymakers and Bank Indonesia on the main determinants of digital rupiah user acceptance so they could focus on those determinants while on the development and implementation of the digital rupiah.

The article is organized as follows. The first section is the introduction, which covers background information on digital rupiah. The next part will cover the literature study of CBDC, digital rupiah, and UTAUT. The following part will go over the research model that will be used and how to construct hypotheses for this study. The fourth portion will go into the study's research technique, including the research method, sample, data processing method, and research tools. Part four will reveal the findings of the research based on the survey data. The overall research conclusions will be presented in the fifth section.

2. LITERATURE REVIEW

2.1. CBDC

CBDC is a new form of central bank money distinct from physical cash or central bank reserve/settlement accounts [3]. The benefits and motivation behind issuing CBDC include increasing financial inclusion, improving the monetary policy, and promoting efficient digital payments [8]. While regular cryptocurrencies are decentralized which means that the cryptocurrencies are not issued or regulated by any central authority [9], CBDC is backed by central banks and centralized [3].

2.2. Digital rupiah

Digital rupiah is Indonesia's own CBDC that was developed to fulfill Bank Indonesia's mission as a public policy maker in the digital era and serves as a means for the Indonesian public to have access to digital currency that is risk-free and is denominated in rupiah [10]. The risk-free part of the digital rupiah can be seen from a credit-risk perspective as CBDC does not carry credit or liquidity risk like bank deposits and other liabilities of private financial institutions because CBDC are treated as a direct liability of the central bank [11]. The denomination in rupiah is important due to the purpose of the digital rupiah as a legal means of digital payment which will complement banknotes and coins [10].

There are two types of digital rupiah which is digital rupiah wholesale (w-digital rupiah) and digital rupiah ritel (r-digital rupiah). The w-digital rupiah usage access would be limited and only distributed for wholesale transactions. In contrast, r-digital rupiah would be distributed for retail transactions and accessible to the public [10].

2.3. User acceptance

One of the models to explain user acceptance is the UTAUT. UTAUT was based on eight acceptance theories with fourteen initial constructs. UTAUT has four significant constructs, including effort expectancy, performance expectancy, social influence, and facilitating conditions. Besides four significant constructs, four significant moderating variables were identified, including gender, experience, age, and voluntariness of use [12].

Another UTAUT version also came along namely UTAUT2 and UTAUT3. UTAUT2 extends the UTAUT model to better suit customer context by hedonic value which led to three new constructs: hedonic motivation, price value, and habit [13]. UTAUT2 also drops voluntariness of use from the model due to many

cases exhibiting voluntariness on consumer behaviors and lack of organizational mandate on consumers [13]. UTAUT3 is the extension of the UTAUT2 model by the addition of a new construct which is personal innovativeness [14].

3. HYPOTHESIS DEVELOPMENT

This study utilizes the UTAUT3 model as the research model. The reason for the usage of the UTAUT-3 model is due to the purpose of this study which was to examine the Indonesian acceptance of the digital rupiah. The UTAUT3 model consists of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, and personal innovativeness as factors that determine behavioral intention, which in turn affect use behavior. Two additional independent variables which are awareness and privacy were added based on the previous study [6], [7]. Each of these factors plays a crucial role in determining the user acceptance of the digital rupiah in Indonesia. For instance, performance expectancy refers to the belief in performance improvement to obtain job-related benefits when using an information system [15], is supported by previous studies on e-money and e-wallet adoption in Indonesia [16], [17]. Similarly, effort expectancy refers to the level of ease of use of an information system by users [18] and has been shown to impact behavioral intention on the usage of financial technology especially e-money in Indonesia [19]. Next, social influence is one of the factors that affect the adoption of e-learning systems by college students [20]. Social influence also affects the user's behavioral intention of e-wallet usage in Indonesia [17]. Furthermore, facilitating conditions are one of the important factors that influence internet banking behavioral intention [21], [22]. Moreover, hedonic motivation, which is the enjoyment or fun factor associated with utilizing technology, is a significant factor in determining technology acceptance [23] and affects behavioral intention to adopt mobile banking apps in Cameroon [24]. Price value refers to the monetary cost of using digital rupiah previous research on the usage of digital payment systems has shown that price value affects behavioral intention [25]. Habit is a factor that affects the behavioral intention for the adoption of m-banking among Islamic banking customers [26]. And use behavior on the adoption of mobile payment [27], [28]. Finally, personal innovativeness refers to a personal trait that instills the desire and openness to experiment with new advancements in the field of information technology [14]. Personal innovativeness has been seen to impact behavioral intention on the adoption of mobile payment [29] and the use behavior of executive business students towards lecture capture systems [14]. Figure 1 presents the proposed research model for this study where there are ten independent variables and two dependent variables.

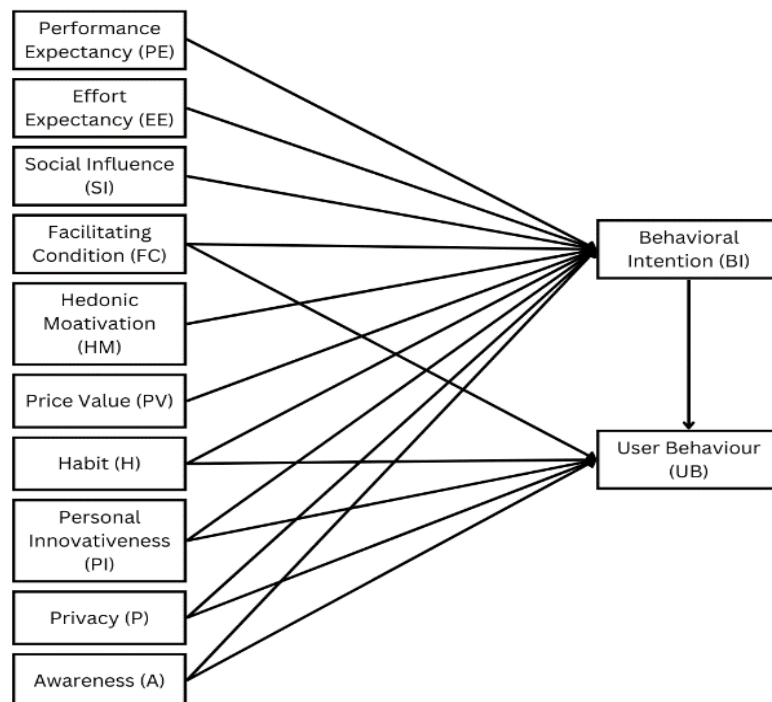


Figure 1. Research model

The proposed hypotheses for this study:

- H1: performance expectancy positively affects behavioral intention to use digital rupiah.
- H2: effort expectancy positively affects behavioral intention to use digital rupiah.
- H3: social influence positively affects behavioral intention to use digital rupiah.
- H4A: facilitating conditions positively affect behavioral intention to use digital rupiah.
- H4B: facilitating conditions positively affect the use behavior of digital rupiah.
- H5: hedonic motivation positively affects the behavioral intention of digital rupiah.
- H6: price value positively affects behavioral intention to use digital rupiah.
- H7A: Habit positively affects behavioral intention to use digital rupiah.
- H7B: habit positively affects the use behavior of digital rupiah.
- H8A: Personal innovativeness positively affects behavioral intention to use digital rupiah.
- H8B: personal innovativeness positively affects the use behavior of digital rupiah.
- H9A: Awareness positively affects behavioral intention to use digital rupiah.
- H9B: awareness positively affects the use behavior of digital rupiah.
- H10A: Privacy positively affects behavioral intention to use digital rupiah.
- H10B: privacy positively affects the use behavior of digital rupiah.
- H11: behavioral intention affects the use behavior of digital rupiah.

4. METHOD

This study uses non-probabilistic sampling due to the unknown list of every member in the population of this study and for the convenience of this study. The primary data for this quantitative study was obtained using an online survey via google forms and spread on social media such as Facebook. The research instrument used on the survey as presented in Table 1 consists of 42 statements where every variable of this study was represented by several statements and the statements were tailored from previous research literature [5]-[7], [30]-[32]. The respondents in this study were presented with a series of statements from research instruments and were asked to indicate the extent to which they agreed with each statement with the provided response. The response was presented as a 5-point likert scale to scale respondent responses which are “strongly disagree”, “disagree”, “neutral”, “agree”, and “strongly agree”. The responses that the respondents gave were converted into numbers from one to five based on the order presented. The numbers then were analyzed as data for this study.

The population of this research is Indonesian people who have used e-money. The criteria of e-money usage was set because the digital rupiah had not been released yet at the time this study was conducted and e-money has similar usage to the digital rupiah, especially the r-digital rupiah. Data samples were taken from five provinces that use the most e-money in Indonesia, namely Jakarta, West Java, East Java, Central Java, and Yogyakarta. Due to the unknown number of populations, the sample size goal was determined by multiplying the number of questions which is 42 from the research instrument by five therefore the total goal number of the sample size is 210 respondents.

The survey was conducted from November 2023 to December 2023 and managed to gather 218 respondents as the sample for this study. The total number of sample respondents met the expected sample size with the sample's description as shown in Table 2. Table 2 shows the sample description of this study based on age, gender, knowledge about digital rupiah, region, and educational degree. Most respondents were between the ages of 18 to 24 (92 respondents), from Jakarta region (66 respondents), male (95 respondents), have bachelor's degrees (112 respondents), and know about digital rupiah (208 respondents). This study sample therefore mostly represents the population of Indonesian people who know about the digital rupiah (208 respondents).

The analysis of the data was conducted using partial least squares structural equation modeling (PLS-SEM) with SmartPLS software version 4.0.9.7. PLS-SEM is chosen for its ability to provide robust results and suit this study model which includes multiple variables and paths [33]. The SmartPLS software was used for this study as it is commonly used for PLS-SEM analysis.

There are two main models for PLS-SEM which are the outer model and the inner model. The outer model test consists of outer loading, cross-loading, average variance extracted (AVE), Cronbach alpha, and composite reliability. The inner model test consists of R^2 , f^2 , Q^2 , goodness of fit (GOF), and path coefficient. The outer model test purpose was to determine the validity and reliability of the research instrument while the inner model test purpose was to understand the link between independent and dependent latent variables [17]. The outer model test and inner model test results will be provided in the next section.

Table 1. Research instrument

Variables	Indicator	Code	References
Performance expectancy (PE)	Useful for financial transaction operations	PE-1	[5] with modification
	Increase the speed of financial transactions	PE-2	
	Increase the effectiveness of financial transactions	PE-3	
	Make my financial transactions easier	PE-4	
Effort expectancy (EE)	Easy to use	EE-1	[5] with modification
	Easy to learn	EE-2	
	Easy to use the way that I want to use it	EE-3	
	Clear and understandable	EE-4	
Social influence (SI)	It should be suggested by people who are important to me	SI-1	[5] with modification
	It should be suggested by people whom I value the opinion	SI-2	
	Should be suggested by social media	SI-3	
	Should be suggested by a government campaign	SI-4	
Facilitating conditions (FC)	Required complementary resources	FC-1	[5] with modification
	Required new knowledge	FC-2	
	Required compatibility with other technology	FC-3	
	Required professional support	FC-4	
Privacy (P)	Concerned about giving information	P-1	[7] with modification
	Concerned about information misused	P-2	
	Concerned about giving personal information	P-3	
	Concerned about personal information misused	P-4	
Awareness (A)	Aware of Bank Indonesia's plan to release digital rupiah as Indonesia's own CBDC system	A-1	[6] with modification
	Aware of the planned usage of the digital rupiah	A-2	
	Aware of the potential benefit of digital rupiah usage	A-3	
Hedonic motivation (HM)	Expect a pleasurable experience from digital rupiah usage	HM-1	[30] with modification
	Expect to enjoy transactions using the digital rupiah	HM-2	
	Anticipate amusement from using digital rupiah	HM-3	
Price value (PV)	Anticipate the digital rupiah to be reasonably priced	PV-1	[31] with modification
	Expect digital rupiah to offer good value for money	PV-2	
	Believe that the digital rupiah will provide good value for the price	PV-3	
Habit (H)	Using digital rupiah will become a habit	H-1	[31] with modification
	Anticipate strong attachment	H-2	
	Feel the need to use digital rupiah	H-3	
Personal innovativeness (PI)	I enjoy experimenting with digital rupiah	PI-1	[32] with modification
	I am usually the first one to try a new way of transaction among my peers	PI-2	
	I am not hesitant to try out digital rupiah	PI-3	
Behavioral intentions (BI)	I intend to always use	BI-1	[5] with modification
	I intend to use it frequently	BI-2	
	I intend to use it in daily life	BI-3	
Use behavior (UB)	Use for wiring transactions	UB-1	[5] with modification
	Use for offline shopping	UB-2	
	Use for online shopping	UB-3	
	Use for international transactions (payment and transfer)	UB-4	

Table 2. Sample description

Criterion	Response	Count	Criterion	Response	Count
Age	<18	4	Region	Jakarta	66
	18–24	92		West Java	47
	25–34	78		Central Java	38
	35–44	29		East Java	34
	45–54	10		Yogyakarta	33
Gender	55–64	5	Educational Degree	Elementary school	2
	Male	95		Junior high school	3
	Female	123		High school	65
Know about Digital rupiah	Yes	208		Diploma	28
	No	10		Bachelor	112
			Master	8	

5. RESULTS AND DISCUSSION

5.1. Outer model test

5.1.1. Outer loading and cross loading

Table 3 shows the results for outer and cross loading. Outer loading is used to show the correlation between the indicator and its construct with an expected outer loading value higher than 0.708 [33]. The results show that every indicator has a loading factor value higher than 0.7 which means that every indicator is fit for their measurement model. Cross-loading is used to verify that every indicator has a loading factor that is higher on its construct than another construct. The results show that every indicator has a higher loading factor on its construct than other constructs.

Table 3. Outer and cross loading

	A	BI	EE	FC	H	HM	P	PE	PI	PV	SI	UB
A-1	0.874	0.705	0.578	0.567	0.624	0.612	-0.006	0.621	0.633	0.571	0.624	0.594
A-2	0.866	0.612	0.541	0.541	0.618	0.593	-0.118	0.549	0.616	0.511	0.601	0.564
A-3	0.863	0.665	0.575	0.528	0.561	0.575	-0.040	0.562	0.607	0.605	0.580	0.568
BI-1	0.656	0.841	0.549	0.556	0.700	0.630	-0.151	0.590	0.709	0.561	0.649	0.681
BI-2	0.653	0.845	0.628	0.568	0.673	0.634	-0.033	0.680	0.723	0.637	0.624	0.715
BI-3	0.637	0.864	0.606	0.584	0.715	0.651	-0.021	0.676	0.731	0.672	0.627	0.713
EE-1	0.529	0.527	0.828	0.659	0.556	0.618	0.145	0.713	0.556	0.648	0.520	0.649
EE-2	0.532	0.594	0.823	0.637	0.598	0.631	0.091	0.722	0.605	0.630	0.544	0.655
EE-3	0.550	0.612	0.825	0.686	0.623	0.691	0.111	0.755	0.654	0.702	0.552	0.687
EE-4	0.542	0.574	0.832	0.645	0.547	0.630	0.143	0.723	0.568	0.678	0.527	0.648
FC-1	0.549	0.609	0.670	0.835	0.560	0.539	0.010	0.650	0.566	0.574	0.615	0.627
FC-2	0.464	0.464	0.591	0.749	0.381	0.530	0.203	0.569	0.477	0.539	0.470	0.500
FC-3	0.492	0.508	0.695	0.824	0.516	0.600	0.147	0.629	0.542	0.604	0.591	0.597
FC-4	0.533	0.582	0.625	0.838	0.574	0.572	0.052	0.577	0.630	0.588	0.636	0.590
H-1	0.595	0.709	0.617	0.566	0.863	0.641	-0.052	0.610	0.725	0.614	0.616	0.698
H-2	0.530	0.680	0.599	0.551	0.832	0.600	-0.037	0.567	0.674	0.556	0.608	0.685
H-3	0.640	0.697	0.580	0.493	0.855	0.592	-0.113	0.576	0.707	0.599	0.617	0.669
HM-1	0.604	0.606	0.705	0.636	0.569	0.847	0.196	0.735	0.563	0.726	0.543	0.657
HM-2	0.568	0.606	0.665	0.609	0.573	0.860	0.075	0.705	0.629	0.685	0.545	0.673
HM-3	0.567	0.688	0.613	0.512	0.675	0.834	0.013	0.619	0.697	0.676	0.612	0.704
P-1	-0.025	-0.048	0.085	0.110	-0.049	0.053	0.879	0.043	-0.072	0.049	-0.011	-0.063
P-2	-0.083	-0.091	0.158	0.089	-0.104	0.093	0.923	0.166	-0.077	0.146	-0.057	0.010
P-3	-0.044	-0.083	0.135	0.123	-0.059	0.132	0.934	0.125	-0.042	0.132	-0.002	-0.005
P-4	-0.066	-0.026	0.159	0.120	-0.055	0.108	0.867	0.173	-0.061	0.136	-0.030	0.005
PE-1	0.544	0.652	0.716	0.600	0.611	0.652	0.087	0.849	0.624	0.659	0.557	0.721
PE-2	0.557	0.616	0.753	0.645	0.574	0.685	0.089	0.831	0.645	0.661	0.551	0.723
PE-3	0.609	0.653	0.750	0.657	0.580	0.664	0.136	0.807	0.621	0.731	0.542	0.701
PE-4	0.496	0.607	0.702	0.572	0.511	0.677	0.145	0.827	0.637	0.640	0.535	0.653
PI-1	0.626	0.716	0.686	0.652	0.668	0.640	-0.024	0.672	0.827	0.688	0.617	0.723
PI-2	0.530	0.668	0.492	0.444	0.698	0.562	-0.132	0.517	0.769	0.515	0.643	0.641
PI-3	0.588	0.694	0.585	0.573	0.661	0.628	-0.019	0.671	0.853	0.599	0.602	0.707
PV-1	0.508	0.595	0.691	0.610	0.554	0.723	0.211	0.736	0.625	0.856	0.493	0.696
PV-2	0.541	0.611	0.723	0.588	0.619	0.674	0.108	0.673	0.610	0.836	0.519	0.684
PV-3	0.591	0.650	0.626	0.596	0.583	0.683	0.019	0.651	0.633	0.840	0.511	0.628
SI-1	0.554	0.568	0.372	0.502	0.507	0.445	-0.054	0.408	0.534	0.333	0.800	0.451
SI-2	0.595	0.549	0.422	0.535	0.544	0.425	-0.112	0.439	0.587	0.418	0.824	0.501
SI-3	0.555	0.656	0.607	0.625	0.646	0.657	0.018	0.613	0.644	0.540	0.814	0.651
SI-4	0.501	0.580	0.639	0.599	0.584	0.584	0.046	0.617	0.637	0.605	0.738	0.656
UB-1	0.565	0.683	0.735	0.623	0.707	0.654	-0.031	0.740	0.713	0.684	0.631	0.866
UB-2	0.534	0.696	0.625	0.607	0.710	0.659	-0.020	0.642	0.714	0.642	0.604	0.816
UB-3	0.562	0.674	0.678	0.585	0.619	0.714	0.038	0.754	0.691	0.678	0.541	0.809
UB-4	0.556	0.708	0.628	0.572	0.649	0.655	-0.028	0.688	0.706	0.641	0.615	0.848

5.1.2. AVE, Cronbach alpha and composite reliability

The AVE is used to show that the data gathered have good validity and fulfilled the condition of convergent validity. A good AVE value should be higher than 0.5 [33]. AVE results from Table 4 show that all the variables have fulfilled the condition for convergent validity because AVE for every variable is higher than 0.5 with the lowest being PI constructs with 0.75 AVE. This indicates that every construct of this study can explain more than 75% of the item variance that makes up the construct.

Cronbach alpha shows good reliability for the variable if it is higher than 0.6 and lower than 0.95 [33]. Table 4 shows that all variables have good reliability because their Cronbach alpha value is higher than 0.6 individually. Composite reliability will show good reliability of the variable if it is higher than 0.6 and lower than 0.95 [33]. Table 4 shows that all the variables have higher than 0.6 values on both composite reliability rho_a and rho_c.

Table 4. AVE, Cronbach's alpha, and composite reliability value for every variable

Variable	AVE	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
A	0.836	0.753	0.838	0.901
BI	0.808	0.723	0.809	0.887
EE	0.846	0.684	0.848	0.896
FC	0.828	0.660	0.836	0.886
H	0.808	0.722	0.808	0.886
HM	0.804	0.717	0.806	0.884
P	0.927	0.813	0.996	0.945
PE	0.848	0.687	0.849	0.898
PI	0.750	0.667	0.753	0.857
PV	0.798	0.712	0.799	0.881
SI	0.805	0.631	0.808	0.872
UB	0.855	0.697	0.856	0.902

5.2. Inner model test

5.2.1. R², predictive relevance (Q²) and GOF

R² are indicators that show how much an independent variable affects dependent variables. R² can be separated into three categories which are 0.75 is substantial, 0.50 is moderate and 0.25 is considered as weak than 0.6 and lower than 0.95 [33]. Behavioral intention (BI) has an R² value of 0.819 and can be categorized as substantial which means that the independent variable that affects BI can explain 89% of change on the BI variable while the 11% of change will be explained by an external unknown factor. The R² value for use behavior (UB) is 0.792 and can be categorized as substantial which means that the independent variable that affects UB can explain 79% of change on the UB variable while the 21% of change will be explained by external unknown factors.

Q² values are used to validate the research model. Q² value consists of three ranges of small categories (higher than 0), medium (higher than 0.25), and large (higher than 0.5) [33]. The Q² value for BI is 0.367 and for UB is 0.384. Both have Q² values that are higher than 0.25 which means that they have a medium predictive value. The result indicates that the indicators that are used to measure BI and UB are valid and reliable predictors of the construct within this research model.

The GOF values are used to evaluate the fitness of the research model with the provided data. GOF values are divided into three categories which are small if equal to 0.1, moderate if equal to 0.25, and high if equal to 0.36. The GOF value for this study is 0.729 and can be categorized as high which means that the fitness of the research model and the data are high. This suggests that the research model used in this study is a good representation of the factors that affect the user acceptance of the digital rupiah in this study population.

5.2.2. Effect size (f²)

The f² value is used to evaluate the effect of independent variables on dependent variables. The f² has three categories which are substantial if the value is 0.35, moderate if the value is 0.15, and small if the value is 0.02. Table 5 shows the f² value that indicates the effect of every independent variable on their own designated dependent variables. Several factors are deemed to have a very small effect on the dependent variable, which is facilitating condition, hedonic motivation, privacy, price value, and social influence. Meanwhile, personal innovativeness seems to affect user behavior the most with its medium effect.

5.2.3. Hypothesis testing

The result from the path coefficient as shown in Table 6 provides p values that can be used to conclude the hypothesis for this research. P values for the hypothesis must be equal to or lower than 0.005 to be considered significant and accepted. The significance of each hypothesis is provided in Table 6 where there are eight significant hypotheses (H1, H2, H4B, H7A, H7B, H8A, H8B, H9A, and H11) meanwhile seven hypotheses (H3, H4A, H5, H6, H9B, H10A, and H10B) are rejected due to them being not significant.

Table 5. The f^2 value of every variable

Variable	BI	Criteria	UB	Criteria
A	0.075	Small	0.008	Small
BI			0.076	Small
EE	0.032	Small		
FC	0.001	Very small	0.080	Small
H	0.095	Small	0.058	Small
HM	0.002	Very small		
P	0.013	Very small	0.002	Very small
PE	0.061	Small		
PI	0.079	Small	0.125	Medium
PV	0.010	Very small		
SI	0.011	Very small		

Table 6. Hypothesis testing result

Hypothesis	The relationship between variables	Original sample (O)	T statistics	P values	Conclusion
H1	PE→BI	0.258	3.023	0.003	Significant
H2	EE→BI	-0.189	2.016	0.044	Significant
H3	SI→BI	0.083	1.313	0.189	Not significant
H4A	FC→BI	0.022	0.347	0.729	Not significant
H4B	FC→UB	0.192	2.776	0.006	Significant
H5	HM→BI	0.041	0.452	0.651	Not significant
H6	PV→BI	0.089	1.128	0.259	Not significant
H7A	H→BI	0.257	3.490	0.000	Significant
H7B	H→UB	0.215	3.011	0.003	Significant
H8A	PI→BI	0.264	3.292	0.001	Significant
H8B	PI→UB	0.349	4.380	0.000	Significant
H9A	A→BI	0.187	3.475	0.001	Significant
H9B	A→UB	-0.066	0.891	0.373	Not significant
H10A	P→BI	-0.053	1.526	0.127	Not significant
H10B	P→UB	0.023	0.522	0.601	Not significant
H11	BI→UB	0.279	3.378	0.001	Significant

5.3. Discussion

This study investigated the effect of various factors on the user acceptance of digital rupiah based on the UTAUT-3 model. The factors studied in this study are performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, personal innovativeness, awareness, and privacy. The result of this study was compared to the hypothesis and previous research presented in the hypothesis development section of this study.

First, performance expectancy’s significant impact on behavioral intention means that H1 is accepted. These results may imply users’ tendency to use digital rupiah if they think that digital rupiah can improve their transaction performance. Our study result is consistent with previous findings which indicate performance expectancy affects behavioral intention [5]. Based on these results, developers of digital rupiah should pay attention to making payments with digital rupiah faster and easier for users compared to using regular cash, e-wallet, or bank transfers.

The user-friendly aspect is also one of the concerns of the potential users of the digital rupiah as shown by effort expectancy’s significant impact on behavioral intention. This result means that H2 is accepted. This result is in line with the previous finding where effort expectancy affects behavioral intention [6], [7], [19] while contradicting the results of Söilen and Benhayoun [5] where effort expectancy did not affect behavioral intention CBDC. These contradictions may arise from Klaus’s sample characteristic which provides samples from every continent and thus provides general results from every user in the world meanwhile the sample characteristic of this research only focuses on Indonesia as the country that was developing digital rupiah. Indonesia’s population especially from the region where the sample was gathered has already been used to the effortless use of e-money as a means of payment. This means that in the case of the digital rupiah, effort expectancy does affect the behavioral intention of the digital rupiah. Based on these

results, developers of the digital rupiah should pay attention to the user experience of the digital rupiah so digital rupiah can be as user-friendly or more user-friendly compared to when using regular cash, e-wallet, or bank transfers as a way of payment.

The insignificant effect of social influence on behavioral intention indicates that users are not impacted by the ideas or behaviors of their social circle when it comes to the context of potential digital rupiah adoption. This means that H3 is not accepted. These findings contradict the previous study which supports the social influence impact on behavioral intention [17], [20]. This result implies that, in the case of the digital rupiah intention, the public of Indonesia as a potential user at this point time before the release of the digital rupiah does not seem to be affected by the persuasion or recommendation by their social circle. The stakeholders of the digital rupiah should consider focusing on individual user needs when promoting the digital rupiah rather than relying on social influence to help drive the intention to use digital rupiah.

The insignificant effect of facilitating conditions on behavioral intention to use digital rupiah implies that the potential user of digital rupiah behavior didn't change by the availability of facilitating conditions. This means that H4A is not accepted. These findings seem to contradict the previous study [21], [22] while these results seem in line with research done by Limantara *et al.* [17]. The explanation of these results was due to the effect of facilitating conditions on behavioral intention that are only substantial by consideration of moderation of age and experience [17]. The sample characteristics from this study come from the majority come from the young generation from the range of age 18 to 24 thus the effect of facilitating conditions on behavioral intention is not significant. The facilitating conditions, however, seem to have a significant impact on the use behavior of the potential user or H4B is accepted. These results are in line with a previous study by Söilen and Benhayoun [5]. This means that while the facilitating condition such as the infrastructure required to use digital rupiah and support service for digital rupiah is not necessary for the intention to use digital rupiah, the developer of digital rupiah still needs to make sure that the existence of supporting facilities and the user knowledge of resource needed to use digital rupiah are provided for the long-term usage of digital rupiah for the user that will use digital rupiah.

The insignificant influence of hedonic motivation towards the behavioral intention of digital rupiah indicates that H5 is not accepted. These results contradict previous findings on hedonic motivation effects on use behavior [24]. These results indicate that the potential users of the upcoming digital rupiah focus more on the practical side of digital rupiah rather than the potential enjoyment gained from the usage of digital rupiah. This contradiction might stem from the early stage of development of the digital rupiah where potential users might focus more on the usability and features of the digital rupiah on the decision to use digital rupiah more than the potential enjoyment of using digital rupiah. This means that the stakeholders of the digital rupiah should focus more on the practical side of the digital rupiah on development and advertisement campaigns.

Price value's insignificant impact on the behavioral intention of the digital rupiah means that H6 is not accepted. These results deviate from the previous finding where price value affects behavioral intention [25]. This contradiction from previous findings might stem from user unknowns on potential cost or price that users need to pay on the usage of digital rupiah to which there is still little information regarding the cost of usage of digital rupiah and will weigh more on available information of practical usage of digital rupiah to shape their usage decision. For this reason, the stakeholders of digital rupiah need to make sure that the potential user of digital rupiah will be provided adequate information on the potential cost or price needed to use digital rupiah.

The impact of habit on behavioral intentions and use behavior means that the user is more likely to express their desire to continue using digital rupiah if they have established a pattern or habit for using digital rupiah. This means that H7A and H7B are accepted. These findings are in line with the previous study [26]-[28]. From these findings, the stakeholders of the digital rupiah should provide a way to encourage the habit of the user of digital rupiah such as providing digital rupiah as a payment option in several stores and online shops to encourage long-term usage of digital rupiah.

Personal innovativeness effects on behavioral intention and use behavior of digital rupiah suggest that users who are more receptive to innovation are more likely to show the desire to use digital rupiah actively. This means H8A and H8B are accepted. These results are in line with previous studies [14], [29]. The long-term significance of personal innovativeness in influencing use behavior shows that innovative people are more likely to not only express an intention to use digital rupiah but also to actively utilize it. From the provided results, the stakeholders of digital rupiah should provide some innovation on the system of digital rupiah such as personal finance tools or reward programs that may attract users to use the innovation.

The impact of awareness on behavioral intention but not on use behavior means that the user is more likely to express a desire to use digital rupiah when their awareness of digital rupiah increases. This result is in line with the previous study where awareness also positively affects the behavioral intention of CBDC in China [6] and indicates that H9A is accepted. However, the increase in awareness does not necessarily mean that the user will utilize digital rupiah or H9B is not accepted. This means that awareness of digital rupiah

can't be the sole factor that affects the actual usage of digital rupiah but requires the existence of another factor. The stakeholders of digital rupiah should put effort into increasing the awareness of digital rupiah to the public to increase the public intention to use digital rupiah. The act of raising awareness should be complemented by other acts to increase another factor that affects the behavioral intention and use behavior of digital rupiah.

The insignificant effect of privacy on behavioral intention and use behavior means that in the context of digital rupiah adoption, privacy consent might not be the key motivator for users' intentions or actions. These results suggest that H10A and H10B are not accepted. This result is different from the previous study findings where privacy affects the user perception of CBDC [7] and privacy affects the behavioral intention of digital payment [34]. These results seem to be in line with another study done by Widyanto *et al.* [35] where perceived risk which is one of the user privacy constructs does not influence behavioral intention directly but requires the interference of trust as a mediating variable. This highlights the need for future research on the relationship between privacy, trust, and behavioral intention in the domain of CBDC. The takeaway from this result is that the stakeholders of the digital rupiah should put more emphasis on the practical benefit of using digital rupiah rather than emphasizing on privacy concerns of digital rupiah to boost the adoption of digital rupiah. In line with research results from Widyanto *et al.* [35], the stakeholders of the digital rupiah can consider enhancing public trust in digital rupiah as a potential factor that might influence the adoption rate of digital rupiah.

The significant effect of behavioral intention towards use behavior means that H11 is accepted. This implies that the user's intention to use digital rupiah is one of the factors that determine their use behavior in the long term. This means that the stakeholders of digital rupiah development should not ignore all the factors that significantly affect the behavioral intention to adopt digital rupiah, which in this study are performance expectancy, effort expectancy, habit, personal innovativeness, and awareness, in the development of it.

In conclusion, our research model highlights several factors that significantly influence the user acceptance of digital rupiah. The factors that affect the behavioral intention of digital rupiah significantly are performance expectancy, effort expectancy, habit, personal innovativeness, and awareness meanwhile the factors that affect the use behavior significantly are facilitating condition, habit, personal innovativeness, and behavioral intention. Factors that do not affect user acceptance of the digital rupiah are social influence, hedonic motivation, price value, and privacy, it is important to note that the limitation of this study, including the focus on a specific demographic in five provinces in Indonesia and the potential influence for other factor that can affect the user acceptance of digital rupiah.

6. CONCLUSION

The current development of the digital rupiah raises concern regarding the lack of understanding of its user acceptance. The lack of understanding of factors that affect user acceptance of digital rupiah might lead to failure of digital rupiah such as the case of eNaira which suffers from lack of user acceptance. This study tries to investigate factors that affected user acceptance of the digital rupiah using the UTAUT-3 model as the base combined with awareness and privacy as additional independent variables from the previous study. The respondents were gathered from five provinces in Java Island, namely Jakarta, West Java, East Java, Central Java, and Yogyakarta. The researched data gathered was analyzed through the application of PLS-SEM. Based on the analysis of the data gathered, the factors that affect the behavioral intention of digital rupiah significantly are performance expectancy, effort expectancy, habit, personal innovativeness, and awareness and the factors that affect the use behavior of digital rupiah are facilitating condition, habit, personal innovativeness, and behavioral intention. In conclusion, this study highlights important factors that influence user acceptance of the digital rupiah and recommendations for policymakers, Bank Indonesia, and developers of the digital rupiah. The stakeholders must leverage these findings to make targeted strategies aimed at enhancing the adoption of digital rupiah. This study also offers some insight into the expanding literature on user acceptance, especially based on the UTAUT-3 model usage. However, the author acknowledges that there are limitations in this study. The limitation of this study is the limited number of respondents and the region of respondents only limited to five provinces in Java Island. For future research, the authors suggest increasing the number of respondents to increase statistical robustness, including more regions to provide insights into regional-specific user acceptance factors, trying another model to measure user acceptance, for instance, the technology acceptance model (TAM), and also consider the relationship between privacy, trust, and behavioral intention.

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