ACCEPTANCE ANALYSIS OF 'X SUPER-APP' DIGITAL BANKING SERVICE THROUGH TAM AND TPB INTEGRATION

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Abstract: Society 5.0 has created a digital transformation phenomenon that provides new opportunities and challenges for all industries, including the banking industry. Bank X developed a digital banking service, namely X Super-App, to face the phenomenon. This research aims to examine the acceptance of X Super-App by identifying user characteristics and analyzing the influence of personal factors and social influence factors on X Super-App acceptance using the technology acceptance model and the theory of planned behavior variables. The sample in this study was 191 respondents selected by the purposive sampling technique. Data analysis used the SEM PLS method, and the descriptive method refers to questionnaires data, and literature studies. The results showed that personal and social influence factors significantly affected the acceptance of X Super-App. The proposed solutions are adding new features to the X Super-App and maintaining the stability of the X Super-App.

Keywords: digital banking service, digital transformation, technology acceptance, technology acceptance model, theory of planned behavior

Abstrak: Era industri 5.0 telah menciptakan fenomena transformasi digital yang memberikan peluang dan tantangan baru bagi seluruh industri, termasuk industry perbankan. Bank X mengembangkan sebuah layanan perbankan digital yaitu X Super-App sebagai strategi menghadapi fenomena tersebut. Penelitian ini dirancang untuk meneliti penerimaan X Super-App melalui identifikasi karakteristik pengguna dan analisis pengaruh faktor personal serta faktor pengaruh sosial terhadap penerimaan X Super-App menggunakan variabel technology acceptance model dan theory of planned behavior. Sampel dalam penelitian ini berjumlah 191 responden yang dipilih dengan teknik purposive sampling. Analisis data penelitian menggunakan metode SEM PLS dan metode deskriptif yang mengacu pada hasil penyebaran kuesioner, dan studi pustaka. Hasil penelitian menunjukkan bahwa faktor personal dan faktor pengaruh sosial berpengaruh signifikan pada penerimaan X Super-App. Solusi yang diajukan adalah menambahkan beberapa fitur baru pada X Super-App dan menjaga kestabilan X Super-App.

Kata kunci: layanan perbankan digital, penerimaan teknologi, technology acceptance model, theory of planned behavior, transformasi digital

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INTRODUCTION

Rapid technological developments have brought the world into a new era: Society 5.0. Society 5.0 creates a digital transformation phenomenon that focuses on human needs and is based on elements of technology (Mumtaha and Khoiri, 2019). Digital transformation is essential to facing business challenges and opportunities in Society 5.0. One industry that is urgent to carry out digital transformation is the banking industry. The opportunities and challenges of digital transformation in the banking industry are strengthened by the demographic shift. BPS (2021) states that the Indonesian population is dominated by the millennial generation (25.87%) and generation Z (27.94%), who are technology literate. In addition, the COVID-19 pandemic has also played a role in accelerating the process of transitioning to digital.

The increasing urgency of digital transformation in the banking industry is also triggered by non-bank financial institutions, namely financial technology companies (fintech). BI (2021) recorded the total value and volume of electronic money transactions in 2021 at 305 trillion rupiahs and 5.4 billion transactions, respectively. Not only that, there is currently a phenomenon of the presence of digital banks, which are considered capable of disrupting the Indonesian retail banking industry (Lidwiana and Ridhoi, 2020).

Banking companies are now competing to create the latest innovations according to the digital era's development to survive during competition in the financial sector. One of the banking companies that adopted a digital strategy in its business is Bank X. Bank X chose a digital strategy through the development of its mobile banking service called X Super-App. X Super-App is designed to be a financial super-app. From its first launch until the first quarter of 2022, X Super-App managed to get 11 million users, and total transactions increased by 49% YoY. X Super-App also received an award as The Best Financial Services Super App 2021 by CNBC Indonesia (CNBC Indonesia, 2021). Even so, the position of X Super-App in Indonesia's digital banking era is not without threats. According to the Top Brand (2022), X Super-App occupies the third position in the digital banking service category at the 2022 Top Brand Awards. The survey result shows that the three main competitors of X Super-App are BCA Mobile, BRI Mobile, and BNI Mobile, with positions. The strongest competitor is BCA Mobile which has the most significant percentage. In addition, the report of Data.ai (2021) strengthens the indications where it is reported that X Super-App occupies the fourth position as the most widely used digital financial service in Indonesia in 2020, while the first to third positions are MetaTrader 4, BCA Mobile, and RTI Business, respectively.

To increase the competitiveness of bank X which relies on the use of technology in services, research is needed to analyse the acceptability of super-apps and identify things that need to be improved. Hong (2019) states that the factors that influence intention to use mobile banking services are classified into two: 1) personal factors, which include perceived ease of use and perceived usefulness, and 2) social influence factors, which include subjective norms. Therefore, the TAM and TPB approaches that include these variables are used in research on the intention of using mobile banking services.

Research to determine customer acceptance of using X Super-App needs to be done so that the development of services provided by X Super-App can fit customer needs and expectations. Aboelmaged and Gebba (2013) stated that research on the acceptance model of mobile banking services is needed to determine the right strategy for developing mobile banking services.

The aims of the research to analyse the characteristics of customers who use X Super-App, analyse the influence of perceived usefulness and perceived ease of use on customer attitudes, to analyse the influence of attitudes, subjective norms, and behavioural controls on interest in using the X Super-App service, and to identify the effect of usage interest on acceptance of the X Super-App.

METHODS

This research uses online questionnaire distribution techniques to collect primary research data. Data collection was carried out from December 2021 to June 2022. The number of respondents in this research are 191 respondents who X Super-App users in Indonesia. The questionnaire consists of several questions, divided into four parts (screening; profiling; user behaviour of digital banking services, and behaviour of X Super-App users). The answer choices in the fourth part of the questionnaire are arranged based on a five-point Likert scale.

This research uses a purposive sampling technique. The criteria for respondents in this research are Bank X customers who use X Super-App. The research data were processed using descriptive analysis and Structural Equation Modelling-Partial Least Square (SEM-PLS).

The Technology Acceptance Model or TAM theory was first introduced by Davis (1989), which explains that the individual's perception and reaction to something will determine the individual's attitude and behavior. The TAM model measures user behavior towards information technology based on four aspects which can be seen in Figure 1.

Next, the Theory of Planned Behavior or TPB is a development theory of the Theory of Reasoned Action (TRA). Through TPB, Ajzen (1991;1980) believes that a person's intention in making decision is influenced by three aspects of belief, including 1) behavioral beliefs, 2) normative beliefs, and 3) control beliefs. Those aspect of beliefs are described in the TPB theoretical framework, which can be seen in Figure 2.

TAM and TPB are often used in understanding the acceptance of technology by looking at the intentions and behavior of users in using the technology (Cheng, 2019). Currently, there are more studies about the acceptance of technology that combines TAM and TPB into one model framework because the integration of the two theories are considered complementary and has better exploration power than the application of TAM and TPB separately (Bosnjak et al. 2006; Chen et al. 2007). Integration of TAM and TPB is a model that incorporates elements of TPB into the TAM model to complement the limitations of the existing TAM model (Afandi, 2021). TAM ignores social influence factors and behavioral control factors even though these two factors have been shown to affect technology use behavior significantly, and TPB can improve these deficiencies (Arif and Listyorini, 2020). On the other hand, the integration of TAM and TPB can improve the function of TPB elements in explaining and predicting behavior (Taylor and Todd, 1995). Afandi (2021) concludes that integrating TAM and TPB can help research technology acceptance while considering aspects of user behavior.
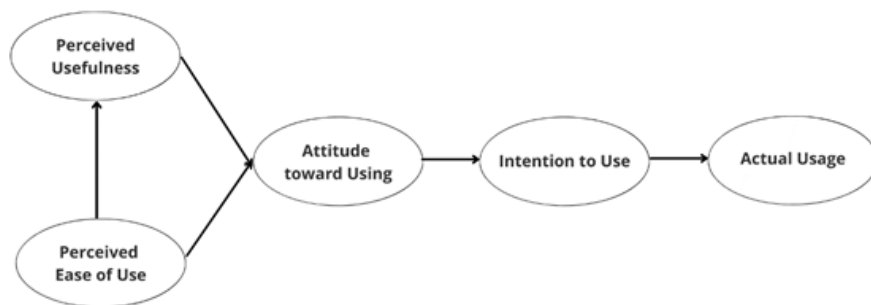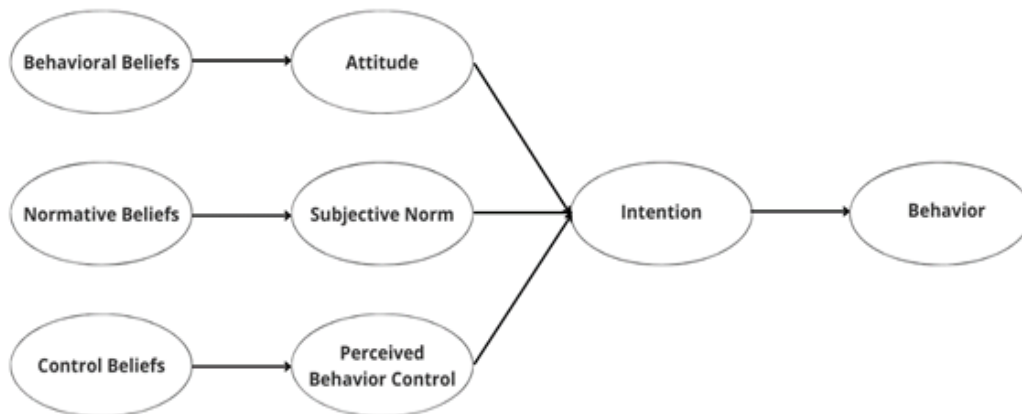
Figure 1. Technology acceptance model framework

Figure 2. Theory of planned behavior framework

Based on empirical studies that have been carried out, this study uses the TAM and TPB integration model to examine the customer acceptance factor for Bank X's digital banking services, namely X Super-App. The framework of the relationship between variables is presented in Figure 3 and the research hypotheses are:

H1: Perceived usefulness affects attitude.
H2: Perceived ease of use affects attitude.
H3: Attitude affects intention to use.
H4: Subjective norm affects intention to use.

H5: Perceived control behavior affects intention to use.
H6: Intention to use affects actual usage.

The independent latent variables of this study were perceived usefulness (PU), perceived ease of use (PEU), subjective norm (SN), and perceived behavioral control (PBC). The latent dependent variables of this study were attitude (ATT), intention to use (ITU) and actual use (AU). The relationship between variables can be seen in Figure 4.
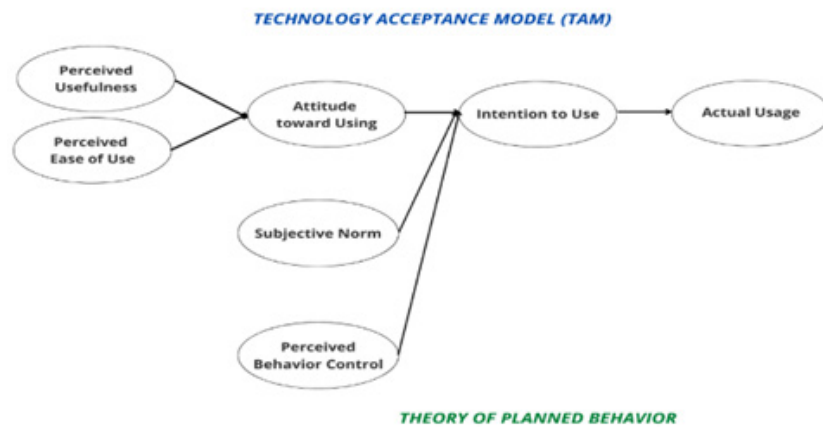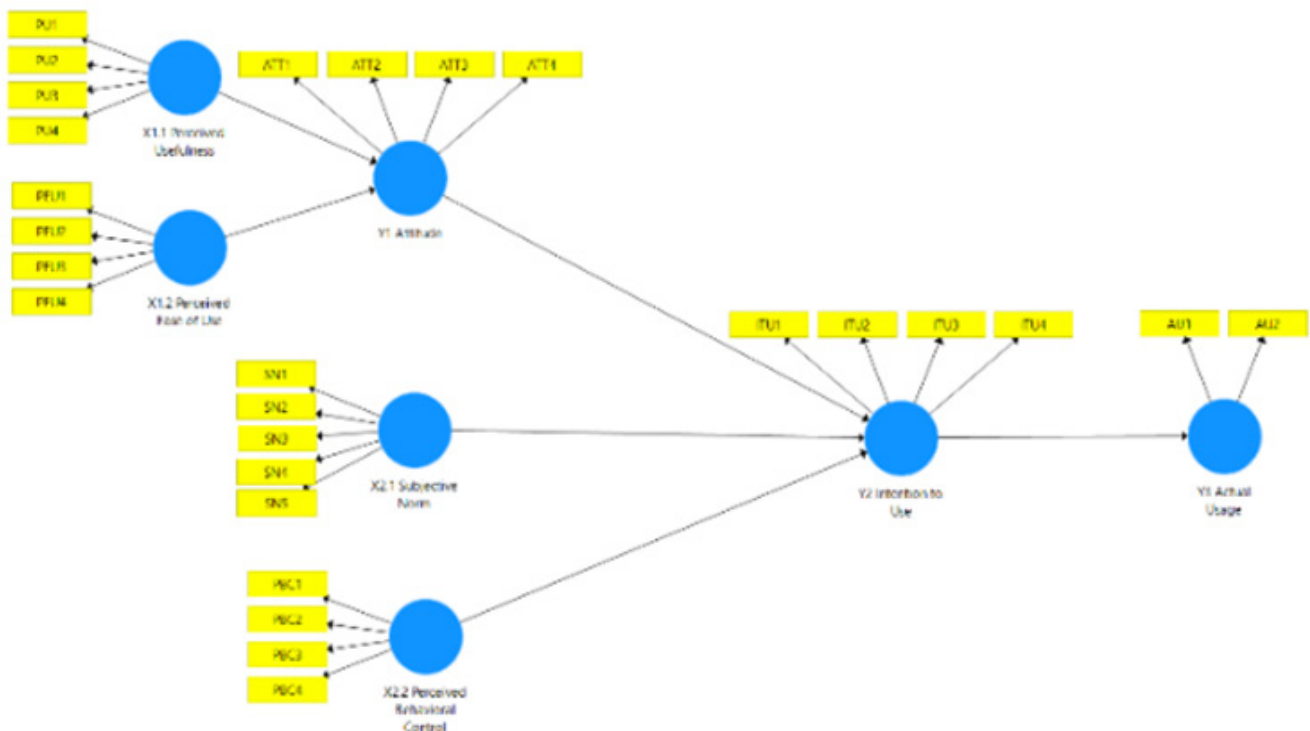

Figure 3. TAM and TPB integration

Figure 4. Research model

RESULTS

X Super-App

X Super-App is a development of the previous Bank X's mobile banking, which is prepared to become a financial super-app with three main aspects: sales, service, and onboarding. X Super-App is integrated with subsidiaries of Company X, state-owned companies, and start-up companies by implementing an open banking strategy to create a digital ecosystem. The features of X Super-App include quick access transactions, interbank transfers, bill payments, bill reminders, e-wallet top-up, e-wallet linkage, cardless withdrawal, online registrar, loan application, QR payment, investment features, auto debit savings, lifestyle transactions, branch service reservations, and so on.

Respondents Characteristics

This research took a sample of 191 respondents. The majority of respondents are women of generation Z (71%), unmarried status (77%), and domiciled in Greater Jakarta (44%) who work as students (42%) with the latest education at the high school level (48%). The majority of respondents have an average expenditure in the range of Rp. 1000.001-Rp. 2,900,000 per month (29%).

Based on the result, the majority of respondents (45%) were users of digital banking services in less than two years. That means the majority of respondents in this research are X Super-App new users. That is most likely the impact of the COVID-19 pandemic, which played a significant role in the surge in new user registrations for digital banking services by up to 200% (Schindler, 2021). Next, the types of transactions often used by respondents are dominated by top-up e-money and e-wallets (29%) and funds transfer (28%). This result is in line with a MarkPlus Inc. (2020) regarding the features of digital banking services that are most widely used today: top-up e-money and e-wallets, and also funds transfer. Then, the result shows that most respondents also use other digital banking services, namely BCA Mobile. That indicates BCA Mobile is the strongest competitor of X Super-App. The Data.ai report (2021) strengthens these indications where BCA Mobile is reported to be ranked second as the most widely used financial service in Indonesia during 2020, while X Super-App is ranked fourth.

SEM-PLS Analysis - Outer Model Measurement

In this research, the initial measurement model used 28 research indicators, but one indicator did not meet the requirements of convergent validity analysis through the loading factor value, so it had to be removed from the measurement model. In the new measurement model, 27 indicators have met the requirements (load factor value > 0.70) so that the model is declared valid (Table 1). Then, the results showed that all latent variables had an AVE value > 0.50, so all latent variables were valid (Figure 5).

Next, the result of the discriminant validity test show that all indicators have a cross-loading value of the latent variable that is greater than the cross value of other latent variables, so all indicators of this research are considered valid. Furthermore, in testing the reliability of latent variables, the result shows that all latent variables had composite reliability values > 0.70 and Cronbach's alpha values > 0.60, so all latent variables had met the composite reliability and Cronbach's alpha requirements and were considered reliable (Table 2).

SEM-PLS Analysis - Inner Model Measurement

The result on Table 3 shows that the attitude variable had an R^2 value of 0.452, which means that the various attitudes of respondents when using the X Super-App were able to be explained by individual factors (perceived usefulness and perceived convenience) of 45.2%. The remaining 54.8% was explained by other factors outside the factors studied. Furthermore, the variable of intention to use shows an R^2 value of 0.553. That means the diversity of respondents' intention to use the X Super-App can be explained by individual factors (perceived usefulness, perceived ease, attitude, and behavioral control) and social factors (subjective norms) is 55.3%. The remaining 44.7% is explained by other factors outside the factors studied. Last, the variable of actual use has an R^2 value of 0.304, which means that the respondent's decision to use X Super-App for daily transactions can be explained by the latent variable in this study of 30.4%. Other factors explain the remaining 69.6% outside of this study.

Table 1. Result for outer loading

| Variables	Indicators	Source
Perceived of Usefulness (PU)	X Super-App helps me in banking transactions.	Venkatesh and Davis (2000); Nurfitriani (2021)
	X Super-App boosts my effectiveness in doing banking transactions.	
	X Super-App makes my banking transactions faster.	
	X Super-App is useful for me.	
Perceived Ease of Use (PEU)	X Super-App is easily understood.	
	X Super-App is efficiently used.	
	X Super-App is handy when used.	
	X Super-App is making transactions easier.	
Attitude (ATT)	I enjoy using X Super-App.	Lee and Hong (2016); Nurfitriani (2021)
	I feel happy when using X Super-App.	
	I feel comfortable when using X Super-App.	
	Overall, I have a positive attitude when using X Super-App.	
Subjective Norm (SN)	People around me are using X Super-App.	Ajzen and Fishbein (1980); Hong (2019)
	People around me think X Super-App will be useful for me.	
	People around me think I need to use X Super-App.	
	People around me think I must use X Super-App.	
Perceived Behavioral Control (PBC)	I have resource to use X Super-App.	
	I have knowledge for using X Super-App.	
	I have the ability for using X Super-App.	
	I am completely in self-control when using X Super-App.	
Intention to Use (ITU)	I have an intention to use X Super-App.	Venkatesh and Davis (2000)
	I think I will continue using X Super-App.	
	I would recommend X Super-App to others.	
	I plan to use X Super-App for	
Actual Use (AU)	I often use X Super-App.	Venkatesh and Davis (2000)
	I use X Super-App for various transactions.	
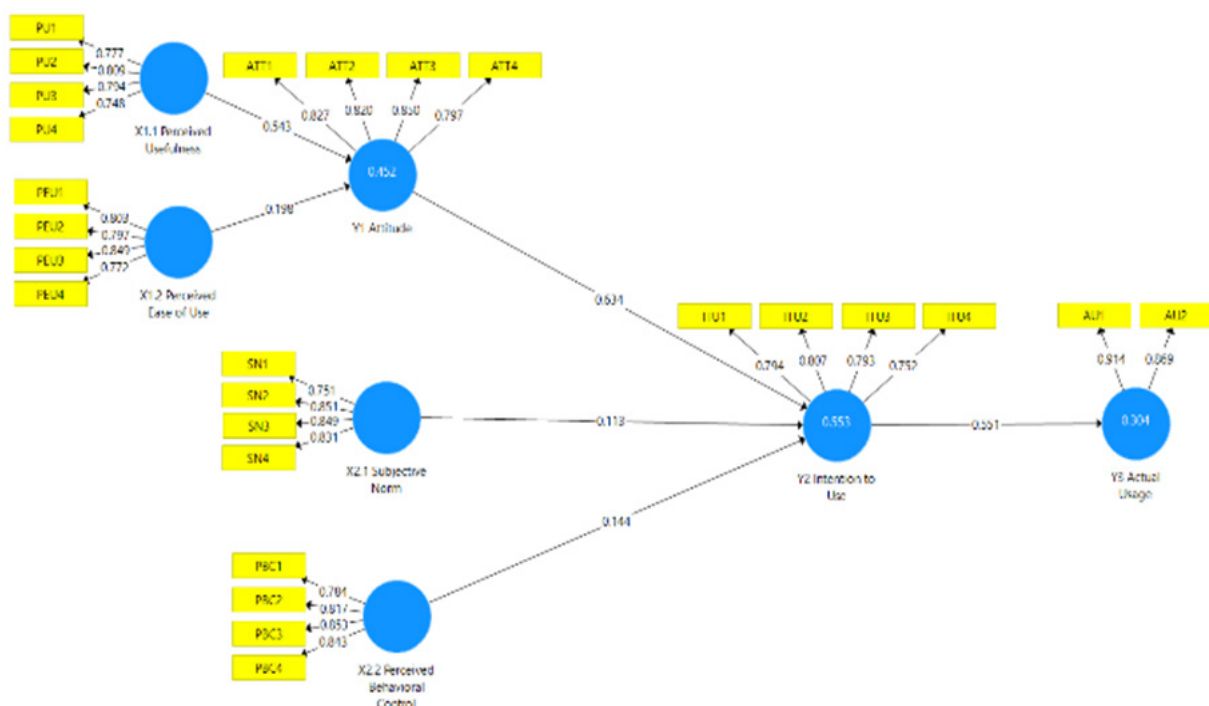
Figure 5. Final research model

Furthermore, the research hypothesis is tested through the PLS bootstrapping technique to get the path coefficient and t-statistic values. The path coefficient value, which ranges from -1 to 1, will indicate the direction of the relationship between latent variables, while the t-statistic value will show significant or insignificant influence between variables. If the t-statistic value is 1.96, then the effect is considered significant.

Table 4 shows the result of the model testing for hypotheses 1-6. The result shows that perceived usefulness (PU) and perceived ease of use (PEU) significantly affect users' attitude (ATT) towards using X Super-App. This research's result aligns with previous studies (Hong, 2019; Afandi, 2021). Users tend to have a positive attitude if they feel that a service can provide value and is easy to use (Hassan, Iqbal and Iqbal, 2018)this study examined the factors that affect the adoption of internet banking in Pakistan through the theoretical lenses of technology acceptance model (TAM). Then, Table 4 shows that attitude (ATT), subjective norm (SN), and perceived behavioral control (PBC) have a positive and significant effect on the intention to use X Super-App. These results are in line with previous research (Hassan, Iqbal and Iqbal, 2018) this study examined the factors that affect the adoption of internet banking in Pakistan through the theoretical lenses of technology acceptance model (TAM. Last, the result shows that intention to use (ITU) has a positive and significant effect on actual usage. According to Rahayu et al. (2017), the actual use of technology can be seen from the user's intention to continue using the technology to support their activities.

Based on the result, it can be concluded that all of the hypotheses of this research can be accepted. Table 4 shows that H1, H3, and H6 have more significant path coefficient and t-statistic values than the other hypotheses. Thus, perceived usefulness, attitudes, and intention to use more significantly affect led to actual use than perceived ease of use, subjective norm, and perceived control behavior.

This result means that users' perceptions about the usefulness value provided by X Super-App will significantly affect positive attitudes such as feeling comfortable, satisfied, and happy for users when transacting with X Super-App. Then this positive attitude will generate a sense of user desire to use X

Super-App in the future and affect users' actual use of X Super-App. Therefore, it can be concluded that the perception of usability is a crucial factor in the acceptance of digital banking service, so it is necessary to increase the value of usefulness provided to users.

Furthermore, if the explanation above is associated with the respondents' characteristics, it can be said that users dominated by generation Z choose to transact using X Super-App because the usefulness value provided by X Super-App can make banking transactions more efficient. This statement is in line with the Populix (2022) which states that one of the biggest reasons Generation Z uses digital banking services is that it can make transactions more efficient. X Super-App offers various excellent features integrated with various cross-industry services in its digital ecosystem, so X Super-App can facilitate users to carry out any transactions in one application. Then, the perceived usefulness variable has path coefficient values and t-statistic values much larger than the perceived ease of use variable. This result means that the benefit value had more influence on realizing positive feelings than the value of the ease of use. This result indicates that most users from generation Z with an undergraduate and high school education background who are studying in college (students) tend to be technology literate and easy to learn new technology. Therefore, the perception of difficulty or ease of use is not the main focus as long as the technology can provide services that meet their needs.

Table 2. AVE, composite reliability, and Cronbach's Alpha value

Latent Variables	AVE	Composite Reliability	Cronbach's Alpha
PU	0.612	0.863	0.789
PEU	0.649	0.881	0.820
SN	0.675	0.892	0.841
PBC	0.680	0.895	0.843
ATT	0.679	0.894	0.842
ITU	0.619	0.867	0.795
AU	0.795	0.886	0.745

Table 3. R-squared (R2) value of the research

Variable	R^2 Value
Atitude (ATT)	0.452
Intention to Use (ITU)	0.553
Actual Use (AU)	0.304

Table 4. Bootsrapping test result

Hypothesis	Path Coeff.	T-stat.
PU → ATT (H1)	0.543	7.522
PEU → ATT (H2)	0.198	2.554
ATT → ITU (H3)	0.634	10.436
SN → ITU (H4)	0.113	2.164
PBC → ITU (H5)	0.144	2.054
ITU → AU (H6)	0.551	8.964

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the results of the descriptive analysis, it can be concluded that most respondents in this study were Generation Z women, single, domiciled in Jakarta, Bogor, Depok, Tangerang, and Bekasi who work as students or university students with the last education at SMA/SMK level. The majority of these respondents have an average expenditure in the range of Rp. 1000,001-Rp. 2,900,000 per month. Respondents were dominated by new X Super-App users who had used the service for less than 2 years with the most transactions being money filling and electronic wallets as well as inter-bank transfers. The majority of respondents in this study also use other digital banking services besides the X Super-App, namely BCA Mobile. The results of the PLS SEM analysis show that personal factors and social influence factors have an influence on the acceptance of the X Super-App. Personal factors of perceived usefulness and perceived convenience have a significant effect on individual attitudes. Personal attitude and behavioral control factors have a significant influence on intention to use. The social influence factor of subjective norms also shows a significant influence on intention to use. Then interest in use has a significant effect on actual use. Based on the research results, several managerial implications are recommended, including 1) adding features and facilities to the X Super-App; 2) maintain system stability on the X Super-App to prevent service interruptions; 3) carry out marketing strategies through product referral programs; and 4) providing in-app tutorials on the X Super-App.

Recommendation

This research uses variables of Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB), which are divided into two factors: personal factors and social influence factor. Personal factors are perceived usefulness, perceived ease of use, attitude, and perceived behavioral control. Meanwhile, the social influence factor is subjective norm. For future research, it is recommended to add new factors or variables, such as mobile banking service quality and brand image, to measure those factors' influence on X Super-App acceptance.

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