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The Impact of The Utilization of Electronic Payment Moderated by Financial Technology Innovation on Financial Technology Payment in Indonesia

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Abstract

Information technology is currently developing rapidly and covers many aspects of people's lives. The development of information technology also includes in the financial sector. The development of information technology in the financial sector is referred to as Financial Technology. The purpose of this study was to test and analyze The Utilization of Electronic Payment moderated by Financial Technology Innovation on Financial Technology Payment in Indonesia. The theories used in this study are the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), Electronic Payment, Financial Technology, Diffusion of Innovation Theory, and Financial Technology Payment. Diffusion of Innovation (DOI) Theory in 1962, making it one of the earliest social science theories. A theory known as "diffusion of innovations" aims to explain how, why, and how quickly new concepts and technologies proliferate. Everett Rogers made the theory more widely known in his 1962 book Diffusion of Innovations. The research method used in this research is quantitative methods with primary data obtained from distributing questionnaires using Google Form. The data were collected from 316 respondents. The questionnaire was structured using a Likert Scale of 1-5 (Strongly Disagree - Strongly Agree). The research data were analyzed using the Structural Equation Model (SEM) with WarpPLS7. The results showed that The Utilization of Electonic Payment accepted with P Value < 0.01 to Financial Technology Payment in Indonesia. The Information Technology Innovation variable can act as a moderating variable between The Utilization Electronic Payment and Financial Technology Payment in Indonesia with P Value = 0.01

Keywords: The utilization of Electronic Payment, Financial Technology Innovation, Financial Technology Payment, Technology Acceptance Model, Unified Theory of Acceptance and Use of Technology.

1. Introduction

In today's digital age, the utilization of information technology (IT) is now beginning to be employed in all areas. Such areas as economy, social, culture, health, and education have already begun to use IT for more convenient services in their business transactions processes e.g., payment transaction. Cashless transactions are favored over cash transactions.

It is the innovations from the utilization of IT that greatly influence developments in the business world and bring many changes in the field of payment transaction processing referred as Financial Technology (K. Gai et.al. 2018). An example of Financial Technology utilization can be seen from the cashless financial transaction enabled from IT-based applications. These applications may be accessed through the Internet connection using a mobile device or even a smartphone, and provide competitive advantages (C. Baden-Fuller and S. Haefliger, 2013) for their speed and ease of transactions (B. Nicoletti, 2017, S. Chishti and J. Barberis, 2016).

As a result, the utilization of Financial Technology by the general public has surged in popularity. Also, a sector in the financial industry, Financial Technology is used to facilitate trading, business interactions, and services provided to customers (Micu, 2016). This is relevant to Bank Indonesia Regulation Number 18/40/PBI/2016 that supports Financial Technology to make financial transactions more convenient for the general public. In this study, Financial Technology is discussed in detail as a payment transaction method.

Svensson, et. al (2019) stated that financial ecosystems are transforming around new financial technology, or “fintech”. Thus, (Thakor, 2020) describes a literature review on Financial Technology and its interaction with banking. This includes innovations in payment systems (including cryptocurrency), credit markets (including P2P lending), and insurance, with Blockchain acting as a

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smart-contract. There are 3 phases to Financial Technology, and as it was launched in 2018, Financial Technology has become a new threat to financial institutions. Financial Technology changes the way people pay, then everyone paid with cash/ credit card/ debit card, now payments are based on real-time processing.

Since the COVID-19 outbreak, the utilization of Financial Technology as a payment method has risen in widespread acceptance. People choose not to carry cash which is known as a cashless culture. It is evidenced by data from Bank Indonesia figures showing that the value of retail transactions in 2017 was 12 trillion Rupiah has a significant increase compared to 2021, 305 trillion Rupiah.

Along with the Information Technology development that runs simultaneously with the development of Financial Technology, it is necessary to conduct research in the field of Financial Technology. As a medium for payment, Financial Technology must be accepted and be used by the public. To measure the use of Financial Technology, this research used the Unified Theory of Acceptance and Use of Technology (UTAUT) model developed by Venkatesh et.al (2003). Apart from using UTAUT, this research also uses the Technology Acceptance Model (TAM) (Davis, F.D 1989). In the use of information technology, innovation also has an important role. Thus, this research used Diffusion of Innovation Theory written by Rogers (1983) .

Innovation is a new idea that has never existed before, which is created by an individual or company to provide convenience in a business process, especially in Financial Technology and Financial Payment.

This study, therefore, will test and analyze whether innovation in the field of information technology has an influence on financial technology payments, as moderated variable, respectively, in Indonesia.

2. Theory

2.1. *Technology Acceptance Model*

The Technology Acceptance Model (TAM) was introduced by Davis (1989). TAM has an influence on people's acceptance for the use of information technology. The question arising is what causes people to approve or reject information technology. From this question, the variables Perceived Usefulness and Perceived Ease of Use appear are generated.

2.1.1. *Perceived Usefulness*

Perceived usefulness is the variable used to measure the extent to which a person believes that using information technology will improve performance. From this understanding, if someone perceives that the information technology used can help their work, then this information technology will be used. Conversely, if someone perceives that this information technology does not provide performance improvement or even provides no benefit, then this information technology will not be used.

2.1.2. *Perceived Ease of Use*

Perceived ease of use is defined as the variable to measure the extent to which a person believes the utilization of technology makes his/ her activities easier to carry out (Rogers, 1983; Davis, 1989). This is in line with the meaning of ease, which is to get thing done easier.

2.2. *Unified Theory of Acceptance and Use of Technology (UTAUT)*

UTAUT was introduced by Venkatesh et.al (2003) with the components as follows:

2.2.1. *Performance Expectancy*

Performance Expectancy is defined as the level of technology use that will provide benefits to consumers to improve performance.

2.2.2. *Effort Expectancy*

Effort Expectancy is the level of ease associated with the use of information technology by consumers.

2.2.3. *Social Influence*

Social influence is the extent to which consumers are influenced by the surrounding environment (e.g., family and friends) to use information technology.

2.3. *Facilitating Conditions*

Facilitating conditions refer to a consumer's perception of resources and support available to perform an action or behavior.

2.4. *Electronic Payment*

Electronic payment or internet payment is a payment method through the Internet connection (Polkowski, 2013). This method can be used in three ways: firstly, making remote card payments using the internet; secondly, making a transfer via online-banking debit, i.e., those who make payments through portal after completing the authentication process; thirdly, making payment through an electronic payment provider. This allows consumers set up their own personal account. The account is usually for traditional payment methods.

Fatonah et.al (2018) wrote that system of payment has grown along with technological advances significantly. Thus, electronic payment can transform to financial technology payment (Palmie, et.al 2020)

2.5. *Financial Technology (FinTech)*

(Gulamhuseinwala et al., 2015: and (Schueffel, 2016: 45) define Financial Technology as a financial industry that applies technology to improve financial activities and uses a combination of business model innovation and financial services that have been disrupted. Phuong et.al (2022) in his research, wrote that services in Financial Technology require innovation in technology.

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2.6. *Diffusion of Innovation Theory*

Rogers (1983) stated that diffusion is a process of an innovation communicated through certain channels at a certain time among members of a social community. Diffusion is also considered as a change that occurs in a social structure and function in society. Meanwhile, innovation is an idea, practice, or object that is considered new by other individuals or organizations. The characteristics of innovation are relative advantage, compatibility, complexity, triability, and observability.

2.7. *Financial Technology Payment*

According to Phuong et al. (2022), Financial Technology payment services refer to financial technology services and applications that involve domestic and international payment transaction services. Unlike the traditional ones, financial payment services involve financial institutions to perform payment services that do not depend on payment services at the financial institution itself but are carried out personally by users of financial payment services (Kang, 2018).

Recent research highlights the growing importance of financial technology and electronic payment systems in modernizing financial services. Financial Technology innovations are driven by perceived usefulness and enjoyment, with electronic word-of-mouth moderating adoption (Al-Okaily et al., 2021).

Digital payment technologies are classified into four categories: card payment, e-payment, mobile payment, and cryptocurrencies, each facing social, economic, technical, awareness, and legal challenges (Khando et al., 2022). In the context of tertiary institutions, the adoption of electronic payment systems has been shown to positively impact financial sustainability, with technological capabilities mediating this relationship (Madu et al., 2022). These advancements in Financial Technology and electronic payments are crucial for improving financial management practices and promoting financial inclusion in developing economies

From the literature review, this research model is built, as below:

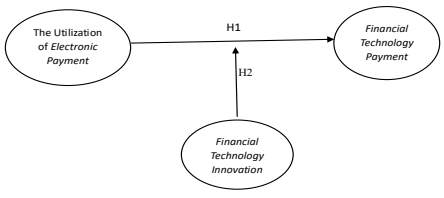

Figure 1: Research Model

On basis of the research model, the research hypotheses are then built:

H1 : The utilization of Electronic Payment has a positive effect on Financial Technology Payment

H2 : The utilization of Electronic Payment is moderated by Financial Technology Innovation and has a positive effect on Financial Technology Payment.

3. Methods

As causal research, this research tests the cause-effect relationship between variables (Sekaran and Bougie, 2016, 44). In the research, the variables to be tested whether there is a cause-effect relationship are between Electronic Payment Usage with moderation of Financial Technology Innovation and Financial Technology Payment. This study will also test whether there is a direct or indirect effect between variables.

This research employed quantitative methods as the research design. The primary data were collected using a questionnaire. The respondents of this research are people aged 18 to 50 years old. All respondents reside in Indonesia. Indonesia is a developing country where Financial Technology has been used in big cities (such as Medan, Jakarta, Surabaya, Denpasar) for daily activities.

The questionnaires were distributed using Google Form with the aim that if there are fields left unfilled, the respondents cannot proceed to the next statement. The number of respondents who filled out the questionnaire was 316. Of the 316 completed questionnaires, none failed. The questionnaire is structured on a Likert scale from 1-5 to indicate Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5). Table 1 explains the Variable Measurement along with its indicators.

Table 1. Variable Measurement

No.	Variabel	No.	Indikator	Referensi
1	The Utilization of *Electronic Payment* (X)	1	Compatibility	Rogers (1983), Venkatesh (2003)
		2	Ease of Use of Financial Technology	Rogers (1983), Davis (1989)
		3	Services	(Venkatesh, et.al (2003)
		4	Social Factors	(Venkatesh, et.al (2003)
		5	Benefits	Davis (1989)
2	Financial Technology Innovation (Y)	6	Access Capability	(Venkatesh, et.al (2003)
		7	Technology Innovation	(Venkatesh, et.al (2003)
3	Financial *Technology Payment* (Z)	8	Trust	McKnight et al. (2002), McKnight et. al (2009)

No.	Variabel	No.	Indikator	Referensi
		9	Support	McKnight et al. (2002), McKnight et. al (2009)
		10	Ease of Use of Financial Technology Payment	Rogers (1983), Davis (1989)

4. Results and Discussions

The Structural Equation Model (SEM) is used in this study's data analysis along with WarpPLS 7. SEM can examine how two variables are related. The data analysis process involves two basic components. It is first and foremost an assessment known as the measuring model. This analysis aims to evaluate the research model by validating the structural model and ensuring the validity and reliability of a research instrument. The second is the hypothesis test.

4.1 *Demographic Profile of Respondents*

The respondents have utilized Financial Technology solutions in one or more Indonesian industries. Data gathering took part between August 2022 to December 2022. The survey responses were used to get the results. Table 2 provides demographic profile of respondents who took part in this study.

4.2 *Evaluation of the Measurement Model*

Validity and reliability tests are procedures that must be carried out in quantitative research.

Validity Test and Reliability Test

The validity test used is Convergent Validity to indicate the level of measurement or indicator that has a positive correlation with the indicator for the same construct. To test convergent validity, Outer Loading of each indicator and Average Variance Extracted (AVE) are done.

Validity Test

Convergent Validity

The research measurement of convergent validity used AVE (Average Variance Extracted). An AVE value of 0.50 or more indicates that on average a construct can explain more than half of the variance of its indicators (Barclay et.al). From the convergent validity measurement test results, the AVE values of variables X (Electronic Payment Usage), Y (Information Technology Innovation), and Z (Financial Technology Payment) are 0.632; 0.681; 0.668. Therefore, variables X, Y, Z can explain more than half of the variance of their indicators. The results show in Table 3 Validity Test and Reliability Test.

Reliability Test

Composite Reliability

Composite Reliability that meets the criteria of reliable is between 0 and 1. The higher the value indicates the higher the reliability. Composite Reliability of 0.60-0.70 is acceptable for exploratory research, while for further research stages, the acceptable criteria are 0.70-0.90. From the Composite Reliability test results, the value for variables X (Electronic Payment Usage), Y (Information Technology Innovation), and Z (Financial Technology Payment) is 0.957; 0.895; 0.947. This shows that the variables used in this study are reliable. The results show in Table 3 Validity Test and Reliability Test.

Table 2. Demographic Profile of Respondent

Respondents Profile	Categories	Frequencies	Percentages
Sex	Male	96	30%
	Female	220	70%
	Total	316	100%
Age	17 - 25 years old	281	89%
	26 - 30 y.o	3	1%
	31- 35 y.o	9	3%
	≥ 36 y.o	23	7%
	Total	316	100%
Educational Background	Senior High School	258	82%
	Associate Degree	2	1%
	Bachelor Degree	45	14%
	Master Degree	10	3%
	Doctorate Degree	1	0%
	Total	316	100%
Jobs	Senior High School/ University Student	208	66%
	Business owner	22	7%
	Director	4	1%
	Manager	15	5%
	Supervisor	6	2%
	Staff	53	17%
	Others	8	3%
	Total	316	100%
Length of Service	≤ 2 years	257	81%
	3 - 5 years	25	8%
	6 - 10 years	9	3%
	≥ 11 years	25	8%
	Total	316	100%

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Cronbach's Alpha

The acceptable Cronbach's Alpha value is in the range of 0.70-0.90 From the test results obtained, the Cronbach's Alpha results for variables X (Electronic Payment Usage), Y (Information Technology Innovation), and Z (Financial Technology Payment) are 0.951; 0.843; 0.937. This shows in table 3, that the variables used in this study are reliable so that they can be used in this study.

Cronbach's alpha is a conservative measure to produce lower reliability values. Conversely, composite reliability tends to over-estimate the reliability of internal consistency, resulting in higher reliability values. Therefore Hair., et.al (2022) suggests combining both in the reliability assessment. When analyzing and assessing internal consistency reliability, true reliability generally falls between Cronbach's alpha (as the lower bound) and composite reliability (as the upper bound). The results of the Validity Test and Reliability Test can be seen in Table 3 Validity Test and Reliability Test.

Table 3. Validity Test and Reliability Test

Variabel	AVE	Composite Reliability	Cronbach's Alpha
X	0,632	0,957	0,951
Y	0,681	0,895	0,843
Z	0,668	0,947	0,937

Table 4 shows the discriminant validity analysis for three variables, i.e., variables X (The Utilization of Electronic Payment), Y (Information Technology Innovation), and Z (Financial Technology Payment) with their respective indicators. This measurement is seen from the bold diagonal.

Variable X with each indicator has a value greater than variable Y and variable Z, while variable Y has a value greater than variable X and variable Z, and variable Z has a value greater than variable X and variable Y. These indicate that the discriminant validity has been achieved.

Discriminant Validity

Discriminant validity indicates the degree to which a latent variable or construct is truly different from other constructs as indicated by empirical research results. Discriminant validity is measured by looking at cross-loadings, Table 4.

Table 4. Cross Loading

	X	Y	Z
X1.1	**0.764**	0.518	0.521
X1.4	**0.719**	0.497	0.56
X2.1	**0.795**	0.5	0.509
X2.2	**0.839**	0.54	0.596
X2.5	**0.75**	0.534	0.558
X3.1	**0.846**	0.582	0.616
X3.2	**0.82**	0.552	0.589
X3.3	**0.695**	0.44	0.553
X4.3	**0.708**	0.395	0.523
X5.1	**0.858**	0.581	0.638
X5.2	**0.86**	0.587	0.611
X5.3	**0.828**	0.597	0.632
X5.4	**0.824**	0.579	0.592
Y1.1	0.577	**0.862**	0.601
Y1.2	0.486	**0.854**	0.515
Y1.3	0.483	**0.783**	0.497
Y2.1	0.671	**0.798**	0.705
Z1.4	0.48	0.472	**0.699**
Z2.1	0.687	0.655	**0.854**
Z2.3	0.574	0.669	**0.776**
Z2.4	0.674	0.601	**0.824**
Z2.5	0.57	0.538	**0.762**
Z3.1	0.644	0.582	**0.894**
Z3.2	0.633	0.607	**0.887**
Z3.3	0.545	0.499	**0.828**
Z3.4	0.52	0.533	**0.813**

Table 5: Correlation between Variables - Discriminant Validity

	X	Y	Z
X	**0.795**	0.671	0.727
Y	0.671	**0.825**	0.701
Z	0.727	0.701	**0.817**

Table 5 shows the discriminant validity analysis for 3 variables, i.e., variables X (the utilization of Electronic Payment), Y (Information Technology Innovation), and Z (Financial Technology Payment). The discriminant validity value is seen from the bold diagonal value. Variable X has a value greater than variable Y and variable Z, variable Y has a value greater than variable X and variable Z, variable Z has a value greater than variable X and variable Y Variable X with each indicator has a value greater than variable Y and variable Z, while variable Y has a value greater than variable X and variable Z, and variable Z has a value greater than variable X and variable Y. These indicate that the discriminant validity has been achieved. These indicate that discriminant validity has been met.

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4.3 Structural Model Evaluation

Table 6 shows the Structural Model Evaluation measurement which measures R-squared, Adjusted R-squared, Q-squared, and Full Collinearities VIF.

R-squared (R2) is a measure to predict the strength of the relationship between your model and the response variable. The value of R2 ranges from 0 to 1. The greater the value of R2 indicates a higher level of predictive accuracy. R2 values of 0.75; 0.50; 0.25 can be assessed as predictive power at substantial, moderate, and weak levels (Hair et.al 2022).

The result of measuring R2 is 0.469, which indicates that the predictive accuracy of variables X, Y, and Z is moderate.

Adjusted R-squared (adjusted R^2)

The extent of the model's ability to explain variations in the dependent variable is measured by the adjusted R-squared (R^2). The adjusted R^2 value ranges from 0 to 1. If the adjusted R^2 value is low and close to 0, it means that the ability of the independent variables to explain the dependent variable is very limited. However, if the adjusted R^2 value is high and close to 1, it means that the research model can provide almost all the information needed to predict variations in the dependent variable (Ghozali. 2018, 97).

The test of adjusted R^2 shows a result of 0.466 so that it can be interpreted that variable Z can be explained by variables Y and X by 46.6%. The remaining 53.4% can be explained by other variables outside this study.

Q-squared (Q^2)

Q-squared (Q^2) is used for the assessment of predictive validity or relevance of a set of latent predictor variables on criterion variables. The value of Q^2 must be greater than 0 (zero).

Q^2 shows a result of 0.541 indicating a good predictive validity value, because it is above 0 (zero).

Full Collinearity VIF

It is the result of testing full collinearity which includes vertical and lateral multicollinearity. The criterion for the full collinearity test is that the value must be lower than 3.3 (Kock, 2013).

The Full Collinearity VIF test results for variables X (the utilization of Electronic Payment), Y (Information Technology Innovation), and Z (Financial Technology Payment) show the results of 2.575; 2.279; and 2.578 lower than 3.3 so it can be concluded that the model is free from vertical and lateral collinearity problems.

Table 6: Latent Variabel Coefficient

Variabel	R-squared	Adjusted R-squared	Q-Squared	Full Collinearities VIF
X				2,575
Y				2,279
Z	0,469	0,466	0,541	2,578

4.4 Hypotheses Test Results

This research was developed by making hypotheses from the literature review. The hypotheses testing used WarpPLS 7. The results of the hypothesis testing are shown in

Table 7 by looking at the Path Coefficient and P Values.

H1 shows that the hypothesis is accepted with a P value < 0.01. This means that there is a positive influence between the utilization of Electronic Payment and Financial Technology Payment.

The hypotheses test result confirmed that the performance of businesses and financial technology have benefited from the use of electronic payment systems. E-payments improve bank financial performance, according to studies, increasing return on equity and assets while cutting expenses (Awwad, 2021).

H2 shows that the hypothesis is accepted with a P value = 0.01. This means that Information Technology Innovation can act as a moderating variable with a positive influence on Financial Technology Payment. The hypotheses test result confirmed Fichman et.al (2014) that information technology innovation as a driver of process innovation. Financial technology innovations are transforming the landscape of digital payments and financial services. Financial Technology has been shown to significantly enhance consumer satisfaction with non-cash payment methods (Chen & Chen, 2021).

Tabel 7: Hypothesis Test Results

Hypothesis	Path Coefficient	P Values	Result
H1	0,696	< 0,01	Accepted
H2	0,012	= 0,01	Accepted

5. Conclusion

Based on the study's findings, financial technology payment is positively impacted by the using of electronic payments. The test's outcome indicated that P < 0.01. It indicated that the theory was approved. Furthermore, that payment system has greatly expanded in tandem with technology advancements. Financial technology payment and electronic payment usage are moderated by information technology innovation. According to the test results, P Value is = 0.01. It indicated that the

theory was approved. Innovations in financial technology are changing how financial services and digital payments are provided.

The limitation of study was that the respondents were not evenly distributed. The largest respondents are still around the millennial age, which in fact has a greater preference for the use of information technology both for daily activities and for financial activities. It is estimated that respondents who filled out the questionnaire were respondents who have already used information technology in their daily activities. But on the other hand, in the field of work, the largest respondents are students, who rarely use information technology to support financial transaction activities on a large scale. Therefore, in the disparity of respondents, there may still be bias to answer this research question. The recent research was viewed from the perspective of the utilization of Electronic Payment, Information Technology Innovation and Financial Technology Payment. From the results of the Adjusted R^2 showing the results of 46.6%, it can be interpreted that 53.4% can be explained by other variables outside this study. Therefore, for future research might analyze consumers' trust to adopt Financial Technology Payments, risks in the adoption of Financial Technology Payments, and the development of Financial Technology Payments. To overcome the occurrence of bias in future research, it might be possible to expand the range of respondents' distribution of, not only using Google Forms. Respondents might also answer using paper or manually, which can be guided by researchers if respondents do not understand the statements submitted.

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