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Artificial Intelligence Performance Role in the Use of Virtual Credit Cards

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ABSTRACT

This research aims to examine the effect of security, privacy, and reputation on trust and perceived risk; the moderating role of AI performance between the effect of security, privacy, and reputation on trust and perceived risk; the effect of trust and perceived risk on attitude and attention; and the effect of attitude on attention in the context of the use of virtual credit cards. Research samples include 126 respondents. Variables measurement uses 7-Likert scale questionaries spread to social media. Data analysis uses path analysis. Based on data analysis, security, privacy, and reputation have effects on trust and perceived risk to use virtual credit cards. AI performance moderates the effect of security, privacy, and reputation on trust and perceived risk to use virtual credit cards. Trust and perceived risk also have effects on attitude and intention to use virtual credit cards. Furthermore, the attitude has an effect on intention to use virtual credit cards. First, this research contributes to behavioral economics theory to capture the problem of AI and virtual credit card. Second, this research provides new evidence of virtual credit card as cross-border payment in Indonesia. Third, this research uses AI performance to fill previous gap. Fourth, this research captures new updates of AI development since AI always changes from time to time.

Keywords: Customer Attitude, Customer Intention, Virtual Credit Card, AI Performance
JEL Classifications: G21, D91, O33

1. INTRODUCTION

Financial Stability Board (FSB) sets the roadmap as the steps to achieve the cross-border payment policy for countries of G20 (He, 2021). Most Indonesian people still use other alternatives for cross-border payment, such as wired transfers through bank services, e-wallets, and virtual credit cards. However, wired transfer of cross-country transactions is costly, while e-wallet can only cover the transaction where funder and beneficiary have the same e-wallet services. A virtual credit card is a payment alternative using the credit card method; however, the mechanism is not based on loans but based on money debited from customers' savings. Furthermore, there is no obligation for customers to pay debt payments in the future. Virtual credit card is an international payment alternative since most international e-commerce shops joined with credit card merchants such as Visa and MasterCard. In Indonesia, Indonesian Credit Card Association reports that 75 percent of credit card holders use credit cards for digital payment (Kontan, 2020). A survey of Katadata Insight Center also finds that the use of credit cards in virtual accounts become the second-best choice after e-wallet payment by customers to do the digital payment.

One of the critical issues in digital payment is the guarantee of security to protect customers from risks to build customers' trust and avoid potential customer losses (OECD, 2020). Salo and Karjaluoto (2007) find that customers' protection and trust explain all factors of transaction security, privacy problem, application security, and customers' attitude that relate to privacy protection in digital payment. Customers' trust also can give an impact on customers' attitudes toward the use of payment features (Flavián et al., 2006). On one hand, Gefen et al. (2003) find no evidence of a consistent relationship between perceived risk on customers' intention to use digital payment. On the other hand, Ha et al. (2021) find that perceived risk has a negative effect on the intention to use

digital features in e-commerce where higher perceived risk leads customers to engage less in e-commerce digital. The existence of virtual credit cards in Indonesia leads to trust and perceived risk become important to be examined to determine the customers' attitudes and intentions to use virtual credit cards.

Inconsistent findings of digital payment and behavior lead this research to uses artificial intelligence (AI) performance for mobile banking application. AI implementation is critical for mobile banking application (Payne et al., 2021) to help customers to get higher quality financial service (Prentice et al., 2020). Sanayei et al. (2023) find that AI performance leads customers to use mobile banking.

This research aims to examine the effect of determinant factors of customers' behavior (security, privacy, and reputation of virtual credit card providers) on determining customers' attitudes and intentions. This research also aims to examine the moderating role of AI performance. Based on behavioral economics theory, external factors (security, privacy, reputation, AI performance) determine individuals' responses (trust and perceived risk) and lead them to make a decision (intention and behavior).

This research has some contributions. First, this research contributes to behavioral economics theory to capture the problem of AI and virtual credit card. Second, this research provides new evidence of virtual credit card as cross-border payment in Indonesia. Third, this research uses AI performance to fill previous gap. Fourth, this research captures new updates of AI development since AI always changes from time to time. For example, previous AI implementation still on the immobile machines (Al-Okaily et al., 2023; Pattnaik et al., 2024; Zhu et al., 2024), while current AI implementation can be found in mobile application, such as virtual creadit card.

2. LITERATURE REVIEW

2.1. Behavioral Economics Theory

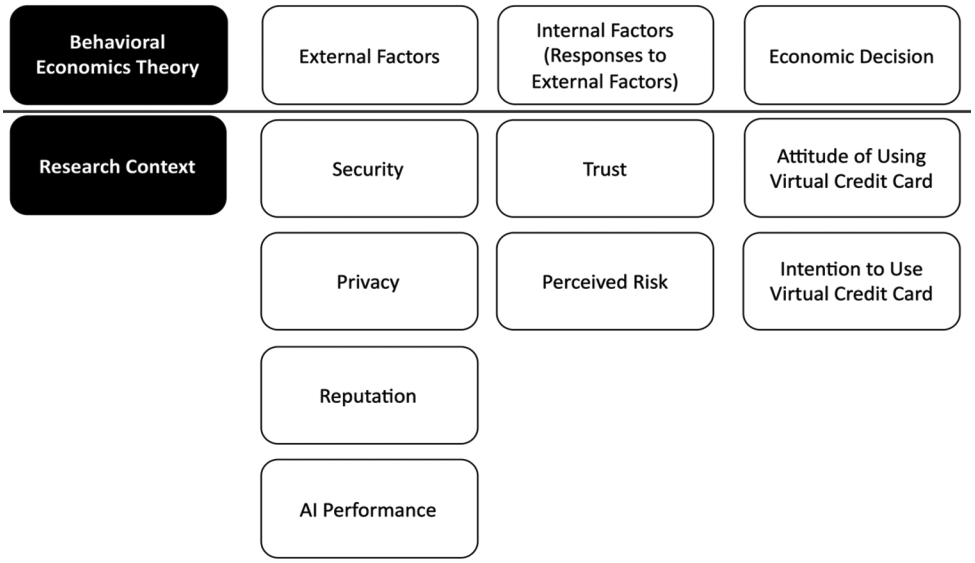
This research uses behavioral economics theory to capture the use of virtual credit card. Behavioral economics theory explains that economic decision is made rationally by considering external and internal factors (Aoujil et al., 2023). In the context of AI, external factor includes service quality that is provided by AI. Internal factor is the assessment of AI performance (Aoujil et al., 2023). In the context of virtual credit card, external factors include security, privacy, reputation, and AI performance. Internal factors of the use of virtual credit card are trust and perceived risk of virtual credit card. Economic decision is captured by attitude and intention to use virtual credit card. The framework of behavioral economics theory can be seen as in Figure 1.

2.2. Cross-Border Payment and Virtual Credit Card

On one hand, the acceleration of international trading and financial integration has been done and it still gives progression in the 1990s-2000s (Tran and Nguyen, 2022). On the other hand, cross-border payment is still costly, ineffective, and inaccessible for most people, especially in emerging and lower-income countries. Based on 112 countries, Bank for International Settlements (2020) find that the average cost of an international wired transfer is $200 which captures a 10 percent higher cost than a local wired transfer. In addition, the cost of wired transfer to developed countries is above US$550 billion in 2019. At the same time, 50% of adult people in developing countries have no access to bank accounts such as in South Africa, North Africa, and Middle East countries (Bank for International Settlements, 2020).

In Indonesia, cross-border payment is established to facilitate transactions outside Indonesia. First, cross-border payment can be done by banking wired transfer. However, the wired transfer is costly, and customers obligate to pay the additional charges (Tim TvOne, 2022). Second, cross-border payment can be done by e-wallet such as PayPal, Neteller, Alipay, Apple Pay, and Google Pay. On the other hand, e-wallet has limitations such as the obligation where the related parties must have the same e-wallet application (Tim TvOne, 2022). Third, cross-border payment can be done by credit card. The known-well merchants of credit cards that support international transactions are Visa and MasterCard. Credit card payment is also costly since customers

Figure 1: The framework of behavioral economics theory



must pay the debt and its interest in the future (Tim TvOne, 2022). Fourth, cross-border payment can be done by virtual credit card. Compared to the conventional credit card method, a virtual credit card is implemented by taking the money out from the deposit account, so customers do not have to have an obligation to pay the debt and its interest in the future. A virtual credit card uses a deposit account in the form of a credit card by providing the card name, number, expired date, and CVV number (Tim TvOne, 2022)

2.3. Hypotheses Development

2.3.1. Security, trust, and perceived risk

Virtual credit card payment is used by the application of e-banking or mobile banking. The application is provided by the bank. In this case, the security of the application is important to avoid data theft by credit card merchants or e-commerce stores. Based on previous studies (Shin, 2021), security is identified as a significant risk in digital payment. Lian and Yen (2013) also find that payment method provider considers security as the main risk where there is potential for data theft and abuse.

Higher security is expected to prevent merchants or e-commerce stores to steal customers data that are used in the application of e-banking or mobile banking. Higher security is also expected to prevent e-commerce store to steal customer data when transaction by virtual credit card is made. The more secure the use of virtual credit cards is, the customers have more trust to use virtual credit cards as payment methods. Secure virtual credit card also leads customers to have a lower risk. Riquelme and Román (2014) find that security reduces perceived risk in digital payment and increases customers trust.

- H_{1a}: Security has an effect on customers' trust to use virtual credit card
- H_{1b}: Security has an effect on customers' perceived risk to use virtual credit card.

2.3.2. Privacy, trust, and perceived risk

Regarding the quality of protection, the ability to protect customers' privacy is also an indicator of security. Privacy refers to the bank's ability to secure the customers' private information when customers use virtual credit cards. Shankar et al. (2020) suggest that control and monitoring by banks are important to prevent theft and leakage of customers' private information.

Bank is expected to have the ability to protect customers' private information from opportunist behavior by merchants or e-commerce stores that use credit card payment methods. Higher privacy protection can lead to lower information stealing, especially when customers submit the virtual credit card submission into an e-banking or mobile banking application, and also when customers do the credit card transaction in the e-commerce payment system. Higher privacy protection can make customers to have trust in the use of virtual credit cards as their payment alternative. Higher privacy protection also reduces perceived risk when customers use virtual credit cards. Chang et al. (2018) and Xu et al. (2011) find that privacy reduces perceived risk in digital payment and leads customers to have higher trust.

- H_{2a}: Privacy has an effect on customers' trust to use virtual credit card
- H_{2b}: Privacy has an effect on customers' perceived risk to use virtual credit card.

2.3.3. Reputation, trust, and perceived risk

Reputation is considered an important factor that can bring customers' trust (Fedorko et al., 2017). The reputation of digital payment providers indicates customers' trust that the digital payment provider can perform professional, honest, and profitable service (Doney and Cannon, 1997; Jin et al., 2008; Teo and Liu, 2007).

Customers tend to choose banks that have higher reputations when customers submit and use virtual credit cards. Banks with higher reputations tend to maintain their reputation by providing higher quality service including the service of virtual credit cards. The quality of virtual credit card service determines customers' trust and leads customers to evaluate the service will bring lower risk. Jarvenpaa et al. (2000), Kabadayi et al. (2011), and Teo and Liu (2007) find a positive relationship between reputation and customers' trust.

- H_{3a}: Reputation has an effect on customers' trust to use virtual credit card
- H_{3b}: Reputation has an effect on customers' perceived risk to use virtual credit card.

2.3.4. Moderating role of AI performance

AI implementation has some benefits for mobile banking users. First, AI can give relevant advices and inputs for customers' needs since AI close to human intelligence (Zhu et al., 2024). Second, AI can do risk management and mitigate uncertainties that are faced by customers (Doumpos et al., 2023; Zhu et al., 2024). Third, AI can solve complex problems (Alnaser et al., 2023). Fourth, in the context of financial and banking, AI can capture financial risks and needs that are faced by customers (Polireddi, 2024). AI benefits come from AI creation that is based on learning process of financial industry, companies, organization, and human behavioral of managers and employees (Kim and Song, 2024; Mohammed et al., 2024; Rodrigues et al., 2022). AI can affect customers' responses since AI determine service quality to solve customers' problems (Alnaser et al., 2023).

- H_{4a}: AI performance moderates the effect of security on customers' trust to use virtual credit card
- H_{4b}: AI performance moderates the effect of security on customers' perceived risk to use virtual credit card
- H_{4c}: AI performance moderates the effect of privacy on customers' trust to use virtual credit card
- H_{4d}: AI performance moderates the effect of privacy on customers' perceived risk to use virtual credit card
- H_{4e}: AI performance moderates the effect of reputation on customers' trust to use virtual credit card
- H_{4f}: AI performance moderates the effect of reputation on customers' perceived risk to use virtual credit card.

2.3.5. Trust, attitude, and intention

Trust refers to the condition where one party (customer) agrees to give authority to another party (service or product provider) to do significant action on behalf of the customer regardless of how much control level has over the customer on the service or product provider (Mayer et al., 1995). Trust comes from honesty in mutual-benefit transactions (Qureshi et al., 2009). Most customers' behavior is determined by their level of trust (Pavlou and Fygenson, 2006).

In the context of this research, trust refers to customers' belief in banks to fulfill customers' needs of virtual credit cards securely and effectively. Customers trust increases customers' positive attitude toward virtual credit cards as a payment method. When customers believe, they tend to have the intention to use virtual credit cards. Jarvenpaa et al. (2000) and Chen and Dibb (2010) find that customers' trust leads to good relationships and positive attitudes between customers and service or product providers. Zhang et al. (2014) also find that trust leads customers to have purchase intention.

- H_{5a}: Customers' trust has an effect on attitude towards the use of virtual credit card
- H_{5b}: Customers' trust has an effect on intention to use virtual credit card.

2.3.6. Perceived risk, attitude, and intention

Perceived risk is an individual belief that relates to benefit and loss (Jarvenpaa et al., 2000). In the context of digital payment, perceived risk is a factor that can interfere with the success of transactions since customers are always proactively aware of the risk in the process of service or product evaluation (Forsythe and Shi, 2003). Perceived risk happens since customers tend to not examine the real risk and have no opportunity to examine the service when they execute the transaction process. Perceived risk comes from customers' fear and worries about virtual credit card performance that will not fulfill their expectations.

Potentials of leakage of information, data stealing, failure of privacy protection, and reputation loss become some risks that have to be taken by customers in the use of virtual credit cards. Risk and uncertainty lead customers to have bad attitudes and create a negative relationship between risk and attitude (Apanasevic et al., 2016). Risk makes customers uncomfortable when they use virtual credit cards. Risk also comes from the gap between customers' expectations and virtual credit card performance such as transaction rapidity, easiness, and comfort (Forsythe and Shi, 2003). If customers receive virtual credit card performance as they expected, customers will have the intention to use virtual credit cards. Tran and Nguyen (2022) find that perceived risk affects customers' attitudes and purchase intentions.

- H_{6a}: Perceived risk has an effect on attitude towards the use of virtual credit card
- H_{6b}: Perceived risk has an effect on intention to use virtual credit card.

2.3.7. Attitude and intention

Positive attitude is a reflection of an individual intention to do specific actions (Tran and Nguyen, 2022). Customers' attitude captures positive feel and emotion, especially feelings and emotion that relate to the use of virtual credit card. Customers' attitude relates to the expectation that is established based on product or service performance to give profit and benefit to customers. Fulfilled expectation increases customers' intention to use a virtual credit card as their digital payment method. Tran and Nguyen (2022) find that a positive attitude by customers makes customers tend to use a product or service.

- H_7: Attitude has an effect on intention to use virtual credit card.

3. DATA AND METHOD

3.1. Respondents

Respondents are determined by the purposive sampling method by using certain criteria. First, the sample includes individuals who have bank accounts in the banks of Mandiri, BNI, BCA, and CIMB Niaga that implement virtual credit cards in Indonesia. Second, individuals already install and use applications of mobile banking. Third, individuals who already use the features of virtual credit cards at least once. This research reaches respondents by using all kinds of communication tools and social media such as email, WhatsApp, Facebook, Instagram, Twitter, and LinkedIn in 2023. There are 126 respondents as in Table 1.

Table 1 shows that there are 48% male respondents and 52% female respondents. Based on respondents' age, 57% respondents have age 18-25 years, 36% respondents who have the age of 26-33 years old, and 7% respondents who have aged above 33 years old. Respondents are dominated younger people since they tend to have more technology acceptance, especially in the use of mobile banking (Merhi et al., 2021).

There are 14% respondents who have high school degrees, 7% respondents who have diploma degrees, 50% respondents who have bachelor's degrees, and 14% respondents who have master or doctoral degree. Based on respondents' affiliation, there are 7% students, 36% private office employees, 29% public office employees, 14% entrepreneurs, and 13% respondents with other affiliations. Based on the bank accounts, 43% respondents have an account in Bank Mandiri, 36% respondents have an account in BNI, 50% respondents have an account in BCA, 43% respondents who have the account of CIMB Niaga, and 14% respondents who have an account in other banks.

Table 1: Respondents

Characteristic	Category	Respondent	Percentage of total
Gender	Male	60	48
	Female	66	52
	Total	126	100
Age	18-25 years old	72	57
	26-33 years old	45	36
	Above 33 years old	9	7
	Total	126	100
Education	High school degree	18	14
	Diploma degree	9	7
	Bachelor degree	63	50
	Master or doctoral degree	36	29
	Total	126	100
Affiliation	Student	9	7
	Private office employee	45	36
	Public office employee	37	29
	Entrepreneur	18	14
	Others	17	13
	Total	126	100
Bank Account (one respondent can have more than one)	Bank Mandiri	54	43
	BNI	45	36
	BCA	63	50
	CIMB Niaga	54	43
	Others	18	14

Source: Proceed data

3.2. Research Variables

In this research, variables include security, privacy, reputation, trust, perceived risk, attitude, intention, AI performance. By following Tran and Nguyen (2022), this research uses the 7-Likert scale questionaries. This research uses questionaries by Tran and Nguyen (2022) that have been adjusted to the context of the use of virtual credit cards. Details of questionaries can be seen in Table 2.

Table 2: Research questionaries

Variables	Indicators	Code
Security	Adequate privacy	SC1
	Not affect financial losses	SC2
	Protected by the best tool	SC3
	Payment is safe	SC4
	Can handle problems related to hackers	SC5
Privacy	Information will be confidential	PR1
	Information will be protected adequately	PR2
	Suitable to obtain personal information.	PR3
	Not obtain personal information unnecessarily	PR4
	Not take advantage of personal information on purpose	PR5
Reputation	Banks are big companies	RP1
	Banks are extremely famous	RP2
	Banks have considerable reputation	RP3
Trust	Have ability and specialization to conduct the transactions as expected	TR1
	Access to necessary information to appropriately handle the transactions	TR2
	Completely fair when handling the transactions for customers	TR3
	Ensure in the service policies for customers when conducting the transactions	TR4
	Open and welcome the needs of customers	TR5
	Make good efforts to handle all the concerns of customers	TR6
	In general, banks are reliable	TR7
Perceived Risk	Entering the private information shall be not safe	RI1
	It is extremely risky when provide the private information	RI2
	Afraid of entering the information	RI3
	Entering personal information shall be not secured	RI4
	Entering legal data shall be not safe	RI5
	Afraid of providing personal information	RI6
Attitude	Like the thought of using virtual credit card	AT1
	Using virtual credit card to shop shall be a good idea	AT2
	Using virtual credit card shall be a wise decision	AT3
Intention	Continue to return to virtual credit card	IN1
	Consider making purchases by using virtual credit card in the next 3 months	IN2
	Consider making purchases by using virtual credit card in the next year	IN3
	For purchasing transactions, I am using virtual credit card	IN4
AI Performance	Mobile banking helps comprehensively and rapid	AI1
	Mobile banking understands my instructions	AI2
	Mobile banking can communicate with the way that I understand	AI3
	Mobile banking can manage and perform the tasks automatically for my needs fulfilment	AI4
	Mobile banking can do adaptation with previous condition	AI5

Source: Tran and Nguyen (2022)

3.3. Data Analysis

Data analysis uses path analysis by using structural equation modeling. This research also performs validity, reliability, and goodness fit of tests. Furthermore, the hypotheses test uses coefficient and t-statistics values of path analysis.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Table 3 shows the average value of security is 5.28 with a standard deviation of 1.07. The average value of privacy is 5.30 with a standard deviation of 1.14. The average value of reputation is 5.75 with a standard deviation of 1.10. The average value of trust is 5.61 with a standard deviation of 0.38. The average value of perceived risk is 3.38 with a standard deviation of 1.11. The average value of attitude is 5.75 with a standard deviation of 0.94. The average value of intention is 5.53 with a standard deviation of 0.74. The average value of AI performance is 5.41 with a standard deviation of 0.89.

4.2. Validity and Reliability

The validity test uses the values of factor loading and AVE, while the reliability test uses the values of composite reliability and alpha. Based on Table 4, the value of factor loading for all indicators is above 0.7 which indicates that all indicators in the questionaries are valid. The value of AVE for all indicators is above 0.5 which indicates that all indicators in the questionaries are valid. The value of composite reliability is above 0.7 while the value of alpha is above 0.6 which indicates that all indicators in the questionaries are reliable.

4.3. Model Fitness

Table 5 shows the measurements of model fitness. The value of CMIN/DF is 1.131 (insignificant) which is below 103. 675. It indicates that the model has a sufficient number of samples. The values of GFI, AGFI, CFI, and NFI are above 0.9 which indicates the model fit with the data. The value of SRMR is 0.041 which is below 0.08. It indicates that there is no problem with the misspecification model. The value of RMS theta is 0.101 which is below 0.12. It indicates that there is no correlation between error terms.

The value of R-square for the effect on trust is 0.638 which indicates trust to use a virtual credit card can be explained by 63.8% of AI performance, security, privacy, and reputation while 36.2% of trust is explained by other variables. The value of R-square for the effect on perceived risk is 0.373 which indicates a perceived risk to use a virtual credit card can be explained by

Table 3: Descriptive statistics

Variables	Average	Standard deviation
Security	5.28	1.07
Privacy	5.30	1.14
Reputation	5.75	1.10
Trust	5.61	0.38
Perceived risk	3.38	1.11
Attitude	5.75	0.94
Intention	5.53	0.74
AI performance	5.41	0.89

Source: Proceed data

37.3% of AI performance, security, privacy, and reputation while 62.7% of perceived risk is explained by other variables. The value of R-square for the effect on attitude is 0.336 which indicates attitude towards the use of virtual credit cards can be explained 33.6% by trust and perceived risk while 66.4% of attitude is explained by other variables. The value of R-square for the effect on intention is 0.699 which indicates an intention to use a virtual credit card can be explained 69.9% by trust, perceived risk, and attitude while 30.1% of intention is explained by other variables. Based on the values of R-square, the highest explanatory power occurs in the effect of trust, perceived risk, and attitude on intention to use virtual credit cards.

Table 4: Validity and reliability tests

Variables	Code	Factor loading	AVE	Composite reliability	Alpha
Security	SC1	0.837	0.762	0.892	0.878
	SC2	0.817			
	SC3	0.844			
	SC4	0.856			
	SC5	0.827			
Privacy	PR1	0.820	0.698	0.944	0.865
	PR2	0.845			
	PR3	0.871			
	PR4	0.859			
	PR5	0.798			
Reputation	RP1	0.828	0.761	0.902	0.863
	RP2	0.880			
	RP3	0.808			
Trust	TR1	0.809	0.787	0.903	0.846
	TR2	0.859			
	TR3	0.784			
	TR4	0.833			
	TR5	0.809			
	TR6	0.860			
	TR7	0.789			
Perceived risk	RI1	0.811	0.706	0.888	0.798
	RI2	0.867			
	RI3	0.789			
	RI4	0.831			
	RI5	0.840			
	RI6	0.829			
Attitude	AT1	0.864	0.693	0.909	0.818
	AT2	0.794			
	AT3	0.860			
Intention	IN1	0.791	0.733	0.893	0.816
	IN2	0.823			
	IN3	0.822			
	IN4	0.842			
AI performance	AI1	0.865	0.741	0.902	0.877
	AI2	0.888			
	AI3	0.876			
	AI4	0.821			
	AI5	0.809			

Source: Proceed data

Table 5: Model fitness

Test	Value	Cut-off
CMIN/DF	1.131	Below 103.675
GFI	0.961	Above 0.9
AGFI	0.955	Above 0.9
CFI	0.966	Above 0.9
NFI	0.964	Above 0.9
SRMR	0.041	Below 0.08
RMS theta	0.101	Below 0.12
R-Squared of Trust	0.638	
R-Squared of Perceived Risk	0.373	
R-Squared of Attitude	0.336	
R-Squared of Intention	0.699	

Source: Proceed data and Henseler et al. (2014)

4.4. Path Analysis

Table 6 shows that the path of security on trust (Security -> Trust) has a coefficient of 0.697 with a t-statistic of 3.027 (significant in 0.01). The result shows that higher security leads to higher trust. It indicates that H_{1a} is accepted where security has an effect on customers' trust to use virtual credit cards. The path of security on perceived risk (Security -> Perceived Risk) has a coefficient of −0.280 with a t-statistic of 2.472 (significant in 0.01). The result shows that higher security leads to lower perceived risk. It indicates that H_{1b} is accepted where security has an effect on customers' perceived risk to use virtual credit cards.

The path of privacy on perceived risk (Privacy -> Perceived Risk) has a coefficient of 0.411 with a t-statistic of 2.748 (significant in 0.01). The result shows that higher privacy leads to higher trust. It indicates that H_{2a} is accepted where privacy has an effect on customers' perceived risk to use virtual credit cards. The path of privacy on perceived risk (Privacy -> Perceived Risk) has a coefficient of −0.109 with a t-statistic of 2.218 (significant in 0.05). The result shows that higher privacy leads to lower perceived risk. It indicates that H_{1b} is accepted where privacy has an effect on customers' perceived risk to use virtual credit cards.

The path of privacy on reputation (Reputation -> Perceived Risk) has a coefficient of 0.316 with a t-statistic of 2.636 (significant in 0.01). The result shows that a higher reputation leads to higher trust. It indicates that H_{3a} is accepted where reputation has an effect on customers' perceived risk to use virtual credit cards. The path

Table 6: Path analysis

Path	Coefficient	t-statistic	P-values
Security -> Trust	0.697	3.027	0.002*
Security -> Perceived Risk	−0.280	2.472	0.007*
Privacy -> Trust	0.411	2.748	0.003*
Privacy -> Perceived Risk	−0.109	2.218	0.014**
Reputation -> Trust	0.316	2.636	0.005*
Reputation -> Perceived Risk	−0.407	2.934	0.002*
Security × AI Performance -> Trust	0.331	2.027	0.041**
Security × AI Performance -> Perceived Risk	−0.102	2.072	0.032**
Privacy × AI Performance -> Trust	0.221	2.048	0.035**
Privacy × AI Performance -> Perceived Risk	−0.231	2.018	0.045**
Reputation × AI Performance -> Trust	0.222	2.036	0.042**
Reputation × AI Performance -> Perceived Risk	−0.205	2.034	0.042**
Trust -> Attitude	0.412	2.657	0.004*
Trust -> Intention	0.208	2.359	0.010**
Perceived Risk -> Attitude	−0.444	3.144	0.001*
Perceived Risk -> Intention	−0.543	3.620	0.000*
Attitude -> Intention	0.772	3.712	0.000*

*Significant in 0.01, **Significant in 0.05. Source: Proceed data

of reputation on perceived risk (Reputation -> Perceived Risk) has a coefficient of −0.407 with a t-statistic of 2.934 (significant in 0.01). The result shows that a higher reputation leads to lower perceived risk. It indicates that H_{3b} is accepted where reputation has an effect on customers' perceived risk to use virtual credit cards.

The interaction between security and AI performance on trust (Security × AI Performance -> Trust) has a coefficient of 0.331 with a t-statistic of 2.027 (significant in 0.05). The result shows that higher trust leads to a more positive attitude when AI performance is higher. It indicates that H_{4a} is accepted where AI performance moderates the effect of trust to use of virtual credit cards. The interaction between security and AI performance on perceived risk (Security*AI Performance -> Perceived Risk) has a coefficient of −0.102 with a t-statistic of 2.072 (significant in 0.05). The result shows that higher security leads to lower perceived risk when AI performance is higher. It indicates that H_{4b} is accepted where AI performance moderates the effect of security on customers' perceived risk to use virtual credit cards.

The interaction between privacy and AI performance on trust (Privacy × AI Performance -> Trust) has a coefficient of 0.221 with a t-statistic of 2.048 (significant in 0.05). The result shows that higher privacy leads to a more positive attitude when AI performance is higher. It indicates that H_{4c} is accepted where AI performance moderates the effect of privacy on trust to use of virtual credit cards. The interaction between privacy and AI performance on perceived risk (Privacy*AI Performance -> Perceived Risk) has a coefficient of −0.231 with a t-statistic of 2.018 (significant in 0.05). The result shows that higher privacy leads to lower perceived risk when AI performance is higher. It indicates that H_{4d} is accepted where AI performance moderates the effect of privacy on customers' perceived risk to use virtual credit cards.

The interaction between reputation and AI performance on trust (Reputation × AI Performance -> Trust) has a coefficient of 0.222 with a t-statistic of 2.036 (significant in 0.05). The result shows that higher reputation leads to a more positive attitude when AI performance is higher. It indicates that H_{4e} is accepted where AI performance moderates the effect of reputation on trust to use of virtual credit cards. The interaction between reputation and AI performance on perceived risk (Reputation*AI Performance -> Perceived Risk) has a coefficient of −0.205 with a t-statistic of 2.034 (significant in 0.05). The result shows that higher reputation leads to lower perceived risk when AI performance is higher. It indicates that H_{4f} is accepted where AI performance moderates the effect of reputation on customers' perceived risk to use virtual credit cards.

The path of trust on attitude (Trust -> Attitude) has a coefficient of 0.412 with a t-statistic of 2.657 (significant in 0.01). The result shows that higher trust leads to a more positive attitude. It indicates that H_{5a} is accepted where customers' trust has an effect on their attitude toward the use of virtual credit cards. The path of trust on intention (Trust -> Intention) has a coefficient of 0.208 with a t-statistic of 2.359 (significant in 0.05). The result shows that higher trust leads to higher intention. It indicates that H_{5b} is accepted where customers' trust has an effect on intention to use virtual credit cards.

The path of perceived risk on attitude (Perceived Risk -> Attitude) has a coefficient of −0.444 with a t-statistic of 3.144 (significant in 0.01). The result shows that lower perceived risk leads to a more positive attitude. It indicates that H_{6a} is accepted where perceived risk has an effect on attitude towards the use of virtual credit cards. The path of perceived risk on intention (Perceived Risk -> Intention) has a coefficient of −0.543 with a t-statistic of 3.620 (significant in 0.01). The result shows that lower perceived risk leads to higher intention. It indicates that H_{6b} is accepted where perceived risk has an effect on the intention to use a virtual credit card.

The path of attitude on intention (Attitude -> Intention) has a coefficient of 0.772 with a t-statistic of 3.712 (significant in 0.01). The result shows that a more positive attitude leads to higher intention. It indicates that H_7 is accepted where attitude has an effect on the intention to use a virtual credit card.

5. DISCUSSION

Based on path analysis, this research finds that hypotheses of H_1-H_7 are accepted. First, security has an effect on customers' trust and perceived risk. Since a virtual credit card is one of the digital payment methods, customers have to access applications of mobile banking or e-banking through Internet accesses. The issue of security in digital payment is important since the internet is linked to other parties such as merchants, banks, e-commerce stores, and hackers. When customers feel that their private information is secure, customers will have high trust in the security system and feel that they will bear low risk of theft and abuse of private information. This finding is consistent with Riquelme and Román (2014) who find that security reduces perceived risk in digital payment and increases customers' trust.

Second, privacy has an effect on customers' trust and perceived risk to use virtual credit cards. Banks have to ensure that customers' private information is only used by parties that only authorized. In this case, customers feel that their privacy is safe. When customers feel that their private information is safe, customers will have high trust in the banks' ability to secure their data. This finding is consistent with Chang et al. (2018) and Xu et al. (2011) who find that privacy reduces perceived risk in digital payment and leads customers to have higher trust.

Third, reputation has an effect on customers' trust and perceived risk to use virtual credit cards. When a high reputation occurs, customers will see banks as the provider that can perform professional, honest, and beneficial service. In this case, customers tend to choose banks that have high reputations to reduce risks. This finding is consistent with Jarvenpaa et al. (2000), Kabadayi et al. (2011), and Teo and Liu (2007) who find a positive relationship between reputation and customers' trust.

Fourth, AI performance moderates the effect of security, privacy, and reputation on customers' trust and perceived risk. AI helps

customers to give relevant advice and inputs, do risk management and mitigate uncertainties, solve complex problems, and capture financial risks and needs. Higher AI performance gives more benefits for customers to trust and assess the risk of the use of virtual credit cards. The result is consistent with Alnaser et al. (2023) where AI leads customers to uses financial service.

Fifth, customers' trust has an effect on their attitude and intention to use virtual credit card. When customers have high trust, they tend to have a positive attitude including that customers believe banks will fulfill customers' needs. High trust also leads customers to have the intention to use banks' services including virtual credit cards as digital payment methods. This finding is consistent with Jarvenpaa et al. (2000) and Chen and Dibb (2010) who find that customers' trust leads to good relationships and positive attitudes between customers and service or product provider. This finding is also consistent with Zhang et al. (2014) who find that trust leads customers to have purchase intention.

Sixth, perceived risk has an effect on attitude and intention to use a virtual credit card. When customers assess and evaluate the services and products, they estimate the risks they have to bear including the potential for leakage of information, data stealing, failure of privacy protection, and reputation loss. Lower risks lead customers to believe that virtual credit card is a reliable payment method and have intention to use virtual credit cards. This finding is consistent with Tran and Nguyen (2022) who find that perceived risk affects customers' attitudes and purchase intention.

Seventh, attitude has an effect on the intention to use virtual credit cards. When customers believe that a virtual credit card has performed as customers expect, they will choose to use the service of a virtual credit card. This finding is consistent with Tran and Nguyen (2022) who find that positive attitudes by customers make customers tend to use products or services.

6. CONCLUSION

This research aims to examine the effect of determinant factors of customers' behavior (security, privacy, and reputation of virtual credit card providers) on determining customers' attitudes and intentions with AI performance as moderating variable. Based on data analysis, security, privacy, and reputation have effects on trust and perceived risk to use virtual credit cards. AI performance moderates the effect of security, privacy, and reputation on trust and perceived risk to use virtual credit cards. Trust and perceived risk also have effects on attitude and intention to use virtual credit cards. Furthermore, the attitude has an effect on intention to use virtual credit cards. The result indicates that when a virtual credit card provider has a sufficient security system, privacy protection, and a high reputation; customers will trust and have a low risk to make positive attitudes and intention to use virtual credit cards.

This research has some limitations. First, this research examines security systems and privacy protection only based on customers' perceptions without involving banks' internal management. Future research is expected to examine security systems and privacy protection based on the point of view of banks' internal management. Second, this research finds respondents from social media and does not get the respondents from banks' documents which provide accurate data on customers. Future research is expected to access banks' documents to determine the respondents.

This research implies banks as virtual credit card service providers, especially Bank Mandiri, BCA, BNI, and CIMB Niaga. By improving security systems, privacy protection, and reputation establishment; banks can gain customers' trust to use banks' service of virtual credit cards. In detail, banks can build systems in e-banking or mobile banking to secure customers' private information from abuse of data by hackers or other external parties. In this case, banks can gain more customers. This research also implies customers to use virtual credit cards as an alternative to digital payment, especially for cross-border transactions. By evaluating banks' security systems, privacy protection, and reputation; customers can use virtual credit cards. This research also implies financial regulators in Indonesia formulate regulations or specific systems that can be implemented by all banks to have services of virtual credit cards. In this case, cross-border payment will be applied in Indonesia with low costs.

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