International Journal of Innovative Research and Scientific Studies, 7(3) 2024, pages: 997-1008

IJIRSS International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

Exploring the dynamics of fintech usage behavior moderated by customer characteristics in Indonesia

Hadi Cahyadi[1*], Ribka Putrita Tarigan[2], Ronnie Resdianto Masman[3], Estralita Trisnawati[4], Henryanto Wijaya[5]

[1,2,3,4,5]*Faculty of Economics and Business, Universitas Tarumanagara, Jakarta, Indonesia.*

Corresponding author: Hadi Cahyadi (*Email: hadic@fe.untar.ac.id*)

Abstract

This research examines the factors influencing the adoption of Fintech services in Indonesia, focusing on perceived risk, perceived benefit, perceived usefulness, perceived ease of use, trust, and Fintech usage intention. Data from 317 users of payment Fintech services in Indonesia was collected through a Google Form questionnaire and analyzed using Smart PLS 4.0. The study reveals that perceived usefulness, perceived ease of use, and trust significantly impact Fintech usage intention and subsequent behavior, particularly among millennials and Gen Z. Customer attributes such as age and gender show minimal impact, while education level, especially advanced degrees, strengthens the link between perceived usefulness and intention to use. The results contribute to understanding the Fintech sector in Indonesia and suggest potential areas for future research. The study is limited to payment Fintech in Indonesia and recommends broadening the scope for future research. To enhance future research, it is recommended to broaden the study scope to include various fintech types, expand the geographical coverage for diverse results, and encompass a wider range of ages and education levels among respondents for a more comprehensive understanding of fintech adoption.

Keywords: Financial technology usage behavior, Fintech adoption, Fintech usage intention, Fintech user experience, Perceived benefit, Perceived ease of use, Perceived risk, Perceived usefulness, Risk perception in fintech adoption, Trust in fintech services.

DOI: 10.53894/ijirss.v7i3.2993
Funding: This research is supported by Faculty of Economics and Business, Universitas Tarumanagara, Indonesia (Grant number: 07-KD/TU/FE-UNTAR/II/2016).
History: Received: 24 November 2023/**Revised:** 19 January 2024/**Accepted:** 27 March 2024/**Published:** 4 April 2024
Copyright: © 2024 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Competing Interests: The authors declare that they have no competing interests.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Institutional Review Board Statement: The Ethical Committee of the Faculty of Economics and Business, Universitas Tarumanagara, Indonesia has granted approval for this study (Ref. No. 417-D/652/ FE-UNTAR/III).
Publisher: Innovative Research Publishing

1. Introduction

In the Era of Industry 4.0, technological advancements have significantly impacted various aspects of human life, mainly how society interacts with information and services. The Industrial Revolution 4.0 era is increasingly affecting all aspects of business, changing many conventional paradigms, and ultimately altering people's lifestyles [1]. One of the key

trends is the increasing demand for internet access and the utilization of technology across different segments of the population. The digital age is a term that describes an era in which everything is based on technology [2]. A report by We Are Social in January 2023 revealed that global internet penetration had reached 64.4% of the world's total population, marking a 1.9% increase compared to the previous year [3]. In Indonesia, internet users have also reached an impressive figure, totalling 212.9 million people, or approximately 77% of the total population [4].

This technological advancement has also triggered a revolution in various sectors, including the financial and banking sectors. The emergence of financial technology (Fintech) platforms has transformed how financial transactions are conducted. Fintech leverages cloud computing, artificial intelligence, data analytics, and cybersecurity technologies to facilitate various financial transactions, including investments, payments, loans, and other financial services [5]. In short, Fintech has enabled individuals to carry out a wide range of financial transactions more easily, quickly, and efficiently without being limited by physical location or time. Fintech services such as lending, investment, payment processing, and money transfer have become more accessible and affordable for many individuals [6].

As one of the developing countries actively adopting digital technology, Indonesia is also part of this phenomenon. Although the country's Fintech industry's is relatively young, growth trends have recently surged. Establishing the Indonesian Fintech Association (IFA) in 2015 is early evidence of the industry development. The rapid growth of the Fintech industry is fueled by increased technology adoption and a shift in consumer behavior in financial transactions. Data from Boston Consulting Group (BCG) and AC Ventures, a leading venture capital firm that specializes in funding early-stage startups in Southeast Asia and Indonesia, show a significant increase in the number of Fintech companies in Indonesia, from 51 in 2011 to 334 in 2022 [7]. Additionally, the Ministry of Communication and Informatics (Kominfo) reports that the Gross Transaction Value (GTV) of the digital payments segment in Indonesia reached USD 266 billion in 2022 and is expected to reach USD 421 billion by 2025, with a compound annual growth rate (CAGR) of 17% [8]. The Financial Services Authority (FSA) describes Fintech as an innovation in the financial services industry that leverages technology. Fintech products are systems that facilitate specific financial transactions [9]. FSA classifies Fintech services into five categories: Crowdfunding, Microfinancing, Peer-to-Peer Lending Service, Market Comparison, and Digital Payment Systems [10].

However, along with its tremendous potential, the Fintech industry's growth also presents several challenges that must be addressed. Data security is a crucial issue, as it is necessary to safeguard the integrity and confidentiality of consumers' financial information. Studies on computer security and fraud have discovered that individuals shopping online commonly encounter risks such as malware infections, service terminations, data loss, unauthorized data access, and suboptimal system setups. Other challenges include consumer protection, appropriate regulation, and technology access disparities among different segments of society. Despite becoming increasingly familiar with technology, consumers still have concerns about security and privacy when conducting transactions on digital platforms [11]. Maintaining customer loyalty is highly significant for the survival of a company. To uphold customer loyalty, many variables can influence it [12]. This research aims to understand users' behavior in using Fintech services by identifying how variables such as perceived usefulness, perceived ease of use, perceived benefit, perceived risk, and trust interact and influence each other in the context of Fintech usage in Indonesia. As part of an effort to support the sustainable development of the Fintech industry and to gain a deeper understanding of how consumers adopt these services, this research seeks to delve deeper into the factors influencing users' intentions and actual usage of Fintech services in Indonesia. The research holds theoretical significance by enriching fintech literature with current data on its usage in Indonesia, aiding in the development of technology acceptance models, contributing to consumer behavior theories, and serving as a future reference. On a practical level, it enhances understanding of fintech's implications for Indonesia's financial system, offers an international perspective, identifies influencing factors, and supports the development of more adaptive Fintech solutions in the country. Examining the factors that influence the adoption and utilization of Fintech technology, this research employs pertinent theoretical frameworks. The Technology Acceptance Model (TAM) and Behavioral Accounting Theory are two such significant theories in this context. Furthermore, conceptual definitions can be provided for variables including Fintech Usage Behavior and Fintech Usage Intention, Perceived Usefulness, Perceived Ease of Use, Perceived Benefit, Perceived Risk, Trust, and Customer Characteristics (Age, Gender, and Education) as the foundation for this research. Moreover, the study's structure delineates a systematic approach to addressing these objectives. The subsequent sections comprise an extensive literature review and hypothesis development to provide a robust theoretical foundation. Following this, the methods section details the quantitative research design and data collection techniques employed. The data analysis segment encompasses the rigorous assessment of collected data through statistical models and analyses. This sequential progression allows for a comprehensive examination of Fintech usage behavior and its influencing factors, culminating in a conclusive discussion and recommendations for future research and industry applications.

2. Literature Review and Hypothesis Development

2.1. Technology Acceptance Model (TAM)

A framework known as the Technology Acceptance Model (TAM) was created to comprehend the acceptance and utilization of information technology by individuals. Davis, et al. [13] posit that acceptance by users is primarily influenced by two factors: perceived usefulness and perceived ease of use. Users are more likely to adopt new technology, according to the TAM theory, if they perceive it to be beneficial and simple to use (perceived ease of use and usefulness, respectively). In order to further examine the effects of technology acceptance, Venkatesh and Davis [14] proposal included moderator variables like management support and system quality.

Additionally, numerous fields, including e-commerce, mobile technology, healthcare, and education, have implemented the model [14]. Extensive research has utilized the TAM theory to forecast user behavior with regard to Fintech services [15-17]. The present study employs the TAM theory to investigate the determinants of Fintech adoption.

2.2. Behavioral Accounting Theory

Behavioral accounting is a relatively new concept in accounting, focusing on the behavior of accountants and all their responses. It analyzes the behavior of accountants and individuals who use accounting data [18]. Behavioral accounting has many relationships with factors such as age, performance, social desire, budget adequacy, and participation in budgeting. The scope of behavioral accounting is vast, encompassing the influence of human behavior on the design, construction, and use of information systems, the influence of accounting systems on human behavior, and methods for predicting and developing strategies for changing human behavior.

2.3. Factors Affecting Fintech Usage Behavior

2.3.1. Perceived Risk

The perceived risk theory has been employed to elucidate consumer behavior since the 1960s. Financial risk, performance risk, physical risk, psychological risk, social risk, and time-related risk are the six dimensions that comprise perceived risk [19]. Nevertheless, the aspects of perceived risk may differ depending on the nature of the product or service. Physical risk is irrelevant in the context of Fintech usage, as there is no direct physical threat.

Research shows that performance risk significantly negatively impacts perceived usefulness [20]. However, other research results show different relationships, such as the lack of a significant moderating effect between perceived risk, perceived usefulness, satisfaction, and the intention to continue using the service [21]. There are also inconsistent results in the relationship between perceived risk and perceived usefulness, such as in online shopping research [22].

Based on the explanations above, this study proposes the following hypothesis:

H_1: Perceived risk negatively affects perceived usefulness.

2.3.2. Trust

Trust is confidence in the service or business reputation. In Fintech, this means trust in a confidentiality and security of transactions. The dimensions of trust include ability, integrity, and benevolence [23]. Trust is also essential in adopting Fintech services because switching costs to traditional, expensive systems is costly [24, 25]. Trust plays a significant role in shaping user intentions to use Fintech applications.

As stated by Chauhan [26] attitudes towards and perceived usefulness of mobile money are profoundly influenced by trust. This result is consistent with findings from other studies [27-30]. Users require trust in the system in order to attain desired results [31], and perceived usefulness was also found to be significantly influenced by security and privacy, trust, and service quality in the study by Le [25] concerning Fintech usage after the COVID-19 lockdown.

Additionally, several studies by Francisco, et al. [15] and Alshurideh, et al. [27] support the beneficial impact that trust has on the perception of ease of use. Trust in mobile payments has a positive impact on perceived ease of use [15]. Also supported by research on electronic payment system usage is the finding that perceived ease of use is positively impacted by trust [27]. Trust influences perceived ease of use in e-commerce in a positive way, as a high level of trust in the internet facilitates transactions [15].

Based on the explanations above, this study proposes the following hypotheses:

H_2: Trust positively affects perceived usefulness.

H_3: Trust positively affects perceived ease of use.

2.3.3. Perceived Usefulness

Perceived usefulness is an individual's perception of how beneficial technology or a system is to their performance. This concept emerged in the Technology Acceptance Model (TAM) by Davis, et al. [13]. In technology usage behavior literature, perceived usefulness is often measured to understand how users interpret the benefits of technology and the factors influencing this perception. In many studies, perceived usefulness influences usage intention, with an average regression coefficient of around 0.6. Understanding the factors that shape this concept and how its influence develops over time and with user experience [14].

Perceived usefulness influences the intention of SMEs to utilize Fintech during the pandemic, according to studies [16]. Concerning the adoption of Fintech by Indonesian SMEs, perceived benefit is the most influential factor, while government support is the least influential. The positive effect of perceived usefulness on the intention to use Fintech, specifically e-wallets, is also supported by other journals [32]. Perceived usefulness influences the intention to use Internet banking positively in India [33]. On the contrary, Mufarih, et al. [34] discovered that the impact of perceived usefulness on the adoption of digital banking is negligible.

The following hypothesis is formulated in light of the aforementioned explanations:

H_4: Fintech usage intention is positively influenced by perceived usefulness.

2.3.4. Perceived Ease of Use

The concept of Perceived Ease of Use quantifies the degree to which individuals perceive the utilization of novel technologies to demand exertion. This relates to belief that using the system won't be difficult, as Davis [35] defined it in the Technology Acceptance Model (TAM). Research by Nugraha, et al. [16] relates the effectiveness of Fintech services to

the perceived ease of use, which includes a user-friendly interface and direct access via devices. Empirical research demonstrates a correlation between "perceived ease of use" and intention to use, both directly and by means of its impact on perceived usefulness [14].

Perceived ease of use is also a factor in the adoption of new technologies, according to research. This is associated with the development of user-friendly interfaces for interacting with financial services and initiating the adoption of new technologies [16]. Further studies have established a positive correlation between the intention to use Fintech and perceived ease of use [14, 36, 37].

In contrast, contrasting findings were reported in a number of scientific journals. Perceived ease of use does not significantly influence the intention to use Fintech, according to some studies [33, 38]. However, perceived ease of use continues to be a crucial factor in determining whether or not individuals will adopt and intend to utilize new technologies.

Following the aforementioned explanations, the following hypothesis is formulated for this study:

H_5: Perceived ease of use positively affects Fintech usage intention.

2.3.5. Perceived Benefit

Perceived benefit is a central factor in consumer decisions about using technology such as Fintech. Abramova and Böhme [39] emphasize that perceived benefit reflects individuals' beliefs in Fintech's direct and indirect positive outcomes. In TAM, the perceived benefit has been proven to be a significant determinant of usage intention [20, 40, 41]. Overall, perceptions of the benefits gained from Fintech services play a significant role in shaping usage intention, including economic benefits, smooth transactions, and ease of access [42].

A correlation between perceived benefit and intention to use Fintech has been identified in some journals; customers are more likely to utilize Fintech services when they perceive perceived benefits in them. Al-Nawayseh [24]; Jain and Raman [43]; Khuong, et al. [44] and Ryu [42]. Al-Nawayseh [24] discovered in his journal that perceived benefit influences Fintech usage intention more significantly than perceived risk. Furthermore, this discovery is corroborated by studies investigating the utilization of Fintech in Bahrain, wherein three dimensions of perceived benefit—economic benefit, seamless transaction, and convenience—are found to have a positive impact on Fintech usage intention [45].

Following the aforementioned explanations, the following hypothesis is formulated for this study:

H_6: Perceived benefit positively affects Fintech usage intention.

2.3.6. Fintech Usage Intention

Technology usage is measured based on user attitudes toward technology, including motivation to continue using it and the intention to encourage other users [46]. In the context of this research, "intention to use" refers to the intention to use Fintech services, also known as "Fintech usage intention." This study focuses on factors influencing user decisions to use Fintech services.

An investigation conducted by Nikou and Economides [47] examined the correlation between user interface and behavioral intention to utilize e-wallets. The findings of this study indicated that e-wallet adoption was positively influenced by behavioral intention. This results of this study showed that behavioural intention had a positive influence on e-wallet adoption [32]. Consistent with the findings of Lim, et al. [48] which suggest that consumers' intentions to utilize e-wallets impact their adoption, this result confirms this notion. A number of additional studies [14, 46, 49] also support a strong correlation between Fintech users' actual behaviour and their intention to use it.

Based on the explanations above, this study proposes the following hypotheses:

H_7: Fintech usage intention positively affects Fintech usage behavior.

2.4. Moderating Effect of Customer Characteristics (Age, Gender, and Education)

Research indicates that age has a direct influence and also serves as a moderating factor on intention to use, adoption, and technology acceptance [50]. Younger users show a stronger relationship between perceived usefulness and usage intention in an organizational context [50].

Gender also has a significant impact, with gender and task orientation differences affecting technology usage behaviour [23]. Although males initially dominated technology usage, females' increased usage, especially in electronic payment systems, has been recorded [27, 51].

Education also has a big impact on people's acceptance of technology. A positive correlation exists between education and usage intention [52-54]. Numerous studies have demonstrated that age moderates the association between intention to use technology and perceived ease of use [50]. Gender has an impact on perceived ease use, and people with lower levels of education frequently view technology as being difficult to master, which in turn affects their willingness to use such technologies [55, 56]. Thus, customer characteristics, including age, gender, and level of education, exert substantial influence on the adoption and utilization patterns of emerging technologies, while also influencing Fintech usage intention in both direct and moderate ways.

The following hypotheses are formulated in light of the previously mentioned explanations:

H_8:The relationship between perceived usefulness and Fintech usage intention is moderated by customer characteristics (age, gender, or education).

H_9: The relationship between perceived ease of use and Fintech usage intention is moderated by customer characteristics (age, gender, or education).

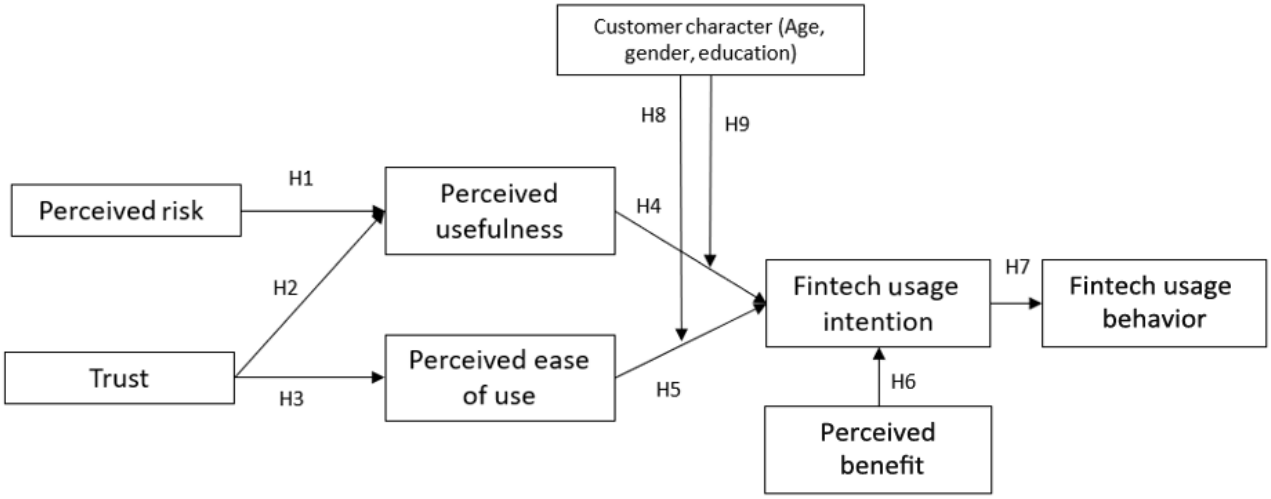

Figure 1.
Research model.

Figure 1 illustrates the research framework with the hypotheses developed in this study.

3. Methods

This article presents a quantitative research study that utilizes primary data collected through a questionnaire. The scope of respondents included users of Fintech payment services such as Gopay, Ovo, Gopay, Dana, Shopeepay, Linkaja, and pay-later services in Indonesia, with a total of 317 respondents. The sample was selected using the purposive sampling method. The questionnaire consisted of two parts, the first being respondent demographics and the second comprising questions related to respondents' perceptions of the components of the Fintech Usage Behavior variable. The method employed for analysis was partial least squares-structural modeling (PLS-SEM) with the assistance of Smart PLS 4.0 software.

Furthermore, using a statistically formulated model, this research examines the relationships between independent variables (such as perceived risk, trust, ease of use, usefulness, benefit, customer characteristics, and fintech usage intention) and the dependent variable (Fintech Usage Behavior).

$$FUBi = \beta 0 + \beta 1PRxPUi + \beta 2PBxPUi + \beta 3TxPUi + \beta 4TxPEOUi + \beta 5PUxFUIi + \beta 6PEOUxFUIi + \beta 7PUxCCi + \beta 8PEOUxCCi + \beta 9FUIi + \mathcal{E}i$$

4. Data Analysis

4.1. Demographic Characteristics

This research was conducted from July 10th to July 26th, 2023, using primary data obtained from an online questionnaire. A total of 323 questionnaires were received, with six samples identified as non-users of Fintech services, resulting in a final sample size of 317 respondents available for this study.

Table 1.
Respondents' demographic profile.

Description	Category	Total	Percentage (%)
Gender	Male	130	41.0
	Female	187	59.0
Total		317	100
Age	Gen Z	66	20.8
	Gen Milenial	186	58.7
	Gen X	61	19.2
	Gen Baby Boomers	4	1.3
Total		317	100
Education	Non-bachelor's degree holder	55	17.4
	Bachelor's degree	217	68.5
	Master's degree	34	10.7
	Doctoral degree	11	3.5
Total		317	100
Types of fintech payment services used	Gopay	113	35.6
	Ovo	98	30.9
	Shopeepay	59	18.6
	Dana	14	4.4
	LinkAja	3	0.9

Description	Category	Total	Percentage (%)
	Paylater	15	4.7
	Lainnya	15	4.7
Total		317	100
Usage frequency	Once a week	76	24.0
	Twice a week	32	10.1
	Three times a week	41	12.9
	Four times a week	24	7.6
	Five times a week	144	45.4
Total		317	100

The demographics of the respondents to the questionnaire are presented in Table 1. The participants in the study consist primarily of women (59%) and millennials (58.7%); a significant proportion of them possess a bachelor's degree (68.5%). The validity test results for each variable in this study are depicted in Figure 2. To meet the criteria for questionnaire items, an item is considered valid if its factor loading value exceeds 0.7 [57]. The validity test results are as follows:

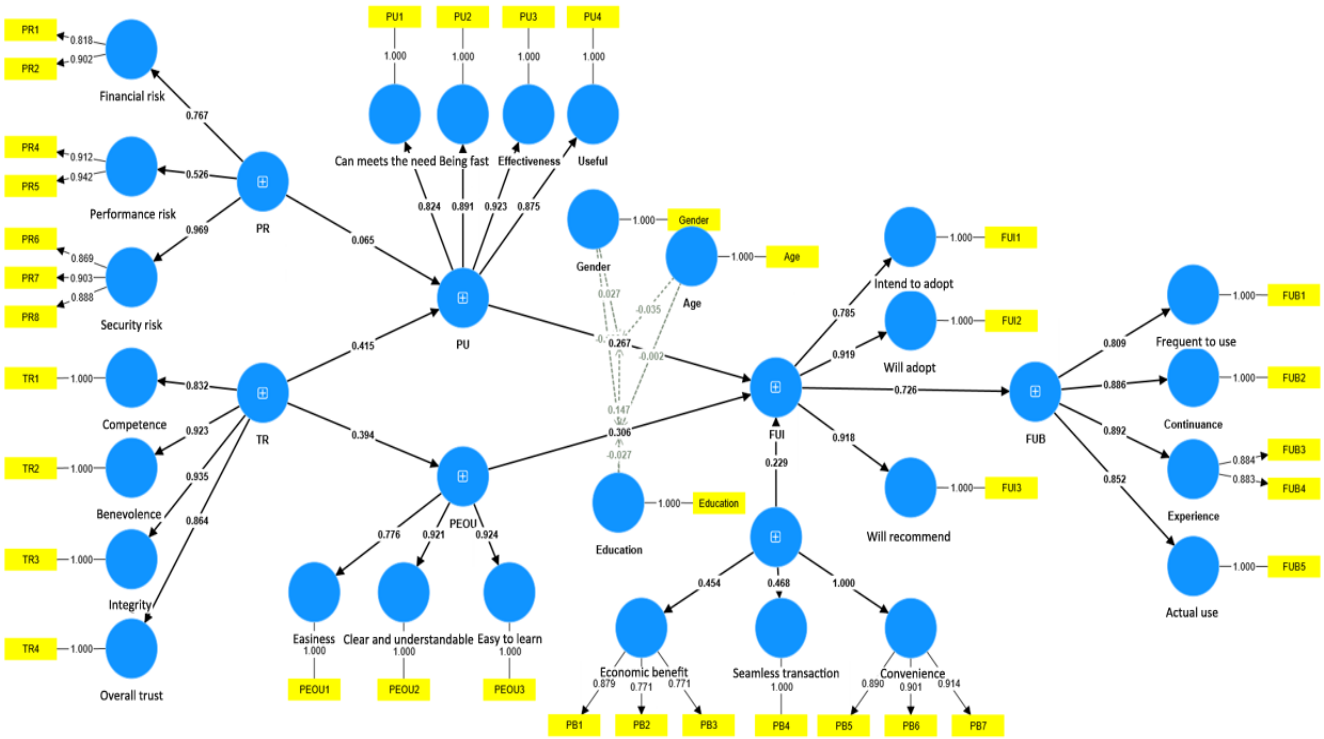

Figure 2.
The result of validity test.

Several indicators have been excluded from the model to meet the reliability and validity requirements. In Figure 2, you can see the outer model of this study, which consists of 33 indicators considered valid in explaining each construct, as their outer loading values exceed 0.7. The actual reliability testing on the outer model of this study was performed using the Composite Reliability indicator to evaluate internal consistency. A Composite Reliability value is deemed satisfactory if it exceeds 0.70. Although Cronbach's alpha can also be employed to gauge internal consistency, it has lower sensitivity than Composite Reliability. The coefficient of determination, or R^2, is an indicator that measures the extent to which the variation is explained by each construct, serving as a benchmark for the explanatory power of the model. R^2 values range from 0 to 1, where more significant numbers indicate higher explanatory power. R^2 values can be categorized into three groups: $R^2 > 0.75$ (strong category), R^2 between 0.50 to 0.75 (medium category), and R^2 between 0.25 to 0.50 (weak category). Below are the determination coefficient outcomes for every construct examined in this study:

Table 2.
R-squared and r-squared adjusted value.

Variable	R-square	R-square adjusted
Fintech usage behaviour (FUB)	0.527	0.526
Fintech usage intention (FUI)	0.465	0.444
Perceived ease of use (PEOU)	0.155	0.153
Perceived usefulness (PU)	0.156	0.150

Based on Table 2, the R^2 adjusted values for the Fintech Usage Behavior variable fall into the medium category (0.50 - 0.75), while the Fintech Usage Intention variable is weak (0.25-0.50). The perceived ease of use and perceived usefulness variables are very weak (below 0.25). This can be interpreted as follows: the Fintech Usage Behavior variable can be explained by 52.7% of its independent variables, Fintech Usage Intention can be explained by 46.5% of its independent variables, perceived ease of use can be explained by 15.5% of its independent variables, and perceived usefulness can be explained by 15.6% of its independent variables.

In addition to analyzing predictive accuracy using R^2, the researcher conducted further analysis to determine the Q^2 value. The Q^2 value indicates the predictive relevance of the research model. The calculation of the Q^2 value was performed using the SmartPLS version 4.0 software.

The obtained Q^2 value will fall within the range of 0 to 1, where a Q^2 value above 0 indicates a higher level of predictive relevance to the endogenous variable (construct) under investigation. There are specific thresholds for interpreting the magnitude of predictive relevance based on the Q^2 value, which are 0.02 (small), 0.15 (medium), and 0.35 (large). Here are the results of the Q^2 value calculations from the PLS-Predict process:

Table 3.
Predictive relevance (Q^2) results.

Variable	Indicator	Q^2predict
Perceived risk	PR1	0.304
	PR2	0.550
	PR4	0.182
	PR5	0.277
	PR6	0.716
	PR7	0.776
	PR8	0.719
Trust	TR1	0.690
	TR2	0.849
	TR3	0.872
	TR4	0.746
Perceived usefulness	PU1	0.166
	PU2	0.043
	PU3	0.073
	PU4	0.154
Perceived ease of use	PEOU1	0.076
	PEOU2	0.135
	PEOU3	0.126
Perceived benefit	PB1	0.225
	PB2	0.049
	PB3	0.076
	PB4	0.214
	PB5	0.793
	PB6	0.801
	PB7	0.838
Fintech usage intention	FUI1	0.152
	FUI2	0.238
	FUI3	0.283
Fintech usage behaviour	FUB1	0.146
	FUB2	0.198
	FUB3	0.151
	FUB4	0.155
	FUB5	0.155

Table 3 shows that every endogenous construct (dependent variable) in this research model has a Q^2 predictive relevance greater than 0. This indicates that all endogenous constructs in this study have significant predictive relevance.

From the magnitude of predictive relevance, it can be observed that nearly all variables have a high level of predictive relevance.

This means these variables have strong capabilities for predicting variations in the dependent variable.

The indicators PU2, PU3, PEOU1, PB2, and PB3 show moderate predictive relevance. Although not as strong as the other variables, these four indicators still have reasonably good abilities in predicting variations in the dependent variable.

In addition to hypothesis testing and specific-indirect effects analysis, this research proceeded with an analysis known as Importance-Performance Map Analysis (IPMA). IPMA is utilized to determine the priority levels of each construct and indicator within the study.

This, in turn, allows for formulating managerial implications to improve indicators' performance in Fintech services based on their priority levels. IPMA assesses two main aspects: importance and performance. Here are the Importance-Performance Map Analysis (IPMA) results for each indicator in this study.

Table 4.
Importance-performance map analysis (IPMA) for the research indicators.

Variable	Indicator	Importance	Performance
Customer characteristic	Age	-0.026	33.649
	Education	0.067	33.438
	Gender	-0.023	58.991
Fintech usage intention	FUI1	0.241	63.512
	FUI2	0.291	73.896
	FUI3	0.293	67.298
perceived benefit	PB5	0.062	79.022
	PB6	0.058	79.653
	PB7	0.064	80.442
Perceived ease of use	PEOU1	0.074	68.849
	PEOU2	0.089	75.079
	PEOU3	0.090	77.208
Perceived risk	PR2	0.004	53.549
	PR6	0.004	64.274
	PR7	0.004	58.360
	PR8	0.004	61.278
Perceived usefulness	PU1	0.053	77.603
	PU2	0.055	84.069
	PU3	0.057	77.918
Perceived usefulness	PU4	0.055	80.599
Trust	TR1	0.045	68.533
	TR2	0.049	60.095
	TR3	0.049	61.830
	TR4	0.046	56.703
Mean		0.071	66.494

Tabel 4 presents the Importance-Performance Map Analysis (IPMA), which reveals that the key determinants influencing the adoption of Fintech services in Indonesia include Fintech usage intention, perceived ease of use, perceived usefulness, and trust. These factors are deemed highly important in shaping users' decisions. On the other hand, factors such as perceived benefit, perceived risk, customer characteristics, and specific aspects of trust have a relatively lower influence on Fintech adoption in the Indonesian context.

5. Discussion

Here is the table of the PLS-SEM data processing results showing path coefficients, significance levels, and the research hypothesis test conclusions:

Table 5.
Research hypothesis test results.

No	Hypothesis	Path coefficients	T statistics (|O/STDEV|)	P values	Decision
H1	Perceived risk has a negative influence on perceived usefulness	0.065	1.158	0.123	Reject
H2	Trust has a positive influence on perceived usefulness	0.415	7.565	0.000	Accept
H3	Trust has a positive influence on perceived ease of use	0.394	6.701	0.000	Accept
H4	Perceived usefulness has a positive influence on fintech usage intention	0.267	2.931	0.002	Accept
H5	Perceived ease of use has a positive influence on	0.306	3.408	0.000	Accept

No	Hypothesis	Path coefficients	T statistics (|O/STDEV|)	P values	Decision
	fintech usage intention				
H6	Perceived benefit has a positive influence on fintech usage intention	0.229	3.159	0.001	Accept
H7	Fintech usage intention has a positive influence on fintech usage behavior	0.726	20.098	0.000	Accept
H8a	Customer characteristic (Age) moderates the relationship between perceived usefulness and fintech usage intention	-0.035	0.606	0.272	Reject
H8b	Customer characteristic (Gender) moderates the relationship between perceived usefulness and fintech usage intention	0.027	0.235	0.407	Reject

Based on Table 5, it was found that Perceived risk has a positive but not significant influence on perceived usefulness (H1). This finding aligns with previous research results that also found a positive but insignificant influence of perceived risk on perceived usefulness [22, 58].

Additionally, a substantial positive correlation was found between trust and perceived usefulness, as well as ease of use (H2 and H3). According to the reviews of literature on e-commerce transactions, trust has a positive impact on perceived ease of use because it makes transactions easier by removing the needs for customers to comprehend and exert control over the situation [15].

Perceived usefulness, perceived ease of use, and perceived benefit significantly influence Fintech usage intention (H4, H5 and H6). The ability of Fintech payments to provide broader access to financial services and empower individuals previously underserved by traditional systems creates the perception that adopting Fintech payments is a concrete step in improving access to essential financial services. Therefore, it is said that when Fintech users perceive the technology as beneficial, they are more likely to have a positive perception and a firm intention to use Fintech services [59].

Fintech usage intention has a significant favorable influence on Fintech usage behavior (H7). Positive intentions lead to actual actions in using Fintech applications, utilizing them for everyday transactions, and consistently choosing Fintech payments as the primary option.

In relation to moderation effects, it was observed that customer characteristics (age, gender, and education) did not exert any influence on the association between Fintech usage intention and perceived usefulness, perceived ease of use, and perceived ease of use (H8a, H8b, H9a, H9b, & H9c). It was determined that customer characteristic education was the only factor that moderated the association between perceived usefulness and intention to use fintech (H8c).

6. Conclusion

In this study, it was found that perceived risk has a positive but not significant influence on perceived usefulness. This differs from previous research findings that perceived risk had a negative impact on perceived usefulness [20, 60]. Fintech's ease of use and economic benefits drive people to adopt and use it in their daily lives, even if they have concerns about security risks associated with the technology [61]. Suppose users perceive a strong need for the convenience and benefits offered by Fintech payments for their daily needs. In that case, they may be more inclined to overlook some existing risks and focus more on the benefits they experience.

Additionally, it was discovered that customer attributes including age, gender, and level of education did not exert a moderating influence on the correlation between the intention to use Fintech and the perception of its ease of use. Similar to the relationship between perceived usefulness and intention to use Fintech, there was no moderating effect of customer characteristics such as age and gender. The moderating effect of customer characteristic education was exclusive to the relationship between perceived usefulness and intention to use Fintech. This implies that there is a greater tendency for individuals with advanced degrees to perceive a more robust association between the anticipated advantages offered by Fintech services and their inclination to utilize them. This may be due to the fact that individuals with a higher level of education are more likely to recognize the applicability and positive potential of Fintech services, as they have a greater understanding of the advantages of technology.

Sihotang and Sekarsari [62] revealed that Internet banking services are not gender-dependent but emphasize the accessibility of benefits available at all times and ease of use factors, focusing on easily understandable usage steps.

In this study, the majority of respondents came from the millennial and Gen Z generations, both of which belong to the group known as Digital Natives-individuals who have been familiar with technology from an early age and have a habit of using information technology to access information in their daily lives [63]. Millennials are the generation that came of age during the information technology revolution, marked by the rise of the internet and the widespread adoption of smartphones [64]. Some respondents have a higher level of familiarity with technology. For them, using Fintech applications or similar technologies may already be a natural part of their daily lives, which is why customer characteristics have a lower impact on the relationship between perceived ease of use, perceived usefulness, and usage intention.

7. Limitations and Future Research

This study is limited to only analyzing the payment Fintech type in Indonesia. Due to this narrow focus, the research results may not be directly applicable to other types of Fintech or outside the context of Indonesia. Additionally, a limitation of this research is that the demographic variation among respondents is limited. This study may only include or have limited representation from specific groups, such as millennials and individuals with a bachelor's degree. Consequently, the research findings may not apply to or be generalizable to other demographic groups not represented in this study.

Additionally, the study only examines specific variables chosen by the researcher to explain the role of perceived risk, trust, perceived benefit, perceived usefulness, perceived ease of use, and Fintech usage intention. These variables may not cover all factors motivating customers to consider using Fintech services in Indonesia.

To address these limitations, future researchers should consider expanding the scope of the study to include other types of Fintech beyond payment services, as well as broadening the geographical scope to capture more diverse research results. Furthermore, researchers can enhance the study's representativeness by including a wider range of age groups and educational backgrounds among respondents.

References

[1] E. S. Dermawan and E. Trisnawati, "Investment decisions in the era of the COVID 19 pandemic," *International Journal of Application on Economics and Business*, vol. 1, no. 1, pp. 70-79, 2023. https://doi.org/10.24912/v1i1.70-79

[2] A. Dudhat and Ardi, "Application of information technology to education in the age of the fourth industrial revolution," *International Transactions on Education Technology*, vol. 1, no. 2, pp. 131-137, 2023. https://doi.org/10.34306/itee.v1i2.319

[3] The Global State of Digital in April 2023 - We Are Social USA, "The global state of digital in April 2023," Retrieved: https://wearesocial.com/us/blog/2023/04/the-global-state-of-digital-in-april-2023/. 2023.

[4] M. Rizaty, "Internet-users-in-Indonesia-touch-212-million-by-2023. dataindonesia. id," 2023.

[5] M. Bergmann, A. C. G. Maçada, F. de Oliveira Santini, and T. Rasul, "Continuance intention in financial technology: A framework and meta-analysis," *International Journal of Bank Marketing*, vol. 41, no. 4, pp. 749-786, 2023. https://doi.org/10.1108/IJBM-04-2022-0168

[6] S. Mamonov, "The role of information technology in FinTech innovation: Insights from the New York City ecosystem," in *Responsible Design, Implementation and Use of Information and Communication Technology: 19th IFIP WG 6.11 Conference on e-Business, e-Services, and e-Society, I3E 2020, Skukuza, South Africa, April 6–8, 2020, Proceedings, Part I 19*, 2020: Springer, pp. 313-324.

[7] M. R. D. P. Putri, "Indonesia has great potential for the fintech industry - ANTARA news," Retrieved: https://www.antaranews.com/berita/3464031/indonesia-punya-potensi-besar-untuk-industri-fintech. 2023.

[8] Yusuf, "Ministry of communication and informatics," Retrieved: https://www.kominfo.go.id/content/detail/46282/menkominfo-lima-segmen-fintech-indonesia-capai-cagr-39-meski-masuki-tech-winter/0/berita_satker. [2022.

[9] OJK, "FAQ: OJK general categories," 2019.

[10] Ministry of Cooperatives, "Let's get to know fintech! Digital finance is on the rise - SMesta," Retrieved: https://smesta.kemenkopukm.go.id/yuk-mengenal-fintech-keuangan-digital-yang-tengah-naik-daun/. 2008.

[11] E. Wijaya and R. Susilawati, "The influence of risk perception and trust (Trust) on the adoption of fintech services (Case study on gopay digital payment services)," *Indonesian Accounting Literacy Journal*, vol. 2, no. 1, pp. 202-209, 2021. https://doi.org/10.35313/ialj.v2i1.3355

[12] T. S. Ruslim, H. Wijaya, H. P. Siswanto, and H. Cahyadi, "The influence of service quality, satisfaction, and perceived switching cost on customer loyalty of cellular operators," *Jurnal Bina Manajemen*, vol. 9, no. 1, pp. 1-16, 2020. https://doi.org/10.52859/jbm.v9i1.111

[13] F. D. Davis, R. P. Bagozzi, and P. R. Warshaw, "User acceptance of computer technology: A comparison of two theoretical models," *Management Science*, vol. 35, no. 8, pp. 982-1003, 1989. https://doi.org/10.1287/mnsc.35.8.982

[14] V. Venkatesh and F. D. Davis, "A theoretical extension of the technology acceptance model: Four longitudinal field studies," *Management Science*, vol. 46, no. 2, pp. 186-204, 2000. https://doi.org/10.1287/mnsc.46.2.186.11926

[15] L.-C. Francisco, M.-L. Francisco, and S.-F. Juan, "Payment systems in new electronic environments: Consumer behavior in payment systems via SMS," *International Journal of Information Technology & Decision Making*, vol. 14, no. 02, pp. 421-449, 2015. https://doi.org/10.1142/S0219622015500078

[16] D. P. Nugraha, B. Setiawan, R. J. Nathan, and M. Fekete-Farkas, "FinTech adoption drivers for innovation for SMEs in Indonesia," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 8, no. 4, p. 208, 2022. https://doi.org/10.3390/joitmc8040208

[17] A. Shahzad, N. Zahrullail, A. Akbar, H. Mohelska, and A. Hussain, "COVID-19's Impact on fintech adoption: Behavioral intention to use the financial portal," *Journal of Risk and Financial Management*, vol. 15, no. 10, p. 428, 2022. https://doi.org/10.3390/jrfm15100428

[18] A. Coşkun and M. Karakoç, *A conceptual framework for behavioral accounting. In Uncertainty and Challenges in Contemporary Economic Behaviour*. Emerald Publishing Limited. https://doi.org/10.1108/978-1-80043-095-220201007, 2020.

[19] R. N. Stone and K. Grønhaug, "Perceived risk: Further considerations for the marketing discipline," *European Journal of Marketing*, vol. 27, no. 3, pp. 39-50, 1993. https://doi.org/10.1108/03090569310026637

[20] M.-C. Lee, "Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit," *Electronic Commerce Research and Applications*, vol. 8, no. 3, pp. 130-141, 2009. https://doi.org/10.1016/j.elerap.2008.11.006

[21] K. Jangir, V. Sharma, S. Taneja, and R. Rupeika-Apoga, "The moderating effect of perceived risk on users' continuance intention for FinTech services," *Journal of Risk and Financial Management*, vol. 16, no. 1, pp. 1-16, 2022. https://doi.org/10.3390/jrfm16010021

[22] F. Driediger and V. Bhatiasevi, "Online grocery shopping in Thailand: Consumer acceptance and usage behavior," *Journal of Retailing and Consumer Services*, vol. 48, pp. 224-237, 2019. https://doi.org/10.1016/j.jretconser.2019.02.005

[23] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "User acceptance of information technology: Toward a unified view," *MIS Quarterly: Management Information Systems*, vol. 27, no. 3, pp. 425-478, 2003. https://doi.org/10.2307/30036540

[24] M. K. Al-Nawayseh, "Fintech in COVID-19 and beyond: What factors are affecting customers' choice of FinTech applications?," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 6, no. 4, pp. 1-15, 2020. https://doi.org/10.3390/joitmc6040153

[25] M. T. Le, "Examining factors that boost intention and loyalty to use Fintech post-COVID-19 lockdown as a new normal behavior," *Heliyon*, vol. 7, no. 8, p. e07821, 2021. https://doi.org/10.1016/j.heliyon.2021.e07821

[26] S. Chauhan, "Acceptance of mobile money by poor citizens of India: Integrating trust into the technology acceptance model," *Info*, vol. 17, no. 3, pp. 58-68, 2015.

[27] M. T. Alshurideh, B. Al Kurdi, R. e. Masa'deh, and S. A. Salloum, "The moderation effect of gender on accepting electronic payment technology: A study on United Arab Emirates consumers," *Review of International Business and Strategy*, vol. 31, no. 3, pp. 375-396, 2021. https://doi.org/10.1108/RIBS-08-2020-0102

[28] S.-Y. Hung, C.-M. Chang, and T.-J. Yu, "Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system," *Government Information Quarterly*, vol. 23, no. 1, pp. 97-122, 2006. https://doi.org/10.1016/j.giq.2005.11.005

[29] P. B. Lowry, A. Vance, G. D. Moody, B. Beckman, and A. Read, "Explaining and predicting the impact of branding alliances and web site quality on initial consumer trust of E-commerce web sites," *Journal of Management Information Systems*, vol. 24, no. 4, pp. 199-224, 2008. https://doi.org/10.2753/MIS0742-1222240408

[30] L. Robert Jr, A. Denis, and Y.-T. Hung, "Individual swift trust and knowledge-based trust in face-to-face and virtual team members," *Journal of Management Information Systems*, vol. 26, no. 2, pp. 241-279, 2009. https://doi.org/10.2753/MIS0742-1222260210

[31] R. Schnall, T. Higgins, W. Brown, A. Carballo-Dieguez, and S. Bakken, "Trust, perceived risk, perceived ease of use and perceived usefulness as factors related to mhealth technology use," *Studies in Health Technology and Informatics*, vol. 216, no. 4, pp. 467-471, 2015.

[32] M. Yang, A. Al Mamun, M. Mohiuddin, N. C. Nawi, and N. R. Zainol, "Cashless transactions: A study on intention and adoption of e-wallets," *Sustainability*, vol. 13, no. 2, pp. 1-18, 2021. https://doi.org/10.3390/su13020831

[33] A. Kesharwani and S. S. Bisht, "The impact of trust and perceived risk on internet banking adoption in India: An extension of technology acceptance model," *International Journal of Bank Marketing*, vol. 30, no. 4, pp. 303-322, 2012. https://doi.org/10.1108/02652321211236923

[34] M. Mufarih, R. Jayadi, and Y. Sugandi, "Factors influencing customers to use digital banking application in Yogyakarta, Indonesia," *The Journal of Asian Finance, Economics and Business*, vol. 7, no. 10, pp. 897-907, 2020. https://doi.org/10.13106/jafeb.2020.vol7.no10.897

[35] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quarterly*, vol. 13, no. 3, pp. 319-340, 1989. https://doi.org/10.5962/bhl.title.33621

[36] C. Candy, S. Shellyna, J. Justyanita, and K. Kristiani, "E-wallet adoption: Technology acceptance model and COVID-19," *Jurnal Inovasi Ekonomi*, vol. 7, no. 01, pp. 91-100, 2022. https://doi.org/10.22219/jiko.v7i01.20385

[37] D. Priantinah, M. N. Aisyah, and Y. Nurim, "The analysis of technology acceptance model (TAM) for personal financial management on mobile application technology," presented at the International Conference on Banking, Accounting, Management, and Economics (ICOBAME 2018), 2019.

[38] N. Shaw, "The mediating influence of trust in the adoption of the mobile wallet," *Journal of Retailing and Consumer Services*, vol. 21, no. 4, pp. 449-459, 2014. https://doi.org/10.1016/j.jretconser.2014.03.008

[39] S. Abramova and R. Böhme, "Perceived benefit and risk as multidimensional determinants of bitcoin use: A quantitative exploratory study," in *ICIS 2016 Proceedings*, 2016.

[40] H. Lee, H. Park, and J. Kim, "Why do people share their context information on social network services? A qualitative study and an experimental study on users' behavior of balancing perceived benefit and risk," *International Journal of Human-Computer Studies*, vol. 71, no. 9, pp. 862-877, 2013. https://doi.org/10.1016/j.ijhcs.2013.01.005

[41] Y. Liu, Y. Yang, and H. Li, "A unified risk-benefit analysis framework for investigating mobile payment adoption," presented at the International Conference on Mobile Business, ICMB 2012, 2012.

[42] H. S. Ryu, "Understanding benefit and risk framework of Fintech adoption: Comparison of early adopters and late adopters," in *Proceedings of the Annual Hawaii International Conference on System Sciences, 2018-Janua*, 2018, pp. 3864–3873, doi: https://doi.org/10.24251/hicss.2018.486.

[43] N. Jain and T. Raman, "The interplay of perceived risk, perceive benefit and generation cohort in digital finance adoption," *EuroMed Journal of Business*, vol. 18, no. 3, pp. 359-379, 2023. https://doi.org/10.1108/EMJB-09-2021-0132

[44] N. V. Khuong, N. T. T. Phuong, N. T. Liem, C. T. M. Thuy, and T. H. Son, "Factors affecting the intention to use financial technology among Vietnamese youth: Research in the time of COVID-19 and beyond," *Economies*, vol. 10, no. 3, p. 57, 2022. https://doi.org/10.3390/economies10030057

[45] A. Razzaque, R. T. Cummings, M. Karolak, and A. Hamdan, "The propensity to use FinTech: Input from bankers in the Kingdom of Bahrain," *Journal of Information & Knowledge Management*, vol. 19, no. 01, p. 2040025, 2020. https://doi.org/10.1142/S0219649220400250

[46] V. Venkatesh, J. Y. Thong, and X. Xu, "Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology," *MIS Quarterly*, vol. 36, no. 1, pp. 157-178, 2012.

[47] S. A. Nikou and A. A. Economides, "Mobile-based assessment: Investigating the factors that influence behavioral intention to use," *Computers & Education*, vol. 109, pp. 56-73, 2017. https://doi.org/10.1016/j.compedu.2017.02.005

[48] F.-W. Lim, F. Ahmad, and A. Talib, "Behavioural intention towards using electronic wallet: A conceptual framework in the light of the unified theory of acceptance and use of technology (UTAUT)," *Imperial Journal of Interdisciplinary Research*, vol. 5, no. 1, pp. 79-86, 2019.

[49] S. Taylor and P. A. Todd, "Understanding information technology usage: A test of competing models," *Information Systems Research*, vol. 6, pp. 144-176, 1995. http://dx.doi.org/10.1287/isre.6.2.144

[50] A. Tarhini, K. Hone, and X. Liu, "Measuring the moderating effect of gender and age on e-learning acceptance in England: A structural equation modeling approach for an extended technology acceptance model," *Journal of Educational Computing Research*, vol. 51, no. 2, pp. 163-184, 2014. https://doi.org/10.2190/EC.51.2.b

[51] K. A. Khan, M. A. Akhtar, S. K. Dey, and R. Ibrahim, "Financial anxiety, financial advice, and E-payment use: Relationship and perceived differences between males & females of generation Z," *Journal of Critical Reviews*, vol. 7, no. 18, pp. 1812–1820, 2020.

[52] E. A. Abu-Shanab, "Education level as a technology adoption moderator," presented at the 2011 3rd International Conference on Computer Research and Development, 2011.

[53] R. Agarwal and J. Prasad, "Are individual differences germane to the acceptance of new information technologies?," *Decision Sciences*, vol. 30, no. 2, pp. 361-391, 1999. https://doi.org/10.1111/j.1540-5915.1999.tb01614.x

[54] A. Burton-Jones and G. S. Hubona, "The mediation of external variables in the technology acceptance model," *Information & Management*, vol. 43, no. 6, pp. 706-717, 2006. https://doi.org/10.1016/j.im.2006.03.007

[55] S. S. Binyamin, M. J. Rutter, and S. Smith, "The moderating effect of education and experience on the use of learning management systems," in *Proceedings of the 2019 8th International Conference on Educational and Information Technology*, 2019, pp. 293–300, doi: https://doi.org/10.1145/3318396.3318428.

[56] O. B. Hai, G. Zandi, S. Mansori, and I. A. Shahzad, "Impact of customer satisfaction and service quality on membership renewal: A study on Malaysian credit card holders," *Journal of Management World*, vol. 2024, no. 1, pp. 21–29, 2024. https://doi.org/10.53935/jomw.v2024i1.271

[57] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks: SAGE Publications, Inc, 2022.

[58] E. Fernando, "Analysis of the influence of consumer behavior using FinTech services with SEM and TOPSIS," presented at the 2019 International Conference on Information Management and Technology (ICIMTech), 2019.

[59] A. F. Alkhwaldi, E. E. Alharasis, M. Shehadeh, I. A. Abu-AlSondos, M. S. Oudat, and A. A. Bani Atta, "Towards an understanding of FinTech users' adoption: Intention and e-loyalty post-COVID-19 from a developing country perspective," *Sustainability*, vol. 14, no. 19, p. 12616, 2022. https://doi.org/10.3390/su141912616

[60] H. P. Lu, C. L. Hsu, and H. Y. Hsu, "An empirical study of the effect of perceived risk upon intention to use online applications," *Information Management & Computer Security*, vol. 13, no. 2, pp. 106-120, 2005. https://doi.org/10.1108/09685220510589299

[61] B. Setiawan, D. P. Nugraha, A. Irawan, R. J. Nathan, and Z. Zoltan, "User innovativeness and fintech adoption in Indonesia," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 7, no. 3, p. 188, 2021. https://doi.org/10.3390/joitmc7030188

[62] E. T. Sihotang and L. A. Sekarsari, "Motivations for using internet banking services and their relationship with gender differences," *Jurnal Manajemen Dan Kewirausahaan*, vol. 6, no. 2, pp. 170-180, 2018. https://doi.org/10.26905/jmdk.v6i2.2331

[63] R. K. Dewi, "What is meant by the digital native generation? This is the explanation.... Page all - Kompas.com," Retrieved: https://www.kompas.com/skola/read/2023/06/28/200000969/apa-yang-dimaksud-Generasi-digital-native-ini-pengjualannya--?page=all&lgn_method=google. 2023.

[64] R. Sarwono and I. Bernarto, "Leading millennials to 4.0 organization," *Management Science Letters*, vol. 10, no. 4, pp. 733-740, 2020. https://doi.org/10.5267/j.msl.2019.10.024