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An Empirical Examination of the Influence of FinTech Adoption on Digital Transactions

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Abstract

This empirical study explores the influence of FinTech adoption on digital transactions with a focus on identifying its impact and implications. The objectives of the research are to assess the extent to which FinTech adoption affects digital transactions, to analyse the associated methodologies, and to understand the statistical tools employed in the investigation. The study utilises a comprehensive research framework to gather and analyse data, employing both qualitative and quantitative methodologies. Statistical tools such as regression analysis and trend analysis are applied to scrutinise the relationships between FinTech adoption and digital transactions. The findings reveal significant correlations and patterns, shedding light on the dynamic interplay between technological advancements in finance and the evolution of digital transactions. The implications of these findings extend to various stakeholders, including financial institutions, policymakers, and consumers. Lastly, the study concludes with insights into the potential future implications of FinTech adoption on the landscape of digital transactions, providing valuable foresight for decision-makers and researchers in the field.

Keywords: FinTech Adoption, Emerging Markets, Digital Literacy, Financial Inclusion, Financial Technology

Introduction

FinTech has made novel financial services such as online payments, peer-to-peer lending, financial planning and budgeting, crowdfunding, savings and investments, and budgeting available to the general people as a result of the financial industry's increasing integration with internet technology. FinTech service adoption increased from 33% in 2017 to 64% in 2019. FinTech platform use may have accelerated due to the COVID-19 epidemic. One of the top three FinTech services that consumers use is the online wealth management platform's savings and investing features. 78% of people are aware of the investing and saving services provided by FinTech platforms, according to 34% of people worldwide, they used online wealth management platforms to access savings and investing services by the end of 2019 (Xie et al., 2021). This study's main goal is to look at the problem of user technology acceptability in the context of online banking. This research aims to contribute to the field of information technology (IT) acceptance/ adoption research by expanding the theoretical validity and empirical applicability of existing literature to Internet banking, an increasingly significant area in the realm of electronic commerce, and by improving the understanding of user technology acceptance. The research is based on an extended technology acceptance model (TAM) (Chau & Lai, 2003). The Technology Acceptance Model (TAM) is a widely used method for assessing how new technologies are adopted. The TAM model takes into account two important determinants, which are: perceived usefulness: the extent to which an individual thinks that utilising a certain system will improve their performance at work; and perceived simplicity of use: the extent to which an individual thinks that utilising a specific system will require no effort (Solarz & Swacha-Lech, 2021). The financial industry

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is, without a doubt, of great importance to society and in the daily lives of people worldwide. Although this sector has undergone major transformations over the centuries due to changes in political and geographic regimes and legislation, several authors (Berger, 2003; Mareev, 2016; Shim & Shin, 2016) state that a new era is being born for banks with the rise of FinTechs. This is an underexplored phenomenon and represents an important challenge for academia as well as for managers in the financial industry (Giglio, 2021). FinTech appears as a "buzz word" or hype, especially in the press, as if it were an important phenomenon that should be observed by practitioners linked to the financial industry, information technology (IT) and innovation (incubators, venture capital, angels, among others). Derived from contracting the words finances and technology, the term "FinTech" arose in the scientific literature in 1972. In an academic article, the vice president of Manufacturers Hanover Trust, Abraham Leon Bettinger, detailed models about how daily problems encountered in that organisation were analysed and resolved, and formulated the following definition for FinTech: "*an acronym which stands for financial technology, combining bank expertise with modern management science techniques and the computer"* (Bettinger, 1972, p. 62), (Giglio, 2021). For instance, Accenture reported that FinTech investment in Europe doubled (120%) between 2014 and 2015, with a 51% increase in the number of deals. In the Asia-Pacific region, investment more than quadrupled in 2015, reaching $4.3 billion, with a substantial portion occurring in China ($1.97 billion) and India ($1.65 billion). Bank Indonesia defines FinTech as the convergence of financial services and technology, transforming business models from conventional to modern. This shift allows for remote transactions that can be completed in seconds, challenging traditional face-to-face payment methods.

Objectives of the Study

- To assess the extent to which FinTech adoption affects digital transactions.
- To understand the digital transaction patterns.
- To investigate the relationship between FinTech adoption and digital transactions.

Literature Review

Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis in 1989, stands as one of the most influential frameworks for understanding technology adoption. It centers on two key factors influencing an individual's intention to use new technology: perceived ease of use and perceived usefulness. For instance, an older adult who views digital games as too challenging or unproductive is less likely to adopt the technology, whereas one who sees digital games as mentally stimulating and easy to learn is more inclined to embrace it. Despite criticisms, TAM provides a valuable general framework and aligns with various studies exploring factors influencing older adults' technology adoption intentions (Braun, 2013). According to the TAM, actual technology use is directly linked to an individual's intentions to use the technology. As these intentions increase, the likelihood of actual technology use also rises. Take online therapy as an example. Intention to use technology is often gauged through questionnaires. The model further posits that these intentions are directly influenced by two factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which an individual believes using a specific technology would be beneficial. When perceived usefulness increases, intentions to use the technology also rise. This aspect is commonly assessed through questionnaires. On the other hand, perceived ease of use is the degree to which an individual believes using a particular technology would be effortless. As perceived ease of use increases, so do intentions to use the technology. This aspect is also frequently measured through questionnaires (Worthington, 2021).

FinTech

Finance and technology have been intertwined since the early stages of development, with historical examples such as Mesopotamia showcasing the use of written records as an early form of information technology to manage administrative and economic systems, including financial

transactions. The evolution of financial technology (FinTech) has seen a significant surge in investment and academic interest in recent years. According to Zavolokina (2021), the data on FinTech investment indicates a rapid increase, especially from 2015 onwards. The World Bank (Nizar, 2017) defines FinTech as an industry that utilises technology to enhance the efficiency of financial systems and service delivery. The Financial Stability Board (Nizar, 2017) expands this definition to include technological innovations in financial services that result in substantial effects on business models, applications, processes, or products related to financial services.

Digital Transaction

Digital innovation is defined as "a product, process, or business model that is perceived as new, requires significant changes on the part of adopters, and is embodied in or enabled by IT" (Fichman, n.d.). Meanwhile, digital transformation, as stated by Guellec and Paunov (2017), involves the digitisation of previously analog machine and service operations, organisational tasks, and managerial processes. The convergence of IT and finance is known as Digital Finance, reflecting the digitalisation of the financial industry (Gomber, Koch & Siering, 2017). Digitalisation is inevitable across various aspects of life, particularly in financial transactions. Digital transactions refer to non-monetary or cash transactions conducted through applications or websites on smartphones and other high-tech devices. Yulia Margaretha Manullang (2018) identifies script-based instruments as common in banking practice and outlines dimensions or indicators of digital transactions. Scholars and policymakers recognise the potential of FinTech in promoting financial inclusion, particularly in developing and emerging markets, as a crucial step towards alleviating poverty (Ediagbonya & Tioluwani, 2022). There are various "literacies of the digital" that help in comprehending phenomena in digital contexts. While many of these literacies have roots in the pre-digital age, they are crucial for understanding and navigating the digital landscape (Martin & Grudziecki, 2006).

Technology Adoption, Digital Transaction with Mediating the Role of FinTech

Digital transformation has a significant and positive impact on the sustainability of a company's operations. Mangifera and Mawardi's findings suggest a noteworthy effect of digital transformation on businesses' financial performance, emphasising the importance for small businesses to enhance their digital skills and knowledge to meet customer needs and improve sustainability. According to Miroshnychenko et al. and Szalavetz, firms embracing digitalisation are better positioned to achieve business goals, switch to new verticals, and outperform rivals, enabling early detection of opportunities and overall performance enhancement (Siswanti et al., 2024). While the financial sector has a history of adopting technology, certain constraints shaped its operating environment until recently. In the late 20th century, the industry already witnessed a high level of computerisation, with most financial services being dematerialised. However, some constraints persisted, such as physical cash requirements for payments and in-person or paper-based processes for onboarding new products and services. Connectivity also posed challenges, with the need for physical infrastructure like branches and ATMs. Transactions with counterparties in other banks were often costly and cumbersome. Significant technological advances in connectivity, data processing, and storage have contributed to the current wave of technology-based finance. These technological advancements have paved the way for a more interconnected and digitally driven financial landscape, offering improved accessibility, efficiency, and innovation in financial services (Feyen et al., n.d.) (Fig. 1).

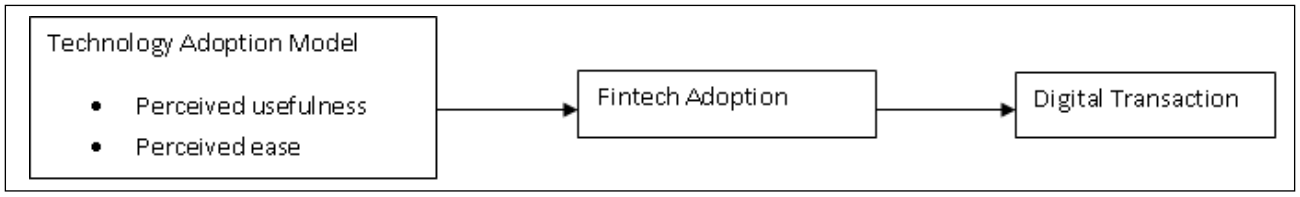


Fig. 1: Proposed Conceptual Model

Hypothesis

H1: Technology adoption positively influence on FinTech adoption (Table 1).

H2: FinTech adoption positively influence on digital transaction.

H3: FinTech adoption positively mediates the role between technology adoption and digital transaction.

Table1: Measurement Instrument

Latent Variables	*Measurement Items*
Perceived usefulness (PU)	Using FinTech can meet my service needs.
	FinTech services can save time.
	FinTech services can improve efficiency.
	Overall, FinTech services are useful to me.
	It is easy to use FinTech services.
Perceived ease of use (PEU)	I find the FinTech service easy to use.
	The interface of the FinTech service is clear and straightforward.
	I can quickly become skillful in using the FinTech service.
	Interacting with the FinTech service is uncomplicated.
	I feel confident using the FinTech service even if I have limited technological knowledge.
Adoption of FinTech services (AFS)	I am likely to adopt FinTech services if I see positive reviews from trusted sources.
	I worry about the potential negative consequences of using FinTech services.
	I believe that FinTech services maintain a high level of data security.
	Using FinTech services would help me save time and effort.
Digital Transactions Adoption	I am likely to adopt digital transactions if I see positive reviews from trusted sources.
	I worry about the potential negative consequences of using digital transactions.
	I believe that digital transactions maintain a high level of data security.
	Using digital transactions would help me save time and effort.

Data Analysis

The research utilised a standardised questionnaire to collect data, engaging 250 investors in the survey. Statistical methods, including descriptive statistics, Pearson's correlation, and Cronbach alpha, were applied for data analysis, and the study employed Smart PLS3 in the model-building process to establish a comprehensive understanding of the relationships among variables, conducting multiple phases of data evaluation as outlined by Nadiger et al. (2023). Variables and financial literacy were examined by analysing descriptive statistical findings obtained from 250 surveys, as highlighted by Hiremath et al. (2023).

Table 2: Construct Reliability and Validity

	Cronbach's Alpha	*Composite Reliability (rho_a)*	*Composite Reliability (rho_c)*	*Average Variance Extracted (AVE)*
Digital Transaction Adoption	0.952	0.954	0.966	0.875
FinTech Adoption	0.969	0.97	0.977	0.915
Technology Accepted	0.946	0.958	0.954	0.68

Table 2 presents various reliability and validity measures for three constructs: Digital Transaction Adoption, FinTech Adoption, and Technology Accepted. Reliability Measures: Cronbach's alpha assesses the internal consistency of the items within each construct. The values here are all well above the conventional threshold of 0.7, indicating high internal reliability. This suggests that the items measuring each construct are consistently capturing the underlying latent construct, demonstrating the reliability of the scales. Composite reliability measures the reliability of a latent construct in a structural equation model. The values here are excellent, exceeding the recommended threshold of 0.7, indicating high reliability. Both rho_a and rho_c provide consistent estimates of reliability for each construct.

Validity Measures: AVE assesses the convergent validity of a construct, indicating the proportion of variance captured by the construct's items. The AVE values here are generally satisfactory, with Digital Transaction Adoption and FinTech Adoption exceeding the threshold of 0.5, suggesting good convergent validity. However, Technology Accepted falls slightly below this threshold, indicating that its items may not share as much variance as desired.

Table 3: Pearson Correlation

	Digital Transaction Adoption	*FinTech Adoption*	*Technology Accepted*
Digital Transaction Adoption	1		
FinTech Adoption	0.976	1	
Technology Accepted	0.945	0.935	1

The correlation between Digital Transaction Adoption and itself is 1, which is expected since it's the same variable. This is known as the variable's perfect correlation with itself (Table 3). The high positive correlation of 0.945 between Digital Transaction Adoption and Technology Accepted indicates a strong and positive relationship between these two variables. As Digital Transaction Adoption increases, there is a substantial tendency for Technology Accepted to also increase. The high positive correlation of 0.935 between FinTech Adoption and Technology Accepted suggests a strong positive relationship. An increase in FinTech Adoption is associated with a notable increase in Technology Accepted.

Table 4: Path Coefficient

	Original Sample (O)	*T Statistics*	*P Values*	*Results*
FinTech Adoption -> Digital Transaction Adoption	0.976	116.989	0	Accepted
Technology Accepted -> FinTech Adoption	0.935	46.839	0	Accepted

The path coefficients derived from the analysis reveal compelling insights into the relationships between key variables (Table 4). Firstly, the path from FinTech Adoption to Digital Transaction Adoption exhibits a robust positive association, with a path coefficient of 0.976. This signifies that as FinTech Adoption increases, there is a substantial and statistically significant elevation in Digital Transaction Adoption. The remarkably high T statistics value of 116.989 underscores the strength and reliability of this relationship. Similarly, the path from Technology Accepted to FinTech Adoption demonstrates a significant positive impact, with a path coefficient of 0.935. This indicates that as the acceptance of technology increases, there is a notable and statistically significant rise in FinTech Adoption. The T statistics value of 46.839 reinforces the reliability of this connection. In both cases, the p-values of 0 confirm the statistical significance of these relationships, providing confidence in the observed associations. Overall, these path coefficients illuminate the interconnected dynamics of FinTech Adoption, Technology Accepted, and Digital Transaction Adoption, underscoring their pivotal roles in shaping the landscape of technological integration and financial transactions.

Table 5: Total Effect

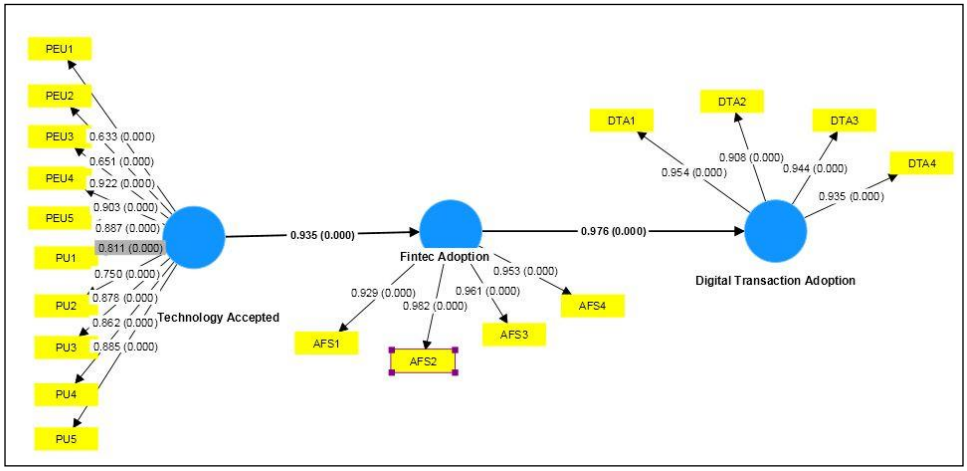
	Original Sample (O)	*P Values*
FinTech Adoption -> Digital Transaction Adoption	0.976	0
Technology Accepted -> Digital Transaction Adoption	0.913	0
Technology Accepted -> FinTech Adoption	0.935	0

The results of the analysis indicate significant relationships among the variables FinTech Adoption, Technology Accepted, and Digital Transaction Adoption. Firstly, there is a strong positive association between FinTech Adoption and Digital Transaction Adoption, with a coefficient of 0.976 and a p-value of 0, suggesting that as FinTech Adoption increases, there is a corresponding significant increase in Digital Transaction Adoption. Similarly, the relationship between Technology Accepted and Digital Transaction Adoption is also positive and significant, with a coefficient of 0.913 and a p-value of 0. This signifies that as acceptance of technology increases, there is a significant positive impact on the adoption of digital transactions. Additionally, the relationship between Technology Accepted and FinTech Adoption is noteworthy, as evidenced by a coefficient of 0.935 and a p-value of 0. This suggests that higher levels of acceptance of technology are associated with increased FinTech Adoption (Table 5). Overall, these findings collectively emphasise the interplay between FinTech Adoption, Technology Accepted, and Digital Transaction Adoption, portraying a comprehensive view of how these variables are interconnected and contribute to the overall landscape of technological and financial integration.

Specific Indirect Effect

	Specific Indirect Effects
Technology Accepted -> FinTech Adoption -> Digital Transaction Adoption	0.913

The specific indirect effect of "Technology Accepted" on "Digital Transaction Adoption" through the intermediary variable "FinTech Adoption" is 0.913. This value signifies the extent to which the acceptance of technology indirectly influences the adoption of digital transactions through the mediation of FinTech adoption. For each unit increase in the acceptance of technology, there is a substantial positive indirect effect of 0.913 on the adoption of digital transactions. This suggests that the impact of technology acceptance on digital transaction adoption is significantly mediated by the adoption of financial technology (FinTech). In other words, as individuals or entities become more accepting of technology, they are more likely to adopt FinTech solutions, and subsequently, this adoption of FinTech significantly contributes to the adoption of digital transactions. The high magnitude of the specific indirect effect underscores the strong influence of technology acceptance on the overall digital transaction adoption pathway through the utilisation of FinTech solutions.



Source: Authors own.

Fig. 2: Path Coefficient

Fig. 2 illustrates the results, which indicate that the t value of TA for AFS was greater than 1.96. The latter was significantly impacted by the former (β = 0.935, t = 46.839), AFS for DTA (β = 0.976, t = 116.989), FRA for SI (β = 0.494, t = 3.680), indicating that hypothesis H1, H2, were satisfied. An important mediating role for Adoption of FinTech services was seen in the interactions between TAM and Digital Transactions.

Conclusion

This empirical examination sheds light on the influential dynamics between FinTech Adoption and Digital Transactions. The findings underscore a significant and positive relationship between these two key variables, revealing that as FinTech Adoption increases, there is a substantial impact on the adoption of Digital Transactions. This conclusion aligns with the broader trends observed in the evolving landscape of financial technology and its impact on transactional behaviour. The positive association between FinTech Adoption and Digital Transactions is not only statistically significant but also holds practical implications for various stakeholders, including financial institutions, businesses, and consumers. As financial technology continues to advance, fostering the adoption of innovative solutions, the shift towards digital transactions becomes more pronounced. The results of this study provide empirical evidence supporting the notion that the embrace of FinTech solutions is a driving force behind the increased prevalence of digital transactions.

In conclusion, the high values of Cronbach's alpha and composite reliability suggest strong internal consistency and reliability for the constructs. While the AVE values for Digital Transaction Adoption and FinTech Adoption indicate good convergent validity, the AVE for Technology Accepted suggests a need for further scrutiny or refinement of the measurement items to enhance convergent validity for this construct. Overall, these measures contribute to the robustness of the measurement model and provide confidence in the reliability and validity of the constructs in your study. The correlation matrix indicates strong positive relationships between all pairs of variables. These findings suggest that Digital Transaction Adoption, Fintec Adoption, and Technology Accepted are positively associated with each other, reflecting a cohesive relationship among these constructs. High correlations between these variables may indicate shared variance or interdependence in the context you are studying.

Practical Implication

The results of this study add valuable insights to the expanding body of knowledge in the realms of FinTech and digital finance, offering significant contributions for researchers, industry professionals, and policymakers alike. In the midst of the ongoing digital transformation of the financial landscape, comprehending the intricate relationship between FinTech adoption and digital transactions becomes increasingly imperative. Subsequent research initiatives could further investigate the specific mechanisms through which FinTech shapes transactional behavior, delving deeper into the implications for financial ecosystems and consumer conduct. In its entirety, this empirical examination enhances our comprehension of the evolving financial terrain, emphasising the pivotal role played by FinTech in molding the future landscape of digital transactions.

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