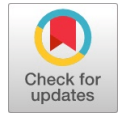


# Financial Inclusion through Fin-tech Adoption of Women: A Way to Sustainable Development

Israt Jahan Shithii, Most. Sadia Akter



**Abstract:** *The presence of technologically advanced financial institutions, such as banks and Mobile Financial Services (MFS), has utilised technology to streamline the process of financial transactions, which is known as financial technology (fintech). However, there are many people, such as women, illiterate or poor, who don't use fintech due to social barriers or lack of knowledge and ability. When those people became involved, financial transactions became a matter of financial inclusion, leading to economic growth. With the advancement of technology in finance, financial inclusion increases because one can conduct financial transactions, save, and pay from anywhere and at any time, which leads to economic growth and expands the opportunities for innovative technology. The objective of this study is to explore how digital financial inclusion can be implemented to achieve sustainable development through the adoption of fintech among women. This paper identifies the factors influencing the adoption of fintech services, examines the relationship between fintech adoption and financial inclusion, and explores how sustainable development goals are achieved by adopting fintech for women. To demonstrate how financial inclusion can be achieved through the adoption of fintech by women, the UTAUT model, along with some new constructs, is identified to validate the latest model. Innovative PLS 4.0 software is used for conducting statistical analysis to validate the model.*

**Keywords:** *Fin-tech, Financial Inclusion, Women, Sustainable Development.*

## I. INTRODUCTION

The financial sector is one of the sectors in which new applications of technology have been developed to improve the quality of all financial services [1]. Fin-tech is defined as a new concept that improves financial services by proposing technology solutions, including digital finance (crowdfunding, peer-to-peer lending, and crowd lending), digital investment (mobile trading), digital money (electronic money and cryptocurrency), digital payments (m-payment), digital insurance, and digital financial advising [2], [3]. Adoption of Fin-tech eliminates time and space shortcomings of financial operations like checking balances, transferring funds, and decreasing visits to physical branches of financial organizations, which leads to efficiency in financial service, generates new opportunities for economic innovation, and

improves governance [4].

Financial inclusion occurs when the adoption of fintech users increases because it provides affordable financial services to individuals and businesses that meet the need for transactions, payments, checking balances, and savings effectively and efficiently [5]. Digital financial inclusion can be extended with the adoption of fintech services as it provides cost savings in digital transactions, reaches people who are excluded financially, and provides customers with a suitable and cost-effective financial transaction [6]. According to the report of the National Financial Inclusion Strategy (NFIS), financial inclusion ensures access of underserved populations to the full range of financial services with the help of the adoption of financial technologies because fintech provides affordable cost with ease of use, quality, and mitigates risks, which leads to sustainability [7]. Increasing financial inclusion is crucial because it encourages community use of financial services, which improves people's well-being [8]. As a result, fintech can be taken as a tool to implement a national financial inclusion strategy. According to the Sustainable Development Goals (SDGs), financial inclusion is a critical factor in facilitating sustainable economic growth. The Sustainable Development Goals (SDGs) agenda of the United Nations contains seventeen important goals, where financial inclusion and SDGs 8 and 9 are closely connected [9]. The following paper presents a model of fintech adoption that promotes financial inclusion within the context of sustainable development. The primary objective of this study is to determine how digital financial inclusion can be effectively implemented to achieve sustainable growth through the adoption of fintech. It also identifies the factors that influence the adoption of fintech services, illustrates the relationship between financial inclusion and fintech adoption, and examines how financial inclusion contributes to achieving sustainable development goals.

## II. THEORETICAL FRAMEWORK

The study presents a comprehensive review that lays the foundation for a conceptual model of financial inclusion through fintech adoption. The Unified Theory of Acceptance and Use of Technology (UTAUT) model, along with some new constructs, is identified to validate the new model. The review of the literature in the current research has been classified under the following headings:

### A. Perceived Performance Expectancy (U)

Perceived performance expectancy implies individual belief in "using the systems that will help them achieve job performance" [10]. Performance expectancy has a positive influence on the behavioural adoption of fintech services, as

Manuscript received on 30 December 2023 | Revised Manuscript received on 08 January 2023 | Manuscript Accepted on 15 January 2024 | Manuscript published on 30 January 2024.

\*Correspondence Author(s)

Israt Jahan Shithii\*, Lecturer, Department of Management Information Systems (MIS), Faculty of Business Studies, Noakhali Science and Technology University, Noakhali 3814, Noakhali, Bangladesh. E-mail: shithiji@gmail.com, ORCID ID: 0009-0004-5837-2090

Most. Sadia Akter, Lecturer, Bangladesh University of Professionals (BUP), Dhaka, Bangladesh. E-mail: sadiam30@gmail.com, ORCID ID: 0009-0000-5018-0968

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identified by many empirical studies [11], [12].

Perceived performance expectancy impacts users' attitudes and readiness to adopt fintech while using information systems [14]. The underlying construct, namely perceived performance expectancy (U), has relative advantages from innovation diffusion theory and perceived usefulness from the technology adoption model [15]. As a result of this, and considering the findings of the earlier investigations, the following hypothesis was developed:

**H1: Perceived Performance Expectancy(U) has a Positive Impact on the behavioural intention to adopt Fin-tech Services.**

## B. Perceived Effort Expectancy (E)

Effort expectancy is defined as how easily the user can use the service [10]. The effort expectancy relating to ease of use of fintech is the central aspect that affects its adoption by consumers [16]. Users are more likely to use fintech services if they find them to be helpful, user-friendly, and simple to use [11], [12]. So, the hypothesis is as follows.

**H 2: Perceived Effort Expectancy (E) has a Positive Impact on the behavioural intention to adopt Fin-tech Services.**

## C. Digital Financial Literacy (L)

Financial literacy is a person's level of financial literacy that can be measured by their awareness and comprehension of various economic goods and institutions [17], as well as their level of competence in managing their finances. Digital financial literacy encompasses an understanding of online shopping, various online payment methods, and online banking. Prasad et al. (2018 [18]) said about the necessity of digital financial literacy in technology adoption. Grohmann & Menkhof, (2020 [19]) demonstrated that a person's level of financial literacy is directly related to their participation in the economic system. Okello Candiya Bongomin et al., (2020 [20]) explained that financial literacy is linked to financial inclusion. The importance of digital financial literacy in achieving financial inclusion is underscored by the fact that both the direct and indirect effects of financial literacy on financial inclusion emerge as significant. The hypotheses are as follows:

**H3: Perceived Digital Financial Literacy (L) has a Positive Impact on the behavioural intention to adopt Fin-tech Services.**

## D. Behavioural Intention to Adopt Fin-tech (FU)

Warshaw and Davis (1985 [21]) defined behavioural intention to adopt fintech as "a person's decision to use or not use it" in the future. Venkatesh et al. (2003 [10]) also considered behavioral intention to adopt technology in their model. An individual's propensity to change their behaviour is significantly affected by the rate of technological change in the financial services industry and the degree to which consumers are aware of the implications of this change. Furthermore, if the rate of technological development is faster than the rate of consumer awareness and use, the fintech companies may not be able to reap the benefits of the innovation, or the gestation period to produce profits may increase [22].

## E. Financial Inclusion by Actual Use of Fin-tech (F)

Any kind of technology will be preferred successfully if the user accepts and uses the services. There is existing literature that supports the idea that the intention to use technology services leads to the actual use of fintech [23], [24]. In this study, the factors responsible for the actual use of fintech are identified. As we live in a technology innovation era, new technology is easily developed and accepted by young women, and they are more excited to accept fintech services [25]. With the rise of the fintech movement, national financial inclusion plans are continuing to gravitate toward digital finance [7]. In this study, if users utilise fintech services, the strategy of the National Financial Inclusion Strategy (NFIS) can be easily implemented, leading to financial inclusion.

**H 4: The Behavioural Intention to Adopt Fin-tech has a Significant Positive Effect on Financial Inclusion by Actually Adopting Fin-Tech Services.**

Recent research indicates that financial inclusion has emerged as one of the most important policy priorities in many nations [26], [27]. Financial inclusion refers to all participants in a market having equal and straightforward access to and utilisation of the formal financial system, along with affordable formal services. Financial inclusion ensures people and enterprises have access to basic and cheap formal financial services [28]. Additionally, Inclusive digital finance aims to give mobile money, internet banking, electronic payments, insurance, and loans to previously excluded populations [29].

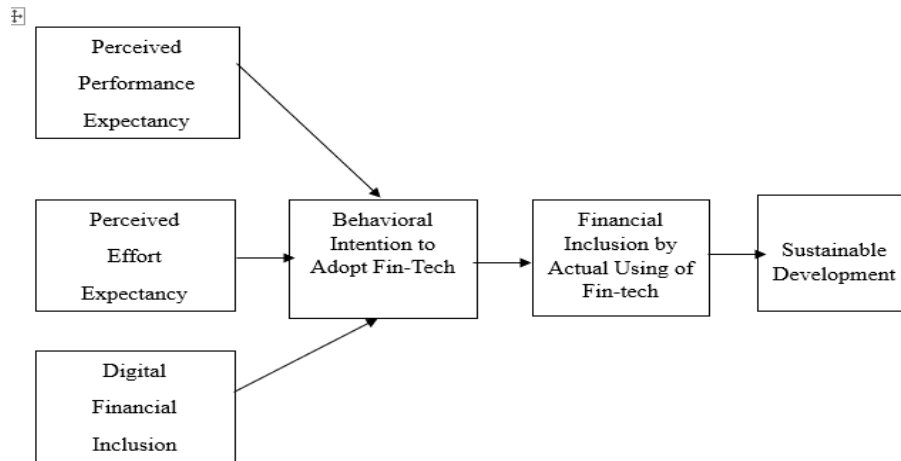
## F. Sustainable Development (SD)

Financial inclusion and sustainable development depend on the indicators used to measure them [30]. The results reinforce global calls for increased financial inclusion and quick achievement of sustainable development goals for all people, the environment, and the planet. Inclusion in digital financial markets is not only an essential step toward achieving the Sustainable Development Goals (SDGs) by 2030, but it is also a necessary step.

SDG 8: Decent work and economic growth: Digital financial services power low-cost business strategies (digitizing wages, trade payments, loans) especially for MSMEs, potentially creating 95 million new jobs and raising global GDP by 6% by 2025 [29], [31]. SDG 9: Industry, innovation, and infrastructure: The use of digital financing presents opportunities for small firms to grow, innovate, expand into new markets, and recruit more young people to work in the digital economy [29], [32]. The credit helps women gain economic power. Digital banking services reduce theft risks and administrative and disbursement costs for women-owned enterprises [32]. When low-income individuals are barred from participating in formal financial systems, it makes the basis of shared economic growth more precarious. Financial inclusion using mobile phones and ICT tools is linked to economic development [31], [30]. SDG-9 encourages innovation and sustainable industrialization. Increased financial inclusion led to improvements in several key performance measures, including income, the standard of living, innovation, health, education, and the reduction of poverty [33], [34].



## H 5: There is a Positive Relation Between Financial Inclusion and Sustainable Development



**Figure 1: Conceptual Framework of Women's Adoption of Fin-tech Leads to Sustainable Development Through Financial Inclusion (Source: Author)**

**Table 1: Development of Model and Construct**

Construct	Item	References
Perceived Performance Expectancy (U)	"U1. Financial technology services save time." "U2. Fin-tech services improve efficiency."	[10], [35].
Perceived Effort Expectancy (E)	"E1. It is easy to use fintech services." "E2. I think the operation interface of fintech is friendly and understandable."	[10], [35].
Digital Financial Literacy(L)	L1. I possess the competency to provide financial services, including payment and savings. L2. I have the competency to develop digital products and services, including tablets, PCs, laptops, and mobile devices.	Self.
Behavioural Intention to Adopt Fin-tech (FA)	"FA1. I intend to use Fin-tech in the future." "FA2. I predict I will use Fin-tech in the future."	[35], [10].
Financial Inclusion by Actual Use of Fin-tech (F)	"FI4: I think that access to basic financial services gradually improves the living conditions of the beneficiaries over time through fintech." "FU4. When I use fintech, I will be able to facilitate my financial transactions." "FU5. I find that using fintech to make a deposit is a flexible, affordable, convenient, and available financial offer that can increase the level of access to financial services."	[36], [37].
Sustainable Development (SD)	"SD2. The adoption of Fin-tech promotes innovative financial services (goal 9)." "SD3. Financial systems are positively linked with the economy's growth (goal 8)."	[7], [38].

### III. METHODOLOGY

The research instrument was developed by developing a conceptual model. The conceptual model was created by the authors, drawing on the literature regarding the UTAUT model and its constructs. There are thirteen questions designed under six constructs. A total of 240 samples were collected from female users of fintech services. As per the "10-times rules" that have been used as a simplicity of application in selecting sample size [39], more than "10 times" is an acceptable range in SMART PLS. This study used a sample size of 18 total questionnaires. So, it is enough to validate the respondents.

### IV. RESULT

#### A. Measurement Model

Construct validity is used to determine the indicators that reflect the underlying construct with the help of convergent validity and discriminant validity. Convergent validity is identified with item loading, composite reliability, and average variance extraction (AVE). In the convergent validity measurement table, it is seen that the loading of each item is greater than 0.70; these values remain within accepted values [40] and all the values of AVE are greater than .50 [41], [42]. The variance inflation factor (VIF) is less than 10 [43]. So, from the above discussion, all the items in the conceptual model should be taken for further procedure.

**Table 2: Convergent Validity of the Reflective Indicators used in the Measurement Model**

Construct	Item	Loading	Composite Reliability	Average Variance Extraction (AVE)	VIF
Perceived Performance Expectancy(U)	U1	.834	.828	0.707	1.207
	U2	.847			
Perceived Effort Expectancy (E)	E1	.894	0.844	0.73	1.275
	E2	.812			
Digital Financial Literacy(L)	L1	.823	.79	0.653	1.103
	L2	.793			
Behavioural Intention to Adopt Fin-tech (FA)	FA1	.905	0.849	0.738	1.306
	FA2	.811			
Financial Inclusion (FI)	FI4	.772	0.812	0.59	1.239
	FU4	.743			
	FU5	.790			
Sustainable Development (SD)	SD2	.905	0.818	0.694	1.194
	SD3	.755			

In the discriminant validity table, all the square roots of AVE are higher than the correlations among all the constructs. HTMT identifies the average correlations of the indicators across constructs where the acceptable levels are < 0.90 [44]. In this paper, all the correlations among the indicators of the construct are less than .90. So, the discriminant validity is accepted.

**Table 2: Discriminant Validity (HTMT Criterion)**

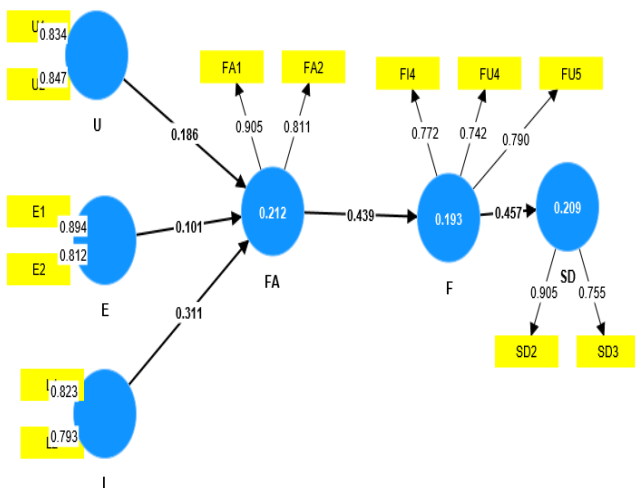
	E	F	FA	L	SD	U
E						
F	0.605					
FA	0.412	0.665				
L	0.597	0.728	0.714			
SD	0.466	0.708	0.629	0.632		
U	0.615	0.517	0.497	0.59	0.397	

## B. Structural Model

The structural model illustrates the path coefficients to identify the causal relationships between the constructs. In the hypothesis test result table, the result for H1 ( $\beta = .186$ ,  $p < .01$ ,  $t > 2$ ) indicates that perceived performance expectancy has a positive impact on the adoption of fintech services. The result for H2 ( $\beta = .101$ ,  $p < .01$ ,  $t < 2$ ) indicates that perceived effort expectancy does not have a positive impact on the adoption of fintech services. The result for H3 ( $\beta = .311$ ,  $p < .01$ ,  $t > 2$ ) indicates that perceived digital financial literacy has a positive impact on the adoption of fintech services. The result for H4 ( $\beta = .439$ ,  $p < .01$ ,  $t > 2$ ) indicates that usage behaviour has a significant positive effect on financial inclusion. The result for H5 ( $\beta = .457$ ,  $p < .01$ ,  $t > 2$ ) indicates that there is a positive relation between financial inclusion and sustainable development.

**Table 3: Hypothesis Test Results**

Hypothesis	Relationship	Coefficient	Std. Error	T-value	P-value	Result
H1	U → FA	0.186	0.056	3.314	0.001	Accepted
H2	E → FA	0.101	0.066	1.532	0.126	Rejected
H3	L → FA	0.311	0.057	5.429	0	Accepted
H4	FA → F	0.439	0.056	7.841	0	Accepted
H5	F → SD	0.457	0.049	9.325	0	Accepted



**Figure 2: Structured Equation Modelling Using Smart PLS**

## V. DISCUSSION

In this paper, the constructs of the UTAUT model, such as perceived performance expectancy and perceived effort expectancy, are used to examine the behavioural intention to adopt fintech services among women, which leads to sustainable development through financial inclusion. In Hypothesis 1, the perceived performance expectancy has been examined as having a positive influence on the behavioural intention to use fintech. The measurement model, including loading, composite reliability, AVE, VIF, and structural model, such as the path coefficient of performance expectancy to behavioural intention to adopt fintech, has direct, p-value, and t-value within the reference range.

However, in hypothesis two, perceived effort expectancy has a positive influence on the





behavioural intention to use fintech, which has been examined. The measurement model, such as loading, composite reliability, AVE, and VIF, is in an acceptable range, but the structural model of p-value and t-value has not been in an adequate range in this paper [41], [42], [43]. Though there is existing literature that supports that perceived effort expectancy has a positive relation to the behavioural intention to use fintech [35], [45], it is not proved in this model. In Hypothesis Three, the perceived digital financial literacy is positively related to the behavioural intention to use fintech, which has been examined. The measurement models, including loading, composite reliability, AVE, and VIF, as well as the structural models, such as the path coefficient of performance expectancy to behavioural intention to adopt fin-tech, the direct p-value, and t-value, are within an acceptable range. In hypothesis four, behavioural intention to adopt fintech has a positive relation to financial inclusion, as actual use of fintech has been found. The path coefficient is direct in the structural model; the p and t values are within an acceptable range, and the measurement model is also validated. Finally, hypothesis five —that financial inclusion leads to sustainable development — has been examined, and all measurement model items and structural model items have been within an acceptable range. So, from this paper analysis, it is found that perceived performance expectancy and perceived digital financial literacy have a positive relation to the behavioral intention to use fin-tech services, the behavioral intention to use fin-tech services leads to financial inclusion when users use fin-tech and finally increasing of financial inclusion in the economy leads to sustainable development such as economic development and financial innovation.

## VI. CONCLUSION

Today is the era of fintech globally. The people who use fintech are entering the realm of financial inclusion, which ultimately leads to sustainable development. In this study, it is identified that perceived performance expectancy and perceived digital financial literacy have a direct effect on the adoption of fintech by women, leading to their actual adoption and use of financial technology where they previously did not use it. As the adoption of fintech increases, financial inclusion also grows in an economy, leading to the sustainable development of innovative technology. The government can focus on this model to increase financial inclusion by addressing the factors that enhance the adoption of fintech among women, ultimately helping to achieve Sustainable Development Goals 8 and 9. In this study, hypothesis H2, which posits that perceived effort expectancy leads to the adoption of fintech services, is not supported. It may have happened because of the sampling of women who were chosen. In this research, educated women are selected as the sample, with their educational qualifications not being below the college level. For them, technology services are easy to use. Therefore, it may not be a dominant factor for them to adopt fintech services. The data can be re-collected to support the above hypothesis, as it has been found in the literature that perceived ease of use leads to the adoption of fintech, as outlined in the Technology Acceptance Model. So, this could be a further research area for this model.

## DECLARATION STATEMENT

Funding	No, I did not receive.
Conflicts of Interest	No conflicts of interest to the best of our knowledge.
Ethical Approval and Consent to Participate	No, the article does not require ethical approval or consent to participate, as it presents evidence.
Availability of Data and Material/ Data Access Statement	Not relevant.
Authors Contributions	All authors have equal contributions to this.

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## AUTHORS PROFILE



**Israt Jahan Shithii** is currently working as a lecturer at the Department of Management Information Systems (MIS), Faculty of Business Studies, at Noakhali Science and Technology University (NSTU), Noakhali, 3814, Bangladesh. She has completed an MBA and a BBA in Management Information Systems (MIS) from the University of Dhaka. She has a good academic record, securing second position with distinction. She has been awarded the "Dean Award" for her outstanding career. She has hobbies of travelling and cooking. Her current research interests include Financial Technology, Information Technology, Business Analytics, E-Commerce, Blockchain, and Industry 4.0, among others.





**Most. Sadia Akter** is a Lecturer of Business Studies at Bangladesh University of Professionals (BUP), a public university, in Dhaka, Bangladesh. Previously, she worked as a lecturer at the University of Bangladesh. She holds an MBA in Management Information Systems (MIS) from the University of Dhaka. She has completed an MBA and a BBA in Management Information Systems (MIS) from the University of Dhaka. She has a good academic record, securing first position with distinction. She has hobbies of travelling and reading novels. Her current research interests include Financial Technology, Information Technology, Business Analytics, E-Commerce, Blockchain, and Industry 4.0, among others. She has published research articles in reputable journals.

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