

# 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 like banks and MFS have used technology to convenience the process of financial transactions which is called financial technology (fin-tech). However, there are many people like women, illiterate or poor who don't use fin-tech due to social barriers or lack of knowledge and ability. When those people started to be involved, financial transactions were a matter of financial inclusion that led to economic growth. With the advancement of technology in finance, financial inclusion increases because one can do financial transactions, saving and paying from anywhere and anytime which leads to economic growth and growing the opportunity for innovation technology. The objective of this study is to find how digital financial inclusion can be executed to achieve sustainable development through the fin-tech adoption of women. This paper identifies the factors influencing the adoption of fin-tech services, finds the relationship between fin-tech adoption and financial inclusion, and finally how sustainable development goals are achieved by adopting fin-tech for women. To prove how financial inclusion can be possible through the fin-tech adoption of women, the UTAUT model along with some new constructs are identified to validate the new model. Smart 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 financial innovation, and improves governance [4].

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Financial inclusion occurs when the adoption of fin-tech 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 fin-tech 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 fullest range of financial services with the help of the adoption of financial technologies because fin-tech provides affordable cost with ease of use, quality, and mitigate 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, fin-tech 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 identifies a model of fin-tech adoption that leads to financial inclusion following sustainable development. The main objective of this study is to find how digital financial inclusion can be executed to achieve sustainable development through fin-tech adoption. It also identifies the factors that influence to adoption of fin-tech services, shows the relationship between financial inclusion and fin-tech adoption, and determines how financial inclusion helps to achieve sustainable development goals.

## II. THEORETICAL FRAMEWORK

The study covers a comprehensive review to lay out the foundation for the conceptual model of financial inclusion through fin-tech 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 behavioral adoption of fin-tech services is identified by many empirical research [11], [12].



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Perceived performance expectancy impacts users' attitudes and readiness to adopt fin-tech while using information systems [13]. The underlying construct namely perceived performance expectancy (U) has relative advantages from innovation diffusion theory and perceived usefulness from the technology adoption model [14]. As a result of this, and taking into account the findings of the earlier investigations, the following hypothesis was developed:

**H 1: Perceived Performance Expectancy(U) has a Positive Impact on the Behavioral 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 fin-tech is the main aspect that affects its adoption by consumers [15]. Users are more likely to use fin-tech 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 Behavioral 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 financial goods and institutions [16], as well as their level of competence in managing their finances. Digital financial literacy involves understanding of online shopping, online payment through numerous forms, and online banking. Prasad et al., (2018 [17]) said about the necessity of digital financial literacy in technology adoption. Grohmann & Menkhof, (2020 [18]) demonstrated that a person's level of financial literacy is directly related to their participation in the financial system. Okello Candiya Bongomin et al., (2020 [19]) explained that financial literacy is linked to financial inclusion. The importance of digital financial literacy in financial inclusion is highlighted by the fact that both the direct and indirect effects of financial literacy with financial inclusion emerge as significant. The hypotheses are as follows:

**H 3: Perceived Digital Financial Literacy (L) has a Positive Impact on the Behavioral Intention to Adopt Fin-tech Services.**

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

Warshaw and Davis (1985 [20]) defined behavioral intention to adopt fin-tech 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 behavior 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 fin-tech companies may not be able to reap the benefits of the innovation, or the gestation period to produce profits may increase [21].

## 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 support where it is proved that the intention to use technology services leads to the actual use of fin-tech [22], [23]. In this study, the factors that are responsible for the actual use of fin-tech is 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 fin-tech services [24]. With the rise of the fin-tech movement, national financial inclusion plans are continuing to gravitate toward digital finance [7]. In this study, if the user uses fin-tech services, the strategy of National Financial Inclusion Strategy (NFIS) can be implemented easily which leads to financial inclusion.

**H 4: The Behavioral 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 [25], [26]. All participants in a market have simple and equal access to and utilization of the formal financial system with affordable formal services is called financial inclusion. Financial inclusion ensures people and enterprises have access to basic and cheap formal financial services [27]. Additionally, Inclusive digital finance aims to give mobile money, internet banking, electronic payments, insurance, and loans to previously excluded populations [28].

## F. Sustainable Development (SD)

Financial inclusion and sustainable development depend on the indicators used to measure them [29]. 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 important step toward achieving the Sustainable Development Goals (SDGs) by the year 2030, but it is also one of the necessary steps.

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 [28], [30]. 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 [28], [31]. The credit helps women gain economic power. Digital banking services reduce theft risks and administrative and disbursement costs for women-owned enterprises [31]. 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 growth [30], [29]. 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 [32], [33].



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

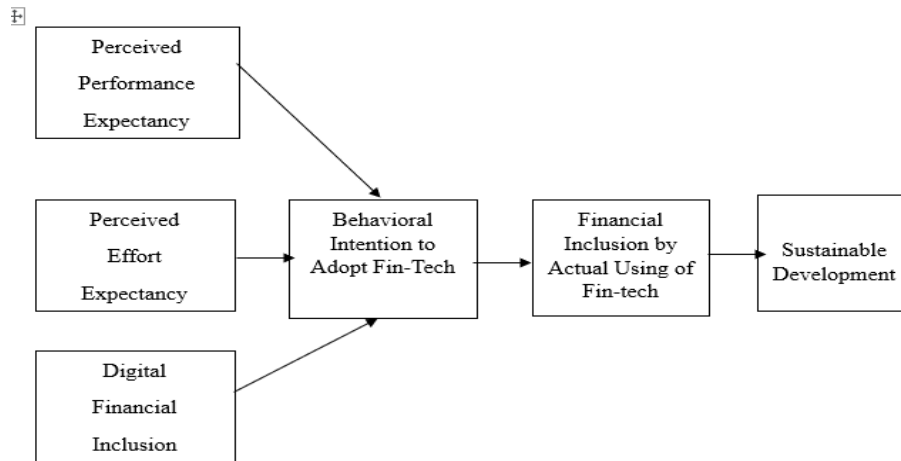


Figure 1: Conceptual Framework of Women's Adoption of Fin-tech Leads to Sustainable Development Through Financial Inclusion (Source: Author)

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], [34].
Perceived Effort Expectancy (E)	"E1. It is easy to use fin-tech services." "E2. I think the operation interface of fin-tech is friendly and understandable."	[10], [34].
Digital Financial Literacy(L)	L1. I have the competency to carry out financial services such as payment, savings, etc. L2. I have the competency to carry out digital products and services like tablets, PCs, laptops, and mobile.	Self.
Behavioral 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."	[34], [10].
Financial Inclusion by Actual Using of Fin-tech (F)	"FI4: I think that access to basic financial services gradually improves the living conditions of the beneficiaries over time through fin-tech." "FU4. When I use fin-tech, I will be able to facilitate my financial transactions." "FU5. I find that using fin-tech to make a deposit is a flexible, affordable, convenient, and available financial offer that can increase the level of access to financial services."	[35], [36], [45], [46].
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], [37].

III. METHODOLOGY

The research instrument was conducted by developing a conceptual model. The conceptual model was designed by the authors with literature support of the UTAUT model and constructs. There are thirteen questions designed under six constructs. A total of 240 samples were collected from females who use fin-tech services. As per the "10-times rules" that have been used as a simplicity of application in selecting sample size [38], more than "10 times" is an acceptable range in SMART PLS. This study used 18 times of total questionnaires for sample size. 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 [39] and all the values of AVE are greater than .50 [40], [41]. The variance inflation factor (VIF) is less than 10 [42]. So, from the above discussion, it is clear that 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			
Behavioral 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 its correlation among all the constructs. HTMT identifies the average correlations of the indicators across constructs where the acceptable levels are < 0.90 [43] [47]. 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 shows the path coefficient to find the casual 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 fin-tech services. The result for H2 ( $\beta = .101, p < .01, t < 2$ ) indicates that perceived effort expectancy hasn't a positive impact on the adoption of fin-tech 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 fin-tech services. The result for H4 ( $\beta = .439, p < .01, t > 2$ ) indicates that usage behavior 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

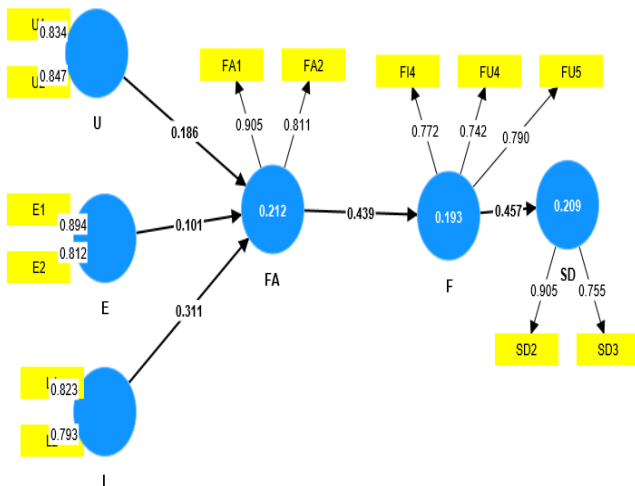


Figure 2: Structured Equation Modeling Using Smart PLS

V. DISCUSSION

In this paper construct of the UTAUT model such as perceived performance expectancy and perceived effort expectancy has been used to see the behavioral intention to adopt fin-tech services among women which leads to sustainable development via financial inclusion. In hypothesis one, perceived performance expectancy has a positive influence on the behavioral intention to use fin-tech has been examined. The measurement model such as loading, composite reliability, AVE, VIF, and structural model such as path coefficient of performance expectancy to behavioral intention to adopt fin-tech is direct, p-value, and t-value are on reference range.



However, in hypothesis two, perceived effort expectancy has a positive influence on the behavioral intention to use fin-tech has been examined. The measurement model such as loading, composite reliability, AVE, and VIF is in acceptable range but the structural model of p value and t value has not been in an acceptable range in this paper [40], [41], [42]. Though there is existing literature that supports that perceived effort expectancy has a positive relation to the behavioral intention to use fin-tech [34], [44], it is not proved in this model. In hypothesis three, perceived digital financial literacy has a positive relation to the behavioral intention to use fin-tech has been examined. The measurement models such as loading, composite reliability, AVE, VIF, and structural models such as path coefficient of performance expectancy to behavioral intention to adopt fin-tech the direct, p-value, and t-value are in an acceptable range. In hypothesis four, behavioral intention to adopt fin-tech has a positive relation to financial inclusion through the actual use of fin-tech has been found. The path coefficient is direct in the structural model, the p and t values are in acceptable range and the measurement model is also validated. Finally, hypothesis five, financial inclusion leads to sustainable development has been examined and all the measurement model items and structural model items have been in 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 fin-tech around the world. The people who use fin-tech newly are entered into financial inclusion that leads to ultimately 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 fin-tech by women which leads to actually adopting and using financial technology where they previously didn't use it. As the adoption of fin-tech use increases, financial inclusion also increases in an economy which leads to sustainable development of innovative technology. The government can focus on this model to increase financial inclusion by making the effort to the factors that increase the adoption of fin-tech by women that ultimately help to achieve sustainable development goals 8 and 9. In this study, hypothesis H2 which was perceived effort expectancy leads to adoption of fin-tech services is not proved. It may have happened because of the sampling of women that were chosen. In this research educated women are chosen as a sample size where their education qualification is not below college levels. For them, technology services are easy to use. So, it may not be a dominant factor to adopt fin-tech services for them. The data can be re-collected to prove the above hypothesis because it is found in the literature that perceived ease of use leads to

the adoption of fin-tech in the technology acceptance model. So, this could be a further research area for this model.

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Availability of Data and Material/ Data Access Statement	Not relevant.
Authors Contributions	All authors have equal contributions to this.

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