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Mediated and moderating variables between behavioral intentions and actual usages of fintech in the USA and Bangladesh through the extended UTAUT model

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Abstract

This study explores the behavioral intentions and actual use of FinTech services in Bangladesh and the USA, utilizing an extended Unified Theory of Acceptance and Use of Technology (UTAUT) model. It aims to examine the role of mediators, such as trust, and moderators, such as information richness, in influencing FinTech adoption. A quantitative approach was employed through online surveys, collecting 320 responses from FinTech users in both Bangladesh and the USA. Structural equation modeling (SEM) was used to analyze the data with SPSS 25 and AMOS. Trust and Effort Expectancy were found to significantly impact users' behavioral intentions to adopt FinTech services. While performance expectancy had a less significant role, information richness acted as an indirect moderator, enhancing trust and user experience. Trust and Ease of Use are critical in driving behavioral intentions toward FinTech adoption. This emphasizes the need for FinTech companies to prioritize security, transparency, and user-friendly interfaces to encourage usage, especially in emerging markets. FinTech platforms should emphasize building trust through secure features and provide comprehensive, easily accessible information. Improving user support systems and enhancing privacy policies will further aid in increasing adoption rates from the perspectives of the USA and Bangladesh.

Keywords: Fintech services, Behavioral intention, Extended UTAUT model, FinTech adoption, Information richness, Moderating and mediating impact, USA.

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1. Introduction

Financial technology (FinTech) has become commonplace in contemporary economies for financial transactions worldwide [1]. Financial services and digital technology are both essential components of fintech, which enables businesses to expand their offerings across mobile transactions, online payments, alternative financing, big data, crowdfunding, peer-to-peer lending, and overall financial management [2]. Applications of technology range from the more basic, like electricity, to the most complex, like financial technology [3]. Fintech, utilized by individuals in urban and even rural regions, strives to enhance and mechanize financial procedures, rendering them more effective, accessible, and intuitive for both customers and enterprises [4, 5].

Due to digitalization, financial transactions have undergone significant changes in emerging economies worldwide and have drawn interest from the business community, academic institutions, and investors [6]. With the idea of Fintech as a vehicle for creating value and wealth, industries confront significant changes [7]. Fintech is set to expedite financial inclusion in emerging nations like Ghana [6]. Fintech provides several advantages for the government, the economy, and consumers of financial services [8]. The difficulties with Fintech are usually attributed to deficiencies in infrastructure, legislation, skills shortages, corruption, and excessive expectations from the growing middle class, among other things [9].

Despite people's attachment to various fintech services (FTS), Generation Z will continue to play a significant role in payment services in the future [5]. The adoption of digital platforms for financial transactions, as noted by Nizam, et al. [10], is enabled by both mobile and internet banking; however, there are differences in terms of the devices applied, ease of access, and user experience [11]. Financial service providers, including credit unions, banks, and microfinance institutions, provide their tech-savvy clientele with mobile banking services that allow them to perform banking operations using a smartphone or other portable computing devices [12]. Although mobile device usage for banking purposes has notable advantages, security issues are a major concern for individuals' personal and banking information, and breaches of either can lower the acceptance rate of M-banking services [13].

The rapid advancement of Internet technology has a significant effect on banking operations like paying bills, accessing account details, rerouting money, and using investing and check services with widespread Internet banking [14]. Fintech adoption offers notable advantages to various parties involved in Bangladesh and the United States. Unlike traditional offerings, innovative financial services improve customer standards and reduce operational costs for customers and enterprises [15]. A recent report indicated that 1.31 billion regular users and 32.4 billion USD emerged from the global fintech sector in the initial quarter of 2022. With over 160 million inhabitants, Bangladesh is a rapidly expanding economy today, and the country's rising middle class is driving up demand for financial services [16].

Fintech presents a profitable opportunity to enhance Bangladesh's financial solutions capabilities and has great promise for accelerating the growth of the monetary system through innovative financial instruments [17]. The bulk of MFS operations continue to shape Bangladesh's Fintech environment. MFS continues to be utilized by IT servers, solution providers, and financiers to build lasting relationships among other businesses [18]. Popular mobile money transfer companies like Bkash and iPay have a larger market penetration in Bangladesh than banking services like U Cash, mCash, and Rocket [19]. Entrepreneurs are gravitating towards the e-commerce space as fintech helps expedite business ventures and increase passive income [20]. An exclusive study by Gao compared fintech development between China and the USA [21]. The growth of fintech has given the United States a global competitive advantage; these benefits are mostly based on creativity, innovation, and diversification. FinTech in the US prioritizes startups and those with noteworthy financial standing [22].

Through examining the literature review in great detail, this research has closed the gap. As a way to figure out the true behavioral intention of FinTech, the majority of studies employ extended models and concentrate on several parameters, including performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FCs), privacy enablers (PEn), and personal innovativeness (PI). The important characteristics identified in a few study fields include trust and information richness (IR). Using an extended UTAUT model in the context of Bangladesh and the USA, our study emphasizes IR and Trust, which are perceived as moderating and mediating factors, respectively, to determine if they impact behavioral intention (BI) to adopt FinTech services in this technological era [21].

RO 1: To explore and analyze consumers' behavioral intention (BI) regarding FinTech services (FTS) through the application of the Unified Theory of Acceptance and Use of Technology (UTAUT) model in both the USA and Bangladesh.

RO 2: To investigate the current state of Fintech Service (FTS) applied in Bangladesh based on IR as a moderator.

RO 3: To gauge behavioral intention (BI) according to current FTS utilization in relation to the mediating component of trust.

2. Literature Review and Hypothesis Development

2.1. Empirical Review

Services from FinTech comprise an extensive array of gadgets and facilities, namely internet payment options, online investment platforms, P2P lending platforms, and mobile financial services (Oliveira, et al. [23]; Shaikh, et al. [13]; Soloviev [24] and Hendriyani and Raharja [25]). Alalwan, et al. [26] showed that a variety of factors had a substantial and beneficial impact on behavioral intention (BI) to adopt a financial system in Jordan, including price value, trust, hedonic incentive, performance expectancy (PE), and effort expectancy (EE). In the context of FinTech, Ullah, et al. [27] found that BIs were affected by PE, EE, and habit in the post of Ghana and sub-Saharan Africa, but not by facilitating conditions (FCs), social influence (SI), hedonic incentive, or price value [6]. The shifting electronic environment is familiar to Generation Z. A thorough investigation by Aseng [5] found that five variables were favorable to the desire of Generation Z to use the service

in Indonesia. Blaise, et al. [28] indicated that the usage of mobile commerce purchase intention was empirically significant when FCs of trust and perceived risk, performance expectancy (PE), effort expectancy (EE), and social influence (SI) were present [21].

According to research on open banking by Chan, et al. [29], BI is directly influenced by PE, EE, SI, and perceived risk [1]. Suebtimrat and Vonguai [30] discovered that the behavioral intention of Thai commercial banks' customers towards using QR code payments is driven by adoption readiness, compatibility, attitude, and perceived intention (PI), all of which are statistically significant. Wei, et al. [14] determined that the following elements have a major influence on Lebanon's customers' BI to participate in Internet banking: task-technology fit, social influence (SI), perceived credibility, and performance expectancy (PE) [21]. FinTech services (FTS) have experienced rapid growth, and the UTAUT model has shown how this has affected people's intentions to utilize them (Oliveira, et al. [23]; Ramos [31]; Mulyana, et al. [3] and Chan et al. [29]). Besides, some studies have exerted different models: UTAUT2 [32-34], Technology Acceptance [35, 36], Structural Equation Modeling [30, 37], and Partial Least Squares analysis [38]. However, our study relies on the expanded UTAUT model in this scenario, incorporating trust as a mediating variable and information richness as a moderating component in Figure 1.

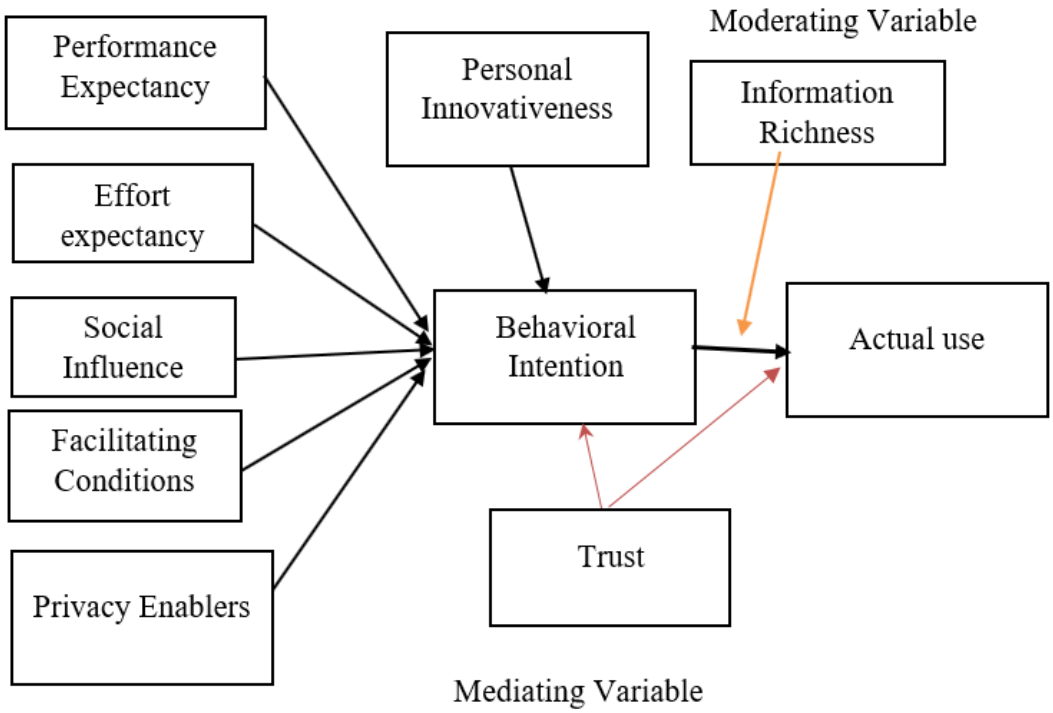

Figure 1.
Conceptual Framework.

2.2. Performance Expectancy (PE)

PE is the measure of system adoption that will improve a person's capacity to perform tasks effectively [39]. It remains a constant and significant element influencing the uptake of financial technology services, as noted by Yu [40] and Oliveira, et al. [23]. Mulyana, et al. [3] explained how individuals' behavioral intentions (BIs) to accept technological information are mostly predicted by their performance expectancy (PE). Antwi-Boampong, et al. [6] surveyed port businesses in sub-Saharan Africa and verified that scholars see performance expectation as the most effective adoption factor affecting involvement in the fintech program. Likewise, Chan, et al. [29] examined a substantial and potential link between users' BIs regarding FinTech and PE. Under this current study, performance expectancy encourages us to utilize financial technology services (FTS) in our daily lives, which greatly increases productivity and efficiency while achieving the purpose of financial operations and transactions [21]. Thus, we present the subsequent hypothesis:
H1: PE impacts BI in the usage of FTS.

2.3. Effort Expectancy (EE)

People are likely to be more receptive to embracing technology if they believe that using its possibilities is simple. EE assesses future technological convenience [39]. The second strongest determinant of behavioral intention was found to belong to effort expectancy [14]. Previous investigations by Aseng [5] and Ramos [31] confirmed a linkage between customers' behavioral intention to use technology and effort expectancy. Studies conducted on mobile banking also show that users' willingness to utilize applications related to mobile app-based banking is influenced by how user-friendly they perceive the app to be (Farah, et al. [33] and Shaikh, et al. [13]). By assessing consumers' effort expectancy when utilizing FTS, we assume that using these services would be easy and affordable in the present study from the perspective of Bangladesh and the USA. However, the subsequent hypothesis is:

$H_{2:}$ EE impacts BI in the usage of FTS.

2.4. Social Influence (SI)

Venkatesh, et al. [39] defined SI as a person's critical opinion of others (friends, family, relatives, and coworkers) who think the person ought to use financial service gadgets. Singh, et al. [41] claim that SI is an essential UTAUT metric, whereas Xie, et al. [42] observed that social impact significantly affects users' BI in research conducted in China. The acceptability of Internet payments by younger generations is influenced by social effects, as empirically suggested by Wei, et al. [14]. This current study concentrates on testing the hypothesis of how SI affects consumers' BI toward using technological services for transactions. This study also focuses on how neighbors influence the behavior of others around them while using technology for various monetary transactions [43]. Therefore, the hypothesis is formed for analysis:

$H_{3:}$ SI impacts BI in the FTS usage.

2.5. Facilitating Conditions (FCs)

Venkatesh, et al. [39] interpreted facilitating conditions (FCs) as the extent to which individuals firmly believe that technological infrastructure may enable them to employ a system or technology for greater efficiency and exert a major impact on behavioral use [44]. According to Oliveira, et al. [23], consumers' adoption behavior regarding mobile banking is influenced by facilitating conditions. Research has indicated a favorable relationship between individuals' adoption intentions and FCs [28, 34, 37]. The FCs had an immediate impact on the mentality of the workforce and a noticeable behavioral influence on the behavioral intention (BI) to use technology, as noted by Alalwan, et al. [26] and Ouattara [32]. In this context, a notable hypothesis has been proposed:

$H_{4:}$ FCs impact BI in the usage of FTS.

2.6. Privacy Enablers (PEn)

Enablers are components that encourage consumers to adopt goods and services (Cenfetelli [45]). Venkatesh, et al. [46] highlighted the significance of privacy for businesses offering customers online services or goods. Zafar, et al. [47] stated that promoting privacy significantly increases behavioral intention, which has been shown to benefit entrepreneurial sustainability. Saprikis and Vlachopoulou [48] demonstrated a favorable association between PEn and m-payment FTS. Against the backdrop of contemporary technological innovation, PEn with transparent and intelligible privacy regulations guarantees users' security and privacy, which has a significant influence on FTS acceptance. So, in this context, the following hypothesis has been stated:

$H_{5:}$ Privacy enablers impact BI in the usage of FTS.

2.7. Personal Innovativeness (PI)

Agarwal & Prasad [49] provided, at first, Personal Innovativeness in the Domain of Information Technology (PIIT) to ascertain an individual's openness to investigate any type of information technology. Kim, et al. [36] claimed that personal innovativeness—a person's eagerness to attempt new technologies—has beneficial impacts on mobile payment systems. In research by Suebtimrat and Vonguai [30], Thai commercial bank customers' behavioral intention (BI) via mobile banking showed that personal innovativeness influences BI toward QR code payment. Nevertheless, a wealth of research refuted that technology users' innovative traits increase their positive views and BI regarding technology-based services [35, 38, 50]. This is the process by which PI encourages consumers to explore innovations and thus increases FTS adoption. In this regard, we proposed a hypothesis:

$H_{6:}$ PI impacts BI in using FTS.

2.8. Trust

Trustworthiness is crucial and positively correlated in terms of BI to integrate FTS [2]. Similarly, applying FTS in banking services raises questions about client trust [51]. In the study by Hu, et al. [52], customers' sentiments are heavily affected by their state of faith in FTS. Amnas, et al. [53] examined the factors impacting the uptake of fintech, with a particular emphasis on trust, and found that trust is important for both the intention to operate and the practical application of fintech. In this sense, consumers' attitudes towards accepting the FTS are readily influenced by trust in dependable, secure, and effective technology, regardless of whether it comes from a government agency, a business, or a third-party service provider. In this context, our study stated the following hypothesis:

$H_{7:}$ Trust impacts BI in using FTS.

2.9. Information Richness (IR)

By providing important details about goods and/or services, IR encourages consumers to behave and make use of them (Lee [54]). Regarding satisfaction, purchasers experience higher levels of satisfaction when sellers supply more qualitative information (Chen and Chang [55]). Galdolage [56] investigated the influences of IR on consumers' adoption of online self-service technology. A thorough explanation of security and privacy policies makes customers feel more confident about the services or goods they are using [57]. Furthermore, it has been asserted that access to sophisticated information increases people's capacity to embrace certain tech services concurrently. In light of this, our study constructs the following hypothesis:

$H_{8:}$ Information Richness impacts BI in using FTS.

3. Methodology

3.1. Method Selection

Researchers proposed a model on the quantitative survey method through random respondents, deploying the extended UTAUT model in Figure 1. Numerous earlier studies examined the use of BI to embrace the UTAUT model to investigate the adoption of FTS (Oliveira, et al. [23]; Ramos [31]; Mulyana, et al. [3] and Chan, et al. [29]). Venkatesh, et al. [39] provided a thorough description of four structures, including FCs, EE, SI, and PE, which are crucial components of consumers' intentions to embrace IT solutions. Consequently, we carried out a study model using assumptions PE (H1), EE (H2), SI (H3), FCs (H4), PEn (H5), and PI (H6). In addition, two other parameters were included in our investigation as mediating and moderating factors affecting the BI of FTS users in Bangladesh and the USA: trust (H7) and information richness (H8) in Figure 1.

3.2. Instrument Development

This current research is conducted with a quantitative approach to trace the importance of a huge volume of data sets. Data was collected through online surveys, and quantitative methodology was used in this research. Karim, et al. [58] found that a quantitative method was appropriate for researching Fintech adoption. The UTAUT 2 model was explored and incorporated in the questionnaire, both in section A and section B. Usually, the questionnaire is used to collect responses regarding the intention of the research [59]. This research discusses consumers' BI toward FTS [60]. The authors selected this research method for its optimal structural design and flexible resources [61]. The authors collected both primary and secondary data to employ in FinTech sectors to generate ideas, hypotheses, and implications of the study [62]. The objective of the research was consumers' BI toward FTS through moderating and mediating variables.

3.3. Research Design

Surveys conducted both in person and online were used to gather data from respondents to evaluate and examine the models and frameworks employed in this study. The research studied above explored the UTAUT model. In the conceptual framework, the authors utilized the extended UTAUT framework to determine the actual usage of FTS through the moderating variable of information richness and to evaluate the BI via the mediating variable of trust.

3.4. Survey and Sampling Techniques

The simple random sampling method was deployed in this research as it provides a more exact determination of research parameters as opposed to the purposive sampling technique [63]. In this study, the FinTech users in the context of Bangladesh and the USA represented the whole population size [64]. The main intent of this study was to obtain data from a sample group consisting of 450 respondents (320 collected, 300 usable responses; the response rate is 71.11% and the usable data rate is 66.67%) applied to the FinTech users in Bangladesh and the USA for conducting the extended UTAUT model. Sample size estimation is a technique used to choose the right number of observations from a larger group to conduct a sample Rahman [65]. Under Jobst, et al. [66], it is advised to conduct path modeling with sample sizes ranging from 100 to 200. According to structural equation modeling, the number of respondents should be 10 times higher than the set of questions [61]. For this reason, the authors collected 320 data sets from respondents, whereas the number of questions was 27. For collecting data, a primary data collection method was used to gather the desired data.

3.5. Data Collection and Analysis

To examine the obtained questionnaire survey data, statistical techniques were applied to present the findings in a significant way and arrive at a trustworthy conclusion. The data that was obtained was processed using SPSS 25, AMOS, and R. SPSS V.25 was used for descriptive statistics, while structural equation modeling (SEM) was conducted using the partial least squares (PLS) method (Ramayah, et al. [67]). Hair, et al. [68] have recommended the application of PLS-SEM in exploratory research, especially when the framework is more complicated and involves moderating or mediating variables [69].

3.6. Analysis

The researchers collected responses from Google Forms and cleansed them with Microsoft Excel by identifying standard values of deviation. The authors analyzed the data using R, AMOS, and SPSS 25. SPSS V.25 was used for descriptive statistics, while SEM was conducted using the PLS method.

Table 1 shows that 52.0% of FinTech users in the US and Bangladesh are male and 48.0% are female. Most consumers, 76.7%, are 18-24-year-olds; thus, FinTech companies will see more business from them. Most users are over 30, and few are under 30. The distribution is as follows: 30-40 years: 5.0%, 40+: 13.7%. Undergraduates make up 70%, others 15%, graduates 8.3%, and postgraduates 6.7%. According to professional distribution, students make up 76% of the audience and are the most engaged with FinTech. Other occupations include 7.0% doctors, 5.7% businessmen, 4.0% self-employed, and 2.7% engineers. This demographic description also suggests that young, educated Bangladeshis, particularly students, are more interested in FinTech services.

Table 1.
Demographic characteristics of the users of Fintech.

Variables	Categories	Frequency	Percentage
Gender	Male	156	52.00%
	Female	144	48.00%
Age	Less than 18	5	1.70%
	18 - 24	230	76.70%
	24 - 30	9	3.00%
	30 - 40	15	5.00%
	Above 40	41	13.70%
Education Level	Undergraduate	210	70.00%
	Graduate	25	8.30%
	Post graduate	20	6.70%
	Others	45	15.00%
Profession	Banker	4	1.30%
	Teacher	4	1.30%
	Student	228	76.00%
	Businessman	17	5.70%
	Self-employed	12	4.00%
	Engineer	8	2.70%
	Doctor	21	7.00%
	Others	6	2.00%

Table 2.
Fintech services use and user experience.

Variables	Categories	N	(%)
Type of Fintech services use	Mobile payment	209	69.70%
	Internet banking	16	5.30%
	Crowdfunding	34	11.30%
	Digital payment	15	5.00%
	Share market	17	5.70%
	Agent banking	9	3.00%
Years' experience in using emerging technologies	< 1 Year	93	31.00%
	1 - 3 years	75	25.00%
	3 - 5 years	56	18.70%
	5 - 8 years	33	11.00%
	> 8 years	43	14.30%

Mobile payment is the most popular and accessible FinTech option, used by 69.7% of users. Table 2 shows a diverse but concentrated preference for mobile-based financial solutions in crowdfunding (11.3%), share market involvement (5.7%), online banking (5.3%), digital payments (5.0%), and agent banking (3.0%). The majority of users (31.0%) had less than one year of experience with emerging technology, suggesting a spike in new adopters. With 25.0% having used these technologies for 1-3 years, 18.7% have used them for 3-5 years. Table 2 shows 11.0% and 14.3% of users with 5-8 years of experience and over 8 years. This distribution shows the rising familiarity and experience of Bangladeshi users with FinTech services. Table 3. Model Constructions, Appendix 1 Structural Equation Modelling.

Table 4.
Model validation Information.

Notes for model (Structural equation modeling)	
Number of distinct sample moments:	378
Number of distinct parameters to be estimated:	70
Degrees of freedom (378 - 70):	308
Minimum was achieved Chi-square:	1470.174
Probability level:	0.000

This is evidenced by the Structural Equation Modeling (SEM) model validation information whereby 378 sample moments exist and 70 unique parameters must be estimated; hence, the model has 308 degrees of freedom in Table 4. The least obtained Chi-square value is 1470. 174; it therefore has a probability level of 0. 000, providing evidence that the model is significant in statistics. However, the fact is that the obtained Chi-square value is so high that it indicates that the model

might not be the best and SEM models should have non-significant Chi-square values. However, this method is significant in large samples often resulting in highly significant chi-square despite the acceptable model of the model in Table 4.

Table 5.
Model fitness evaluation.

Name of fit measures	Indices	Study index value	Acceptable Range	Comment
Absolute fit measures	CMIN/Df	4.773	Less than 5	Accepted Good Fit
	GFI	0.759	Greater than 0.90	Not Accepted
	RMSEA	0.092	Less than 0.10	Accepted
	AGFI	0.705	Greater than 0.90	Not Accepted
Information criteria	AIC	1610.174	-	-
	BCC	1624.639	-	-
	BIC	1869.439	-	-
	CAIC	1939.439	-	-
Parsimony-adjusted measures	PRATIO	0.877	Greater than 0.50	Accepted
	PCFI	0.653	Greater than 0.50	Accepted
	PNFI	0.614	Greater than 0.50	Accepted

The model fit evaluation according to different measures of fitness offers satisfying to moderate results. From the Absolute Fit Measures, it is seen that the CMIN/DF is equal to 4. The value is less than 5, indicating that the model in Table 5 fits the data well. Specifically, the value of RMSEA was 0.092, which is below the cutoff point of 0.10, and also seems to verify an acceptable level of fitness. However, the GFI (0.759) and AGFI (0.705) values are below the acceptable level of 0.90. It was found that there are areas where the model fits well and others where the fit could be improved in Table 5.

Statistical Information Criteria include AIC (1610.174), BCC (1624.639), BIC (1869.439), and CAIC (1939.439), which are used for model comparison rather than the model's fitness. The general rule is that the closer to zero these coefficients are, the better the relative performance of a model, which implies that this model might still be quite acceptable in comparison to Table 5. The Parsimony-Adjusted Measure yields a positive outcome, with PRATIO 0.877, PCFI 0.653, and PNFI 0.614, all above a desirable value of 0.50. This means that the model has a moderate model fit, which is a sign of a perfect fit without compromising the freedom of the model. In general, it appears to be evident from the SEM data that the model has reasonable goodness of fit. The majority of the indices, such as CFI = 0.98, TLI = 0.97, RMSEA = 0.08, and SRMR = 0.06, are above the recommended level of fit, but there is a need to improve on the GFI and AGFI, which were below the standard acceptable levels of fit. Overall, while the model demonstrates a good fit on some indices, particularly in parsimony and relative measures, improvements are needed in the absolute fit indices, especially in GFI and AGFI, to meet the standards of a well-fitting SEM model.

Table 6.
Regression weights of the SEM model.

Hypotheses	Path Directions			Estimate	S.E.	C.R. (z-value)	P value	Comment
H1	Be_Intent	<---	Effort_exp	0.968	0.257	3.771	***	Significant impact
H2	Be_Intent	<---	Info_Rich	0.21	0.125	1.678	0.093	No significant impact
H3	Be_Intent	<---	Actual_use	0.849	0.199	4.262	***	Significant impact
H4	Be_Intent	<---	Perform	-0.72	0.344	-2.091	0.037	No significant impact
H4	Trust	<---	Fac_Con	-0.636	0.153	-4.172	***	Significant impact
H6	Trust	<---	So_factor	0.384	0.078	4.905	***	Significant impact
H7	Trust	<---	Be_Intent	0.879	0.096	9.119	***	Significant impact
H8	Per_inno	<---	Info_Rich	-0.399	0.175	-2.275	0.023	No significant impact
H9	Per_inno	<---	Trust	1.447	0.26	5.567	***	Significant impact

Note: *** significant at 1% level.

The path coefficient is 0.968 with a standard error of 0.257, yielding a critical ratio (C.R.) of 3.771 and a p-value of *** (significant at the 1% level). This suggests that Effort Expectancy (EE) has a significant positive impact on Behavioral Intention (BI), indicating that ease of use is crucial in influencing users' intentions toward FinTech services. The path coefficient is 0.21 with a standard error of 0.125, and a C.R. of 1.678 with a p-value of 0.093. This finding suggests that information completeness and quality may not have a substantial impact on users' intentions, since Information Richness (IR) does not appear to have significant consequences on BI. The path coefficient is 0.849 with a standard error of 0.199, a C.R. of 4.262, and a p-value of *** (significant at the 1% level). This finding shows that Actual Use has a significant favorable impact on BI, suggesting that current use positively reinforces future intentions to use FinTech.

The path coefficient is -0.72 with a standard error of 0.344, and a C.R. of -2.091 with a p-value of 0.037. This result indicates no significant impact, suggesting that perceived usefulness does not necessarily translate into increased intention to use FinTech. The path coefficient is -0.636 with a standard error of 0.153, and a C.R. of -4.172 with a p-value of *** (significant at the 1% level). This significant negative relationship suggests that the support and resources available might

not foster Trust as expected, possibly highlighting a gap in user support systems. The path coefficient is 0.384 with a standard error of 0.078, a C.R. of 4.905, and a p-value of *** (significant at the 1% level). This indicates a significant positive impact, confirming that social influences like peers and family play a crucial role in building Trust in FinTech services. The path coefficient is 0.879 with a standard error of 0.096, a C.R. of 9.119, and a p-value of *** (significant at the 1% level). This demonstrates a strong positive impact, highlighting that intentions to use FinTech significantly boost Trust in the services in Table 6.

The path coefficient is -0.399 with a standard error of 0.175, a C.R. of -2.275, and a p-value of 0.023. This suggests that Information Richness does not significantly enhance Personal Innovativeness, indicating that even comprehensive information does not necessarily drive users' willingness to try new technologies. The path coefficient is 1.447 with a standard error of 0.26, a C.R. of 5.567, and a p-value of *** (significant at the 1% level). This significant positive impact implies that Trust strongly fosters Personal Innovativeness, indicating that clients who trust FinTech seem more inclined to explore and adopt new technologies in Table 6. Overall, the SEM results reveal that Trust, Effort Expectancy, and Actual Use are critical determinants of BI, while social influences significantly build Trust in FinTech services. However, Information Richness and Facilitating Conditions need further exploration to understand their indirect or nuanced roles in influencing FinTech adoption.

Tables 7.
Covariance's.

Hypotheses	Path directions			Estimate	S.E.	C.R. (z-value)	P value	Comment
H10	Info_Rich	<-->	Actual_use	0.314	0.043	7.329	***	Significant impact
H11	Perform	<-->	Info_Rich	0.089	0.022	4.034	***	Significant impact
H12	So_factor	<-->	Fac_Con	0.356	0.061	5.855	***	Significant impact
H13	Effort_exp	<-->	So_factor	0.288	0.048	5.974	***	Significant impact
H14	Effort_exp	<-->	Fac_Con	0.253	0.04	6.338	***	Significant impact
H15	Perform	<-->	Actual_use	0.169	0.025	6.641	***	Significant impact
H16	Perform	<-->	Effort_exp	0.212	0.029	7.355	***	Significant impact
H17	Perform	<-->	Fac_Con	0.189	0.032	5.966	***	Significant impact
H18	Perform	<-->	So_factor	0.248	0.042	5.981	***	Significant impact
H19	So_factor	<-->	Info_Rich	0.066	0.028	2.363	0.018	No significant impact

Note: *** significant at 1% level.

The SEM output for covariances among the constructs indicates multiple significant relationships, highlighting the interconnectedness of factors within the extended UTAUT model: The covariance estimate is 0.314 with a standard error of 0.043, yielding a critical ratio (C.R.) of 7.329 and a p-value of *** (significant at 1% level) in table 7. The covariance estimate is 0.089 with a standard error of 0.022 and a C.R. of 4.034 with a p-value of *** (significant at 1% level). This indicates that the association between social factors and information richness is relatively weak, suggesting that social influences may not strongly determine the perceived information quality of FinTech services.

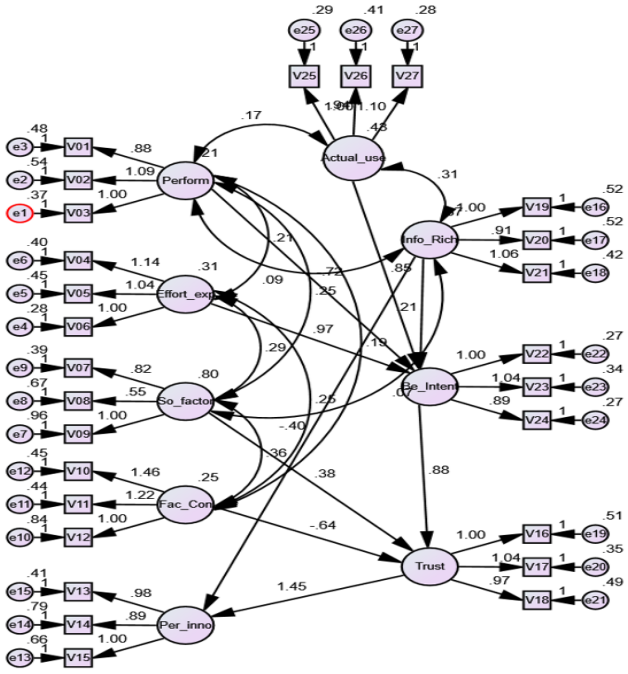

Figure 2.
Path Diagram of the UTAUT model using SEM.

4. Discussion

Examining structural equation modeling (SEM) research yielded insightful findings about the variables impacting the acceptance and utilization of FinTech services (FTS). The findings reveal complex interrelationships among the constructs, highlighting both significant and non-significant impacts. The analysis showed that Effort Expectancy (Effort_exp) had a notable and favorable effect on Behavioral Intention (BI) (Be_Intent) (estimate = 0.968, $p < 0.01$). This result underscored the significance of ease of use in shaping users' intentions to engage with FTS. If FinTech services are perceived as easy to use and uncomplicated, individuals are encouraged to embrace and continue using them (Venkatesh, et al. [39]). Actual Use (Actual_use) also had a substantial positive impact on BI (estimate = 0.849, $p < 0.01$), suggesting that users' experiences with FinTech services reinforce their intentions to continue using them (Davis, et al. [70]). This finding aligns with the notion that a positive experience with FinTech can solidify users' commitment to ongoing use. Conversely, Performance Expectancy (Perform) exhibits a negative and significant impact on BI (estimate = -0.72, $p = 0.037$). The role of Trust (Trust) in influencing Behavioral Intention is strongly positive, reinforcing the critical importance of trust in user acceptance of FTS [71]. Information Richness and Actual Use (estimate = 0.314, $p < 0.01$) are positively related, indicating that the perceived richness of information has a close correlation with the actual use of FTS [72].

The difference in the sets of measurements is apparent, as evidenced by statistical analysis of the constructs (e.g., $F = 0.804$, $p < 0.01$), meaning that the users' experiences and perceptions differed greatly from one another. This further points out the necessity for FinTech services to accommodate and meet the heterogeneity of user needs and expectations [73]. A better understanding of such factors and their interactions may aid in improving FinTech solutions that fulfill user requirements and expectations [56].

5. Implications

5.1. Conceptual

The investigation into the Extended UTAUT Model presents multiple significant theoretical contributions to the comprehension of FinTech adoption. A significant discovery pertains to the influence of Effort Expectancy and Trust on Behavioral Intention (BI) [56]. The robust and affirmative correlation observed between these variables indicates that individuals utilizing FinTech services place significant importance on both usability and trust in their process of determining decisions regarding the acceptance and utilization of such services.

5.2. Practical

FinTech platforms emphasize the development of user-friendly interfaces. Trust can be enhanced by implementing strategies such as two-factor authentication, ensuring secure data storage, and providing transparent communication regarding privacy policies [56]. FinTech platforms delivered comprehensive, pertinent, and easily accessible information regarding their services, particularly during onboarding procedures or the introduction of new features.

5.3. Social

FinTech has the potential to serve as an accessible and inclusive entry point for individuals residing in rural areas, those belonging to low-income groups, or individuals with restricted financial literacy [38]. The widespread adoption of digital financial tools has the potential to foster more proactive personal finance behaviors, such as savings, investments, and digital payments, thereby enhancing the overall financial well-being of society.

6. Conclusion

The figure's conceptual framework, combined with the objectives and findings of the research, provided a thorough knowledge of how different factors affect both the behavioral intention (BI) and actual usage of FTS, especially in the scenarios of Bangladesh and the USA [74]. The study integrates key constructs from the Extended UTAUT model, highlighting both mediating and moderating variables [56]. The study concludes that Behavioral Intention toward FinTech services is shaped by a mix of factors such as ease of use (Effort Expectancy), trust, social influences, and personal innovativeness, while Information Richness and Trust act as critical moderators and mediators, respectively, in converting intention into actual usage. The findings emphasize the necessity for FinTech services to build trust, offer easy-to-use platforms, and provide rich information, all while addressing users' diverse expectations and experiences [75].

7. Limitations and Future Direction

Although the experiment offers insightful information on the acceptance and utilization of FinTech services through the enhanced UTAUT approach, drawbacks are evident from the conceptual structure and empirical outcomes. The analysis focuses on FinTech adoption in Bangladesh and the USA, which can restrict the extent to which the results can be applied to other scenarios or locations. Factors like cultural, economic, and regulatory differences could impact how users in other regions perceive and use FTS [56]. The constructs such as Behavioral Intention and Trust are typically measured through self-reported surveys, which can be prone to response biases. More than 500 pieces of data might be more reliable in this research. Although Information Richness is identified as a crucial moderator between BI and Actual Usage, other potentially significant moderating variables such as demographics, income levels, or technological literacy are not explicitly considered in the framework [56].

Additional studies should use a longitudinal approach to examine how users' Behavioral Intentions, Trust, and Actual Usage evolve over the years as users accumulate more experience with FTS or as the technology and services improve [21].

Future research should delve deeper into the multifaceted role of Trust, the negative relationship of Performance Expectancy, and expand the investigation into additional moderators such as demographics and technological literacy [38]. Moreover, greater emphasis on privacy concerns, facilitating conditions, and social factors would contribute to a more thorough insight into FinTech adoption dynamics in Bangladesh, the USA, and other similar contexts.

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Appendix 1.

Table 3.
Model Constructions

Model contains	Model items
Performance expectancy (Perform)	v1. I would find the Fintech services useful in my job.
	v2. I expect Fintech services to enable us to accomplish tasks more quickly.
	v3. I expect Fintech services can improve my productivity.
Effort expectancy (Effort_exp)	v4. It is easy to use fintech services.
	v5. Using fintech is clear and understandable.
	v6. It is easy for me to become skillful at using fintech services.
Social factor (So_factor)	v7. People who influence my behavior think that I should use Fintech
	v8. I am more likely to use fintech if my friends and family use it.
	v9. I use fintech because my colleagues use it.
Facilitating Conditions (Fac_Con)	v10. I have knowledge of using Fintech.
	v11. Fintech services are compatible with other systems I use.
	v12. If I face any problem in using Fintech services, I can solve quickly.
Personal innovativeness (Per_inno)	v13. If I heard about a new information technology, I would look for ways to experiment with it.
	v14. Among my peers, I am usually the first to try out new information technologies.
	v15. In general, I am not hesitant to try out new information technologies.
Trust (Trust)	v16. The Fintech is trustworthy.
	v17. This Fintech's behavior meets my expectations
	v18. I think Fintech is concerned with the present and future interests of users.
Information Richness (Info_Rich)	v19. My interaction with the Fintech close to an actual face-to-face interaction.
	v20. Shopping at the Fintech felt like an in-person interaction.
	v21. The required information on Fintech services is adequate and complete.
Behavioral Intention (Be_Intent)	v22. I intend to use Fintech in future.
	v23. I plan to continue to use Fintech frequently.
	v24. I have positive attitude towards using Fintech.
Actual use (Actual_use)	v25. Fintech service is pleasant experience.
	v26. I use Fintech currently in my professional and personal life.
	v27. The usage of Fintech is a good idea.