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Exploring the Role of Fintech Innovations in Enhancing Financial Inclusion through Digital Payment Systems in the Kingdom of Bahrain

Manju Rajan Babu
School of Accounting and Finance, Bahrain Polytechnic
Kingdom of Bahrain
https://orcid.org/0000-0002-0118-6957

Mohd Umar Farukh
Post Doctoral Fellow, ICSSR,

Department of Commerce,
Aligarh Muslim University, Aligarh, India
https://orcid.org/0009-0004-3894-7563

Mohammad Taqi*
School of Accounting and Finance, Bahrain Polytechnic,
Kingdom of Bahrain
*Corresponding author email: mohammad.taqi@polytechnic.bh
https://orcid.org/0000-0002-6701-7267

Basel K. Dudin
School of Business, Bahrain Polytechnic,
Kingdom of Bahrain
https://orcid.org/0000-0003-2807-4039

Rumpa Roy
College of Administrative and Financial Science, Gulf University
Kingdom of Bharain
https://orcid.org/0000-0002-8218-4530

Neetu Dora
School of Business, Bahrain Polytechnic,
Kingdom of Bahrain
https://orcid.org/0009-0000-7636-8264

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Abstract

Background: The financial services industry within the Gulf Cooperation Council (GCC) region is undergoing a fundamental transformation driven by the intersection of digital transformation and financial technology (FinTech) advancements. Although the Kingdom of Bahrain has experienced substantial growth in digital payment systems, adoption rates vary significantly across diverse demographic groups based on income, literacy levels, and technological trust.

Objective: This study evaluates the adoption patterns of digital payment services among Bahraini adults, specifically investigating the impact of behavioural dynamics, usage costs, system usability, perceived risks, financial literacy, and regulatory frameworks on technology adoption.

Methodology: A quantitative cross-sectional survey was administered to a sample of 400 adult residents in Bahrain. Data analysis was executed using a comprehensive suite of statistical techniques, including descriptive statistics, multiple regression analyses, chi-square tests, analysis of variance (ANOVA), and covariance-based structural equation modelling (CB-SEM).

Results: The findings indicate that while digital payment systems encounter distinct adoption hurdles, financial literacy and income levels serve as primary determinants of usage. Furthermore, the structural equation model demonstrates that regulatory clarity functions as a vital mediating factor through which digital literacy significantly influences the technology adoption process.

Conclusion: The study concludes that FinTech-driven digital payment systems serve as critical mechanisms for advancing financial inclusion in Bahrain. However, overcoming existing structural and behavioural barriers requires comprehensive, targeted policy interventions.

Unique Contribution: This research provides a novel multi-theoretical contribution by integrating the Technology Acceptance Model (TAM), Capability Theory, and Institutional Theory into a unified framework to explain the socio-technical and regulatory dynamics of digital finance adoption in an emerging Gulf economy.

Key Recommendation: It is recommended that financial regulators and policymakers establish a robust governance framework that focuses on three critical areas: enhancing regulatory transparency, strengthening cybersecurity assurances, and deploying targeted digital financial literacy initiatives for underserved demographic groups.

Keywords: Bahrain; digital payment; financial inclusion; financial innovation; FinTech.

Introduction

Financial inclusion drives economic development. The availability of affordable and reliable financial services enables people to participate in the economy while achieving financial stability (Demirgüç-Kunt et al., 2018). Low-income individuals and people with limited financial understanding, and those who face confidence and regulatory doubts, demonstrate substantial access and usage gaps in their services (Demirgüç-Kunt and Klapper in 2012). The combination

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of wallets with online banking systems and multiple digital payment options has decreased transaction costs while improving access to financial services for communities that have been historically marginalized (Allen et al. 2016). The technology acceptance frameworks, together with the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAT) research, show that users decide to adopt technologies based on their perceived ability to use the technology and its perceived benefits. The financial services sector requires users to adopt FinTech technology based on their trust levels and their perception of associated risks, which includes their security and privacy concerns. People need both financial literacy and digital literacy skills to access digital platforms successfully, while the presence of clear regulations builds trust and reduces the risk people see with digital transactions. The factors show their most important value within digital finance ecosystems because these systems require new governance that creates control over quick technological changes (Lee et.al 2018).

The Kingdom of Bahrain established active FinTech regulations through its sandbox testing programmes and open banking projects to become a FinTech centre for the Gulf Cooperation Council countries, according to the CBB. Existing research usually keeps behavioural drivers (ease of use, risk), capability factors (financial/digital literacy), and institutional variables (regulatory clarity) separate, rather than integrating them into a single empirically tested framework for Bahrain or the GCC. The study investigates how FinTech-based digital payment systems affect the financial inclusion progress in Bahrain. This study expands digital finance research while providing Bahrain and similar economies with policy guidance to achieve inclusive digital transformation.

Literature Review

Financial Inclusion and Digital Finance

Financial inclusion gives access to affordable financial services to the underserved majority (Allen et al., 2016). Lack of trust and financial literacy, their inability to afford services and the institutional factors which create barriers to service delivery (Demirgüç-Kunt et al., 2018). The digital finance and FinTech sectors have developed new technologies which enable businesses to conduct operations at lower costs while reaching customers in distant locations through better methods of service delivery (Gabor & Brooks, 2017). Research studies demonstrate that digital financial services will increase current social disparities in case their usage barriers remain unaddressed (Ozili, 2018).

FinTech, Digital Payments, and Adoption Behaviour

Researchers have used technology acceptance frameworks to study how people adopt digital payment systems. The TAM and UTAUT frameworks establish PEU together with perceived usefulness as essential elements which determine technology adoption (Davis, 1989; Venkatesh et al., 2003). Security, privacy, and transaction reliability are significant factors which impact users' willingness to use digital payment platforms (Gefen et al. 2003). FinTech adoption studies show that increased perceived risks lower adoption rates, but trust-building mechanisms reduce these effects (Ryu, 2018).

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Financial Literacy, Regulation, and the Institutional Context

Digital financial services require users to possess both digital and financial literacy skills, which help users authenticate their ability to utilise these services. The adoption of digital payment systems becomes more likely for people who achieve higher levels of financial literacy (Ozili, 2018). Structured oversight systems create frameworks that enable organisations to develop new technologies while increasing operational predictability and safeguarding consumers' interests (Zetzsche et al., 2017; Arner et al. 2017). The CBB has established several policies which aim to promote innovation while protecting financial stability thus creating a testing environment for digital financial solutions (CBB, 2023). Research indicates that digital payments experience adoption gaps that need investigation to determine how behavioural and regulatory factors affect their usage.

Hypotheses Development

Few research has integrated behavioural, literacy, and regulatory dimensions in a unified empirical framework for the GCC. In narrowing this gap, the present study develops and empirically tests a conceptual model that places FinTech-enabled digital payments in Bahrain directly in line with financial inclusion. It extends existing literature by examining direct, mediating, and moderating relationships and provides policymakers and financial institutions with context-specific insights. The research integrates three theoretical perspectives: (1) Technology Acceptance Theory (TAM/UTAUT) to explain behavioural drivers (perceived ease of use, perceived risk) of digital payment adoption (Davis, 1989; Venkatesh et al., 2003); (2) capability theory to account for user-level enabling factors (financial and digital literacy) that affect capacity to use digital financial services (Ozili, 2018); and (3) institutional theory to capture the enabling role of regulatory clarity in shaping perceived risk and adoption (Zetzsche et al., 2017; Arner et al., 2017). The combination of micro-behavioural, meso-capability and macro-institutional lenses enables researchers to explore direct impacts through their study of behavioural and capability drivers and their institutional risk mediation and digital literacy impact on usability effects. The positive impact of regulatory clarity on digital payment adoption demonstrates how official rules and systems determine how users behave and think. This supports the institutional theory point of view. CBB initiatives include three main elements, which are regulatory sandboxes, EFTS frameworks and PSP licensing. People show more willingness to adopt digital payment systems when they believe institutions operate with integrity and transparency. The relationship between regulatory clarity and adoption rates shows that regulatory clarity leads to increased adoption. The National FinTech Strategy of Bahrain together with its open banking regulations demonstrate that institutional legitimacy functions as a fundamental factor that establishes customer trust in digital financial services (Thakor, 2020).

H01: Perceived ease of use (PEU) is positively associated with adoption of digital payment systems (AD).
H02: Risk Perception (RP) is negatively associated with the adoption of digital payment systems (AD).
H03: Financial literacy (FL) is positively associated with adoption of digital payment systems (AD).

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H04: Regulatory clarity (RC) is positively associated with adoption of digital payment systems (AD).
H05: Digital literacy (DL) positively moderates the PEU and AD relationship.
H06: Regulatory clarity (RC) functions as a mediator between risk perception (RP) and adoption (AD).
H07: Cost of Use (CU) is positively associated with adoption of digital payment systems (AD).

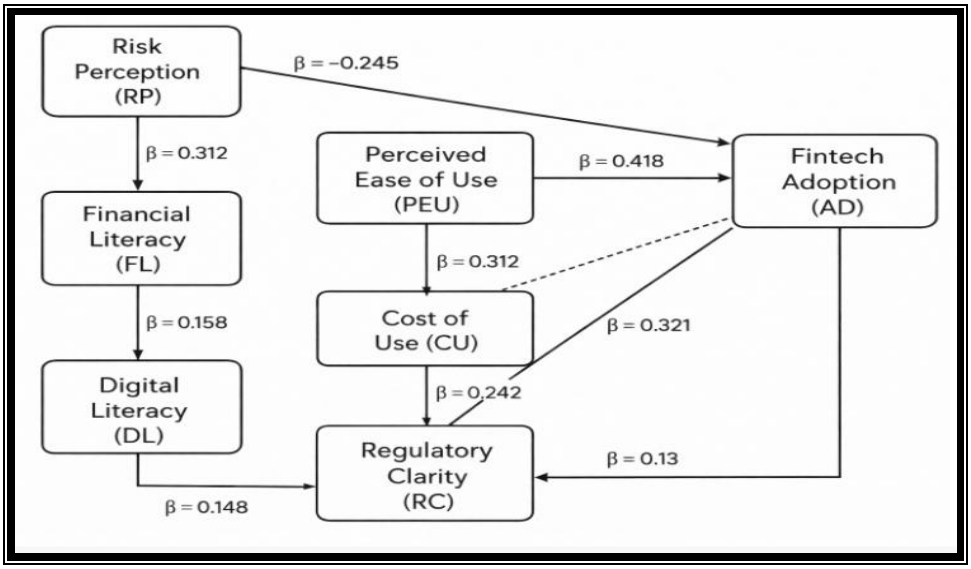

Figure 1 Proposed Model Framework

Methodology

A quantitative cross-sectional survey design employed to collect primary quantitative data through a structured questionnaire. The researchers distributed 425 questionnaires to collect 400 valid responses. The researchers used convenience sampling to recruit participants through online panels and social media platforms.

Measurement and Instruments

The study used five-point Likert scales to assess all research constructs through multi-item measurement. The study included six constructs which were Perceived Ease of Use, Perceived Risk, Financial Literacy, Digital Literacy, Regulatory Clarity, and Adoption adapted from Davis (1989), Gefen et al. (2003), and Zetzsche et al. (2017). The survey instrument was initially developed in English before its translation into Arabic through the process of forward-back translation to resolve testing issues which occurred during the pilot test with 30 participants.

Analysis Method

The analysis utilized three methods which were (1) descriptive statistics to compare different groups through chi-square and ANOVA tests (2) multiple regression analysis to find AD predictors while controlling for demographic factors (3) Covariance-based SEM to estimate both the measurement model through confirmatory factor analysis and the structural paths. The method

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used for estimation required maximum likelihood estimation which included robust standard errors to manage non-normal data. The study implemented full information maximum likelihood method to manage missing data that accounted for less than 2% of total data. The model fit assessment used χ^2, χ^2/df, CFI, TLI, RMSEA with 90% Confidence Level, and SRMR. The study used bias-corrected bootstrapped indirect effects with 5,000 resamples to examine mediation, while interaction terms and simple slopes tested moderation. The researchers applied Harman's single factor test together with a latent method factor to assess common method bias. The model estimation and validation process used established guidelines which assessed reliability, validity, and overall model fit (Hair et al., 2019; Kline, 2016).

Results

Table 1 Demographic Profile of the Survey Participants (N=400)

Variable	Group	Occurrence (n)	%age (%)
Gender	Male	228	57.0
	Female	172	43.0
Age Group	18–20 years	38	9.5
	21–35 years	198	49.5
	36–50 years	118	29.5
	51+ years	46	11.5
Education	High School or below	82	20.5
	Bachelor level	196	49.0
	Masters level	122	30.5
Monthly Income	Below 300 BHD	79	19.8
	300–700 BHD	154	38.5
	Above 700 BHD	167	41.8

Source: Compiled by the authors

The sample (N=400) comprised 57% males and 43% females, with 49.5% aged 21-35 years. The research found that 49% of participants held bachelor's degrees while 30.5% had master's degrees. The income distribution shows that 41.8% of people earned more than 700 BHD monthly, 38.5% earned between 300 and 700 BHD and 19.8% earned less than 300 BHD (Table 1).

Table 2: Adoption and Usage of Digital Payment Systems

Variable	Category	Frequency (n)	%age (%)	Mean	Std. Deviation
Digital Payment Usage	Yes	328	82.0	2.96	0.92
	No	72	18.0		
Most Used Digital Payment Method	Mobile Wallets	189	47.3		
	Online Banking	136	34.0		
	Debit/Credit Card	63	15.8		

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	Others	12	3.0		
Frequency of Use	Daily	126	31.5		
	Weekly	168	42.0		
	Monthly	71	17.8		
	Rarely	35	8.8		

Source: Compiled by the authors

82% of respondents used digital payments, with mobile wallets most popular (47.3%), followed by online banking (34%). Users accessed the service on different basis which included 31.5% of users who accessed it daily; 42% who used it weekly; 17.8% who accessed it monthly and 8.8% who used it infrequently (M=2.96, SD=0.92) (Susanto et.al (2022) (Table 2).

Table 3: Regression Results – Predictors of Adoption of Digital Payment Systems

Predictor Variable	Standardised Beta (β)	p-value	Significance
Perceived Ease of Use	0.47	< 0.01	Sig
Perceived Risk	0.38	< 0.01	Sig
Financial Literacy	0.29	< 0.05	Sig
Regulatory Clarity	0.41	< 0.05	Sig
Cost of Use	–0.07	0.218	Not Sig

Model summary: $R^2 = 0.682$ | Adjusted $R^2 = 0.674$ | Model $p < 0.001$
Source: Computed by the authors

OLS regression identified significant positive predictors of adoption: PEU (β=0.47, p<0.01); PR (β=0.38, p<0.01); FL (β=0.29, p<0.05) and RC (β=0.41, p<0.05). The usage cost proved to be non-significant with a coefficient value of -0.07 and a p-value of 0.218. The model fit resulted in R^2=0.682 and adjusted R^2=0.674 with p<0.001 (Table 3).

Table 4: Chi-Square Test – Association Between Financial Literacy and Adoption

Variable	χ^2 Value	Df	p-value	Decision
Financial Literacy vs Digital Payment Usage	26.92	4	< 0.05	Significant association

Source: Computed by the authors
The Chi-square analysis demonstrated a significant link between financial literacy and digital payment usage according to the test results (χ^2=26.92, df=4, p<0.05) which confirmed this relationship (Table 4).

Table 5: ANOVA – Digital Payment Adoption Across Income Groups

Groups (Income Levels)	Mean Score	Std. Dev.
Below 300 BHD	3.12	0.76
300–700 BHD	3.84	0.61
Above 700 BHD	4.21	0.54

Source: Computed by the authors

ANOVA Statistic	Df	F-value	p-value	Interpretation

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Between Groups	2	18.47	< 0.001	Significant difference

ANOVA revealed that different socio-economic categories use digital payment methods equitably ($F = 18.47$, $p < 0.001$). (Lyons et al., 2020). Digital payment usage was highest among those earning more than 700 BHD ($M = 4.21$, $SD = 0.54$), followed by those earning 300 to 700 BHD ($M = 3.84$, $SD = 0.61$). For those earning less than 300 BHD, adoption was lower ($M = 3.12$, $SD = 0.76$) (Table 5). The conclusions differ from Ozili (2018), who asserted that making digital financial services available is not sufficient to ensure their usage.

Table 6: Summary of Barriers to Digital Payment Adoption

Barrier	**Frequency (n)**	**%age (%)**
Cybersecurity Concerns	116	29.0
Low Digital Literacy	88	22.0
Limited Trust in Technology	74	18.5
Lack of Merchant Acceptance	62	15.5
Preference for Cash	46	11.5
Others	14	3.5

Source: Compiled by the authors

The main obstacles which stopped people from adopting the system originated from five factors which included cybersecurity concerns (29%); low digital literacy (22%); limited trust in technology (18.5%); lack of merchant acceptance (15.5%) and cash preference (11.5%). The main goal of the multi-item scale that measured the latent construct RP in this study was to find out how safe people thought digital payment systems were and how likely they were to be scammed. The items were used to evaluate apprehensions related to data privacy, illicit transactions, and financial losses. The descriptive analysis more accurately illustrates attitudinal resistance to technological utilisation by categorising features of faith in technology as a separate barrier, despite their conceptual linkage to RP (Table 6).

Table 7: Descriptive Statistics

Independent variable	**Mean**	**Std. deviation**
Perceived Ease of Use (PEU)	4.23	0.68
Risk Perception (RP)	3.45	0.76
Financial Literacy (FL)	4.12	0.85
Regulatory Clarity (RC)	3.89	0.67
Cost of Use (CU)	3.10	0.71

Source: Computed by the authors

Mean scores: PEU ($M=4.23$, $SD=0.68$), RP ($M=3.45$, $SD=0.76$), FL ($M=4.12$, $SD=0.85$), RC ($M=3.89$, $SD=0.67$), CU ($M=3.10$, $SD=0.71$). The subgroup analysis was conducted to determine whether the structural connections between individuals with high financial knowledge and those with low financial knowledge presented distinct differences. FL showed the highest standard deviation among the independent variables ($\sigma = 0.85$), which resulted in substantial differences

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between the study participants. The sample was divided into two groups according to the FL median value, which created low literacy and high literacy categories. The researchers applied multi-group structural equation modelling to investigate how the two groups implemented their respective route coefficients. The results demonstrate that PEU had a greater impact on the high literacy group than risk assessment which affected the low literacy group. People who lack financial knowledge face higher costs because legal clarity remains a crucial element for both financial groups. The subgroup analysis strengthens model validity by assessing Table 7 discrepancies through detailed examination.

Table 8: Reliability and Validity of Constructs

Construct	Items	Cronbach's Alpha	CR	AVE
Perceived Ease of Use	3	0.84	0.87	0.61
Risk Perception	4	0.82	0.85	0.59
Financial Literacy	3	0.8	0.83	0.57
Regulatory Clarity	4	0.85	0.88	0.62
Cost of Use	3	0.78	0.82	0.55

Source: Computed by the authors

CFA confirmed acceptable reliability and validity: all Cronbach's α >0.78, CR >0.82, AVE >0.55, factor loadings >0.60. Harman's single-factor test (28% variance) showed that common method bias existed at a minimal level (Table 8).

Table 9: Path Coefficient Result

Path coefficient	Standardised β	p-value
Perceived Ease of Use (PEU) → FinTech Adoption (AD)	0.418	<0.001
Risk Perception (RP) → FinTech Adoption (AD)	-0.245	<0.001
Financial Literacy (FL) → FinTech Adoption (AD)	0.312	0.002
Regulatory Clarity → FinTech Adoption (AD)	0.321	<0.001
Digital Literacy (DL) as a Moderator (PEU → AD)	0.148	0.029
Regulatory Clarity (RC) as a Mediator (RP → AD)	0.098	0.032
Cost of Use (CU) → FinTech Adoption (AD)	0.158	0.048

Source: Computed by the authors

SEM path analysis showed that PEU (β=0.418, p<0.001), FL (β=0.312, p=0.002), RC (β=0.321, p<0.001), and CU (β=0.158, p=0.048) created positive adoption effects. The RP factor produced a negative impact on adoption (β=-0.245, p<0.001). Digital literacy served as a moderating variable for the relationship between PEU and AD (β=0.148, p=0.029) while RC functioned as a mediating variable for the relationship between RP and AD (β=0.098, p=0.032; Table 9).

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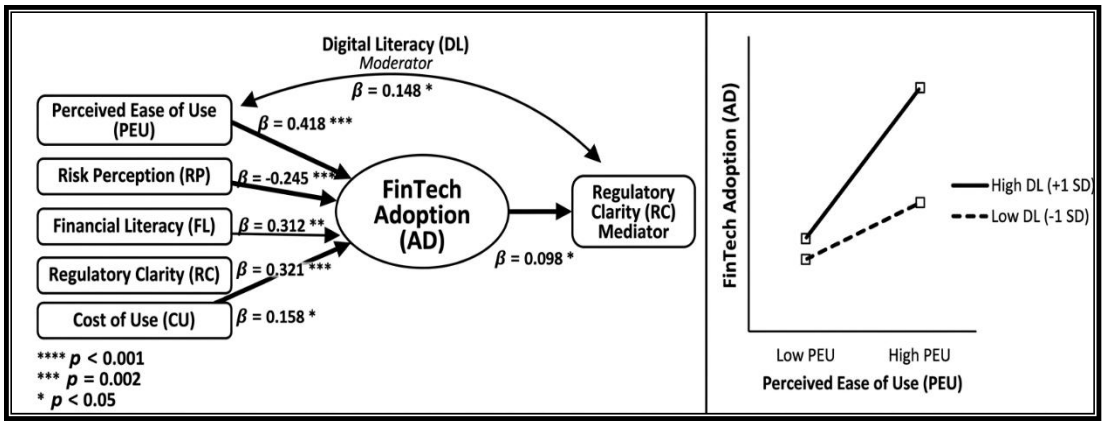

Figure 2 Interaction effect of PEU and DL on FinTech adoption

The Structural Model results show that three factors namely PEU, RC and FL determine adoption of the system, but PEU has the greatest positive impact with $\beta = 0.418$, $p < 0.001$. RP was also found to have a statistically significant negative effect ($\beta = -0.245$, $p < 0.001$), suggesting that increased levels of perceived risk (e.g., Security, Privacy or Financial Loss) act as hindrances to user adoption of FinTech. The relationship between CU and DL shows only a slight positive link but digital literacy serves as a key factor that affects how people use PEU which proves that technical skills make every usability function better. The relationship between risk and adoption requires regulatory compliance to operate as a partial mediating factor. The complete implementation of Bahrain's FinTech system depends on two factors which produce behavioural obstacles: financial skills and regulatory systems.

Table 10: Model Fit Indices

Fit indices	**Model values**	**Threshold values**
Chi-square (χ^2)	143.89, p = 0.212	Non-significant, good fit
CFI (Comparative Fit Index)	0.93	Good fit (>0.90)
TLI (Tucker-Lewis Index)	0.915	Good fit (>0.90)
RMSEA (Root Mean Square Error of Approximation)	0.055	Acceptable fit (<0.08)
SRMR (Standardised Root Mean Square Residual)	0.047	Good fit (<0.08)

Source: Computed by the authors

The observed data are in good agreement with the positive result in SEM analysis, anticipating the covariance structure, as indicated by the non-significant chi-square value ($\chi^2 = 143.89$, $p = 0.212$). The Comparative Fit Index, CFI and Tucker-Lewis Index, TLI values exceed the 0.90 threshold. The SRMR and RMSEA results display acceptable values, which allow their use (Table 10).

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Table 11. Hypothesis Testing

	Hypothesis (proposed relationship)	Standardised Estimate (β)	p-value	Result
H01	Perceived Ease of Use (PEU) → Adoption (AD): PEU positively affects AD	0.418	< 0.001	Supported
H02	Perceived Risk (RP) → Adoption (AD): RP negatively affects AD	−0.245	< 0.001	Supported
H03	Financial Literacy (FL) → Adoption (AD): FL positively affects AD	0.312	0.002	Supported
H04	Regulatory Clarity (RC) → Adoption (AD): RC positively affects AD	0.321	< 0.001	Supported
H05	Digital Literacy (DL) moderates PEU → AD: PEU effect stronger at higher DL	interaction β = 0.148	0.029	Supported
H06	Regulatory Clarity (RC) mediates RP → AD (RP → RC → AD)	indirect β = 0.098	0.032 (bootstrapped)	Supported (partial mediation)
H07	Cost of Use (CU) → Adoption (AD): CU affects AD (tested but not primary hypothesis)	0.158	0.048	Supported (marginal)

S*ource: Compiled by authors*

All seven hypotheses were supported. The results of H01-H04 showed that PEU, RP, FL, and RC had direct effects on adoption. H05 confirmed DL's moderating effect on the PEU-adoption relationship. H06 confirmed that RC partially mediated the relationship between RP and adoption. H07 showed that CU had a slight positive impact on adoption (Table 11). According to Venkatesh et al. 2003, established regulations through their clear and transparent rules diminish the adverse effects that FinTech markets experience during their adoption phase.

Discussion

The research results demonstrate that FinTech-based digital payment systems in Bahrain depend on three interconnected elements, which include user behaviour patterns, institutional capabilities and regulatory frameworks. The presence of technology does not guarantee inclusion because users need to understand how to use the technology, they need to trust its operation, have basic educational skills, and there must be trust in the authority that controls the technology (Demirgüç-Kunt et al., 2018). PEU emerged as the strongest positive predictor ($\beta=0.418$, $p<0.001$), which confirms the main hypothesis of TAM that users will decide to use a system based on its usability (Davis, 1989; Venkatesh et al., 2003). The research shows that digital literacy acts as a moderating factor because users with higher digital skills experience greater usability advantages than their less skilled counterparts who struggle with basic digital functions. The research shows that RP

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creates a strong negative impact on adoption because it prevents users from accepting digital financial services, according to previous studies, which demonstrate that security concerns and transaction unpredictability slow down digital service adoption (Gefen et al. 2003; Pavlou 2003; Ryu 2018).

The research found that RC created a partial mediator effect because the study showed that clear regulatory frameworks, which organisations effectively communicate to the public, help reduce perceived risks and thus improve user adoption rates. The CBB FinTech Regulatory Sandbox together with its PSP licensing system operates as an institutional trust mechanism which supports institutional theory predictions (Zetzsche et al. 2017; Arner et al. 2017). The research finding shows direct policy implications because regulatory communication extends beyond compliance to function as a vital adoption support system. FL served as an important direct predictor of results with a coefficient value of 0.312 and statistical significance at the 0.002 level (Ozili 2018) and the capability theory perspective which states that people need cognitive abilities to assess and use digital financial tools. The ANOVA test results showed a significant income-based adoption pattern through the testing which demonstrated that lower-income groups had significantly lower adoption rates compared to higher-income groups. The income-based digital gap indicates that people from lower income levels face technological access problems because of their economic background which exists separate from their personal beliefs and educational background according to Beck et al. (2007) who maintained that financial systems would create more inequality unless designers build their systems to include all users.

Since the study used online groups for convenience sampling, it's possible that it didn't include enough people who were economically or digitally poor. Even though 20.5% of the respondents who were interviewed had just graduated high school and 19.8% made less than 300 BHD a month, this group could not comprise the poorest or most unbanked people. Even people who don't make a lot of money need to be able to get online and know how to use digital tools. As a result, the sample consists primarily of low- and middle-income internet users, as opposed to those who are completely unbanked or do not participate in the formal financial and digital environments. The findings should not be seen as representing the perspectives or behaviours of the most marginalised populations but rather as reflecting those of economically poor yet technologically savvy individuals. Including unbanked and digitally excluded populations through offline survey methodologies or mixed sampling techniques could enhance the generalisability and inclusivity of future research.

Ordinary least squares regression analysis was used to predict how many individuals would start using electronic payment methods (Table 3). Adoption depends on three factors namely the regulations ($\beta = 0.41$, $p < 0.05$); the user interface accessibility ($\beta = 0.47$, $p < 0.01$) and the perceived safety ($\beta = 0.38$, $p < 0.01$). The findings demonstrate that user experience combined with RP and FL together with a supportive legislative framework act as essential factors which determine digital payment system adoption in Bahrain. In the OLS regression model, CU harms adoption, although it is not statistically significant ($\beta = -0.07$, $p = 0.218$). Tables 9 and 11 reveal a substantial and positive correlation ($\beta = 0.158$, $p = 0.048$) between utilisation and CU. The disparity might be because the estimations were made using different methods. SEM delivers a

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more accurate view of the underlying linkages since it considers hidden causes and measurement errors. The model is statistically significant ($p < 0.001$) since it has an R^2 value of 0.682 and a modified R^2 value of 0.674. In general, the results reveal that individuals in Bahrain are more likely to adopt digital payment systems if they think they are easy to use, safe, affordable, and clear about the law than if they think they are cheap. Also, this phenomenon suggests a 'quality-signalling effect' prevalent in the Bahraini market. However, this finding must be interpreted with caution; the positive valence of cost is likely a byproduct of the 'early-adopter' bias in the sample. So, the digital payment systems require proper coordination between usability, risk communication, regulatory transparency and FL efforts to create financial inclusion.

Conclusion and Implications

The FinTech digital payment systems in Bahrain function as an essential driver which improves financial access for people, but their complete adoption depends on several essential factors, which include system usability, security protocol comprehension, financial literacy, and the understanding of regulatory frameworks. Study strengths include a large primary dataset (N=400), rigorous CB-SEM analysis testing mediation and moderation, integration of TAM, capability theory, and institutional theory, and actionable policy findings.

Policy Recommendations

The national FinTech inclusion programme requires three essential components which include: (1) Regulatory clarity: publish a concise digital payments code with clear consumer protections, dispute resolution timelines, and sandbox procedures within 6 months. The six-month period establishes a suitable timeframe for Bahrain to develop its digital payments legislation because the CBB oversees its existing FinTech regulatory sandbox operations. (2) Cybersecurity assurance: require certified baseline security standards (encryption, MFA, incident reporting) for all providers and annual third-party audits, with penalties for non-compliance; (3) Targeted literacy: fund and roll out a nationwide digital financial literacy campaign (mobile, community centers, or banks) prioritising low-income areas, combined with subsidised onboarding incentives for merchants.

Generalisability to Financially Excluded Groups

The demographic composition of the sample shows a preference for educated respondents who have access to digital technology, which restricts study results to only the most remote groups of society. The model does not propose that all demographic groups adapt uniformly; instead, it highlights these elements. The identified factors show conceptually relevant value through all strata, yet their influence differs differentially between digitally excluded groups. The authors show that their research results need to be understood as proof which demonstrates trends but fails to show all missing information. The future studies should use offline surveys together with targeted sampling and mixed-method techniques to reach a better understanding of digitally excluded people and unbanked people who face obstacles.

Limitations and Future Research

This study presents a cross-sectional analysis which investigates the FinTech landscape of Bahrain, but it contains certain limitations which need to be recognized. The online survey instrument, which was used for data collection, created a self-selection bias which resulted in the over-

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representation of people who already had digital access. The research results demonstrate the factors which lead to 'advanced adoption' while they do not show the obstacles which prevent unbanked people from starting their banking journey. So, the longitudinal study needs to implement a mixed-methods research design, which shall include field interviews from the qualitative section and offline sampling to record the actual experiences of people who currently lack access to digital payment systems. Developing Sharia-compliance as a cultural modality would provide a richer context for institutional analysis within the region.

Declarations

AI Use Statement: The authors confirm that no Artificial Intelligence tools were used in the writing or production of this manuscript.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author, Mohammad Taqi, upon reasonable request.

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Ethical Approval: This study was conducted in accordance with the Declaration of Helsinki. Formal institutional ethical approval was not required for this study as the survey was completely anonymous, voluntary, and carried no risk to participants.

Authors' Contributions: Manju Rajan Babu conceived and designed the study; Mohammad Taqi and Basel K. Dudin designed the conceptual framework; Rumpa Roy, and Neetu Dora performed the data collection; Manju Rajan Babu and Mohd Umar Farukh analysed the data; Manju Rajan Babu, Mohd Umar Farukh, Mohammad Taqi and Basel K. Dudin wrote the paper. All authors contributed to the discussion and conclusion sections of the study. Also, all authors have read and agreed to the published version.

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