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ACADEMIC PAPER

The Rise of Shariah FinTech: A Game-Changer for Islamic Financial Inclusion in Pakistan

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ABSTRACT

Unsatisfactory level of financial inclusion plays a crucial role in economic development of Pakistan, and it can indeed lead to various economic issues. The objective of this study is to examine the role of Shariah FinTech diffusion for Islamic FI in Pakistan. This study adopted a cross-sectional research design. Data collection was carried out by using survey questionnaire from the clients of financial institutions such as Islamic banks in Pakistan. 170 valid responses were used to examine the effect of Shariah FinTech diffusion on Islamic FI. PLS-SEM was carried out to examine the relationship between variables. It is observed that Shariah FinTech diffusion has central importance to promote Islamic FI in Pakistan. Increase in the rate of Shariah FinTech adoption can increase the level of Islamic FI. This study has valuable insights for the policymakers to promote the level of Islamic FI in Pakistan.

KEYWORDS

Islamic financial inclusion, Shariah FinTech, FinTech adoption, financial institutions.

1. INTRODUCTION

Approximately, 1.7 billion adults which are 31% of the world's population has no access to mobile money or financial account (Demircuc-Kunt et al., 2018). Significantly, 1.2 billion people attained mobile money or financial account between 2010 and 2017 for the first time. A large contribution to this progress is due to the impact of technology in the field of finance. The emerging technology in the field of finance called FinTech has great potential in this digitalization era but is also a tool to improve financial inclusion.

Pakistan is an underdeveloped country having a lower middle income with low rate of FI and literacy (Farooq et al., 2023). Pakistan is considered as least and low level in the FI among the worlds. Much of the population, 85%, have no access to formal and non-formal financial services and FI. An ample number of populations in Pakistan has lack of resources and access to financial services and banking facility. Now a days a dominant issue in Pakistan is lack of access of financial services. Ample research is available on empirical and theoretical background with reference to Pakistan that are not directly to focus on the FI but somehow discuss the subtopic of the FI in context of eradication of poverty, elimination of income disparities and economics stability (Shahbaz & Islam, 2011).



The existing literature shows that several studies have been conducted for FinTech and FI on the basis of theoretical background on different theories like TAM, UTAUT and TPB but not emphasis and focus on the potential of Islamic FinTech adoption to increase the level of Islamic FI in light of the new perspective of Islamic finance on the basis of diffusion of innovation (DOI) theory (Agag & El-Masry, 2016; Lou & Li, 2017; Waters, 2010) in Pakistan. In line with this approach, this study explores the potential of Islamic FinTech adoption to accelerate the Islamic FI in Pakistan on the ground of diffusion of innovation theory. According to the best of the researcher's knowledge, there is no framework that used Islamic Fintech adoption as a mediating variable as determining the relationship between relative advantage and Islamic FI. Therefore, the objective of this study is to examine the role of Shariah FinTech diffusion for Islamic FI in Pakistan.

2. LITERATURE REVIEW

2.1. Islamic Financial Inclusion

FI is a crucial component and driver of inclusive and sustainable growth that may unlock the vast and untapped potential of formal investment propensities, savings and proper financing. Households in the lower social classes tend to invest and consume more. FI is the process of mainstream formal institutional entities providing deprived and unserved segments, such as low-income people (Gadzo et al., 2019; Kisman, 2017).

In financial term, the FI refers that peoples of the society, individuals and business have approach to financial products and services like payments, credit, savings, transactions and insurance in useful, easy and affordable manners according to their needs (Farooq et al., 2023; Mader & Sabrow, 2019; Maity, 2019; Razak & Asutay, 2022). FI strives to make an effort for each member of society for everyday financial services available at an inexpensive cost. According to the world bank, FI plays a paramount role in accelerating prosperity and reduction in poverty.

FI is still defined in a rather nebulous manner, and various scholars offer various indicators to measure FI. FI, according to Leyshon and Thrift (1995), is the incorporation of the excluded population in the official financial system. Environment in which people are encouraged to use fundamental financial services. FI, according to Sinclair (2001), FI refers to having access to fundamental financial services. FI is a process that strives to include every member of society in the formal financial system by making financial services easy to access, accessible, and usable (Egharevba et al., 2016; Santosh et al., 2016).

FI has been the main topic of previous studies attempting to connect fintech platforms as a distribution channel and social development. Their main goal was to investigate how fintech may be used to provide affordable loans, equity, peer-to-peer lending, crowdfunding, and cross-border remittances to the previously unbanked people in order to improve their quality of life. On the other hand, many studies that have incorporated fintech in the delivery of social protection services have largely done so focusing on developed countries, with limited attention on developing countries. A few studies have attempted to analyse fintech as a distribution mechanism, including (Al-Dmour et al., 2020; Al Suwaidi et al., 2022; Demirguc-Kunt et al., 2018; Gladden, 2020; Naeem & Akhtar, 2021). Muslims are excluded from financial activity because of their low financial literacy. Islam is the primary impediment to Muslims which require to implement specialized wealth redistribution strategies. Muslims are not poor; hence they are not excluded from the formal financial system; rather, they stay away from the financial system that involves interest (riba).

2.2. Islamic Financial Technology (Islamic Fintech)

A new word describing the connection between finance and technology is financial technology, or FinTech. The interrelationships between finance and technology have a long history, but the most recent wave of technological advancements, such as Big Data, Artificial Intelligence (AI), improved connectivity, and storage technologies like Blockchain and cloud services, are developing at an unprecedented rate, creating new regulatory challenges. FinTech not only presents huge chances to improve the financial sector, but also new, significant hazards that could have an influence on regulatory



objectives. Fintech is a pioneering notion for enhancing financial services operations by offering technological solutions that are driven by business scenarios (Al-Dmour et al., 2020; Naeem & Akhtar, 2021). FinTech evolution is given in Figure 1.

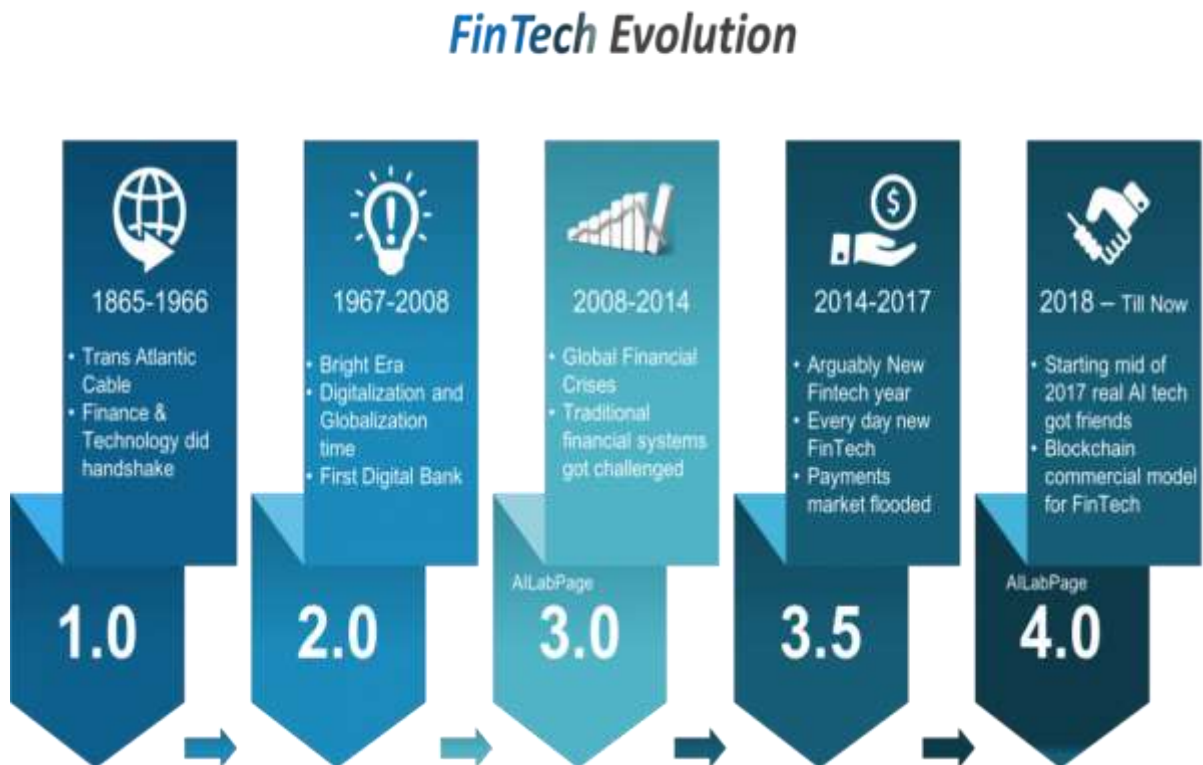


Figure 1: FinTech Evolution

Islamic fintech derives its name from the combination of technology with Islamic finance, therefore any product or service from this industry must adhere to the fundamentals of fiqh al-muamalah, or Islamic commercial jurisprudence. Islamic financial technology platforms make use of cutting-edge technologies including artificial intelligence (AI) and internet of things (IoT) devices. To advance financial, social goals, economic, and environmental, it will implement new tech-based business models. These models will improve the performance of all Islamic financial products and services and provide broader benefits like poverty reduction, social justice, and FI. Islamic fintech would make it easier, more affordable, and more effective for more people to access Islamic financial services. This would open up opportunities for financing, payments, and investment that are in line with the goals of the maqasid shariah, or Islamic Divine Laws of Islam (Ismail et al., 2016).

Fintech and Islamic Fintech both are similar in meaning, but the distinction arise upon the compliance of Sharia'h principles. Conventional Fintech evolved around the Riba, Maisir and Gharar. Islamic FinTech is the union of "Islamic finance" and "technology", that means any product and development or financial services from Fintech would be refer to the Sharia'h Scholars or Islamic jurisprudence accordingly. Islam encourages and warm welcome the technology and innovation if these innovations are not against the rules & regulations of Sharia'h. A new technology who disrupted the complete financial set up and made acceptance across the globe as Islamic Finance. Islamic Fintech is quite unlike from its conventional analogue as it is more comprehensive, ethical and transparent. Islamic Fintech is comparatively a new concept that emerging in the financial market and only scarce research has been explore in this area (Hudaefi, 2020; Khan et al., 2021; Muryanto et al., 2022; Rabbani et al., 2021). Islamic Fintech must follow the rules, regulations, and principles of Sharia'h and any innovation that is violate the standard Islamic principles are not acceptable.



2.3. Diffusion of Innovation Theory

Rogers Everett (1995) introduced the DOI theory and provided the description of how new ideas get adopted, which is divided into two levels: the initiation and the implementation. An analysis of the adoption of new technology is done using the DOI hypothesis. According to Roger, the initiation period would end if a fresh idea came to fruition. The decision of an individual to accept or reject the innovation was defined as the implementation step by the researchers. In the field of diffusion models, the DOI framework is likewise a significant advancement. The DOI theory was the most important piece of research that thoroughly expanded our understanding of psychology and sociology in order to explain how innovations get adopted by the general public.

According to the Rogers (2003) definition of innovation, "an idea, practice, or thing that is seen as new by an individual or another unit of adoption" serves as a suitable beginning point. A wide range of new things, including some of dubious worth, are included in the term. According to this definition, anything new that can spread throughout all or a portion of human civilization due to human decisions and intentional action—from new products to social practices and customs to new words, memes, artistic works, styles, and genres—is an innovation. Rogers introduced the spread of innovation theory. The notion holds that when a new strategy, method, or technology is introduced, it has perceivable processes, timelines, and mechanisms for end users to embrace it. According to his logic, adoption is the choice to use an innovation as the best available course of action, whereas disapproval is the decision to not use the idea. He continued by defining diffusion as the method of disseminating an innovation over time through certain channels within a social system. The four major pillars of innovation diffusion—innovation, time, communication channels, and the social system. The innovation-adoption decision-making process was highlighted by Rogers (2003), who mentioned information-seeking and information-processing as the cornerstone of decision-making. In order to decide whether to accept or reject an innovation, people gather and evaluate relevant information about it in light of its benefits and drawbacks.

On the basis of above-mentioned arguments, this study considers the Diffusion of innovation theory framework as an idealistic approach to use in the context of Islamic Fintech adoption. By using the DOI theory, this research considers that Islamic fintech adoption as a new idea in the presence of fintech that would determine the behavior of people about the Islamic FI in Pakistan.

2.4. Relative Advantage

According to Rogers (2003); Rogers Everett (1995), that relative advantage is a viewpoint or an idea of an individual about the newly introduced technology and innovation is better than the prevailing system. In 1999 another researcher also has an argument about the relative advantage is favorable regarding establishing the perception of members of the society moving to innovation or new idea. Furthermore, the relative advantage also points out the benefits for social cultural gained from the innovation (Rogers, 2003; Rogers Everett, 1995). In current study, we linked relative advantage with Islamic fintech adoption and Islamic FI. Evidence from previous studies shows that relative advantage has a positive significant impact on adoption behavior. Figure 2 shows the framework of the study showing the relationship between relative advantages, Islamic FinTech adoption and Islamic FI.

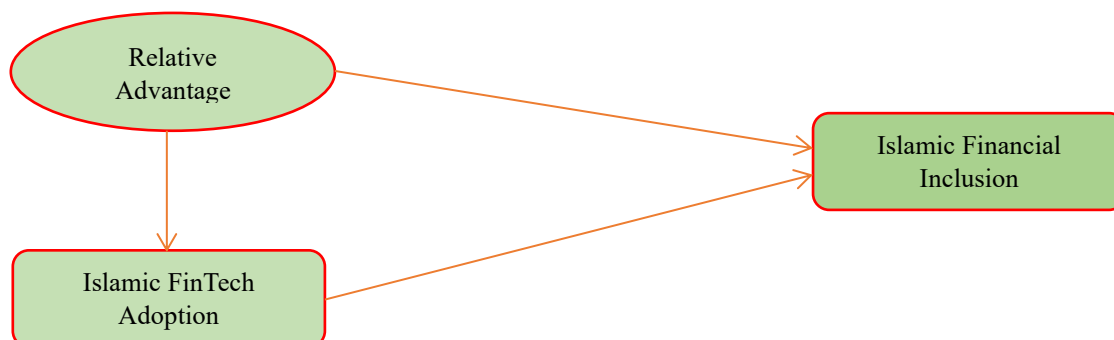


Figure 2: Framework of the study showing the relationship between relative advantages, Islamic FinTech adoption and Islamic FI



Hypothesis 1. *Relative advantage has positive effect on Islamic FinTech adoption.*

Hypothesis 2. *Relative advantage has positive effect on Islamic FI.*

Hypothesis 3. *Islamic FinTech adoption has positive effect on Islamic FI.*

Hypothesis 4. *Islamic FinTech adoption mediates the relationship between relative advantage and Islamic FI.*

3. METHODOLOGY

A quantitative research methodology is used to evaluate the relationship between proposed hypothesis in the current study. A cross sectional research design was chosen to gather the data. Due to time and financial restrictions, the current study used a cross-sectional research methodology rather than a longitudinal one.

Population of the study is based on the Islamic banking industry. All the Islamic banks working in Pakistan were covered in this study and data was collected from the clients of these banks. Data collection was carried out by using survey questionnaire from the clients of Islamic financial institutions such as Islamic banks in Pakistan. 170 valid responses were used to examine the effect of Shariah FinTech diffusion on Islamic FI. -SEM was carried out to examine the relationship between variables.

3.1. Operationalization

3.1.1 Islamic Financial Inclusion

Islamic FI is measured based on five attributes: usage, Access, Quality, Welfare, and satisfaction. Earlier FI studies were used as a model for the questionnaire's questions, which were then modified to reflect the fundamental tenants and traits of Islamic finance. The questions were modified from many studies, such as the Findex Survey by the World Bank from 2017, Iqbal and Mirakhor (2012) and Zulkhibri (2016) (refer to Table 1).

Table 1: Common measurement items of Islamic FI

Constructs	Scale Items	Source
Islamic FI (IFI)	01. Adults have accounts with Islamic financial institutions.	World Bank's Findex Survey (2017)
	02. Positive impact on the welfare of users: improved livelihood: more resilient household; expanded job creation.	
	03. Islamic Financial services meet customers' needs.	
	04. People use Shariah financial services to save, borrow, transact, and mitigate financial risk.	
	05. People have activities in them. accounts in the past six months.	
	06. Confident in dealing with Islamic Financial Services.	
	07. Service centers are close to people.	
	08. Adults' own mobile phones.	
	09. Adults have unique and verifiable. Identification.	
	10. Adults have their profiles in the integrated reference system.	

3.1.2 Relative advantage

Relative advantage is measured based on quickly accomplished tasks, improve the quality of precursors, easy job, effectiveness on job and also increase the productivity. Moreover, quickness for completing the task, much better from predecessor, easiness, effectiveness and enhance the productivity are very crucial for people to accept the technology. Scale items are adapted from Moore and Benbasat (1991) as shown in below Table 2.



Table 2: Scale items Relative Advantage

Construct	Survey Items	Source
Relative Advantage	1. Using the system enables me to accomplish tasks more quickly.	Moore and Benbasat (1991)
	2. Using the system improves the quality of its precursor.	
	3. Using the system makes it easier to do my job.	
	4. Using the system enhances my effectiveness on the job.	
	5. Using the system increases my productivity	

3.1.3 Islamic Fintech Adoption

Islamic Fintech adoption used as mediator in this research. It is measured based on adoption as a new opportunity, inevitable in Pakistan, innovative products and services for bankers, adoption is favorable according to Pakistan regulations, adoption is very smooth, adoption process required strategic management, adoption is supported by everyone, and adoption creates new channels. Scale items are adapted from Dwivedi et al. (2021), as shown in Table 3.

Table 3: Scale items for Islamic FinTech Adoption

Constructs	Scale Items	Source
Islamic FinTech Adoption	01. Islamic FinTech adoption created a new opportunity for banking sector.	Dwivedi et al. (2021)
	02. Islamic FinTech in Pakistan banking is inevitable.	
	03. Islamic FinTech helps to innovate products and services for banks.	
	04. Islamic FinTech adoption is favorable in Pakistan regulations.	
	05. Islamic FinTech adoption process is smooth to adopt in your bank.	
	06. Islamic FinTech adoption required a strategic approach of technology management.	
	07. Islamic FinTech adoption is supported by everyone in the bank.	
	08. Islamic FinTech adoption creates new channels.	

4. DATA ANALYSIS AND FINDINGS

The current study employed PLS which is recommended while analyzing the primary data (Hair & Alamer, 2022; Hair et al., 2013; Hair Jr et al., 2022; Hameed & Naveed, 2019). While using PLS, reliability and validity were examined before examining the relationship. Factor loadings are given in Table 4 which shows that all the scale items have factor loading higher than 0.5. Alpha and composite reliability (CR) is higher than 0.7 which confirmed the convergent validity. Furthermore, discriminant validity is examined through average variance extracted (AVE) square root. AVE square root is reported in Table 5 and Figure 3 which confirmed the discriminant validity.

Table 4: Factor Loadings, Alpha, CR and AVE

Variables	Items	Loadings	Alpha	CR	AVE				
Islamic FI (IFI)	IFI1	0.588	0.725	0.758	0.525				
	IFI2	0.658							
	IFI3	0.854							
	IFI4	0.752							
	IFI5	0.58							
	IFI6	0.785							
	IFI9	0.865							
	Islamic FinTech Adoption (IFA)	IFA1				0.789	0.785	0.798	0.536
		IFA2				0.523			
IFA3		0.785							
IFA5		0.852							
IFA6		0.896							
IFA7		0.652							
Relative Advantage (RA)		RA1	0.654	0.802	0.825	0.589			
	RA2	0.632							
	RA3	0.754							
	RA4	0.756							
	RA5	0.854							
	RA6	0.698							



Table 5: Discriminant Validity

	Islamic FinTech Adoption (IFA)	Islamic FI (IFI)	Relative Advantage (RA)
Islamic FinTech Adoption (IFA)	0.778		
Islamic FI (IFI)	0.655	0.676	
Relative Advantage (RA)	0.524	0.651	0.688

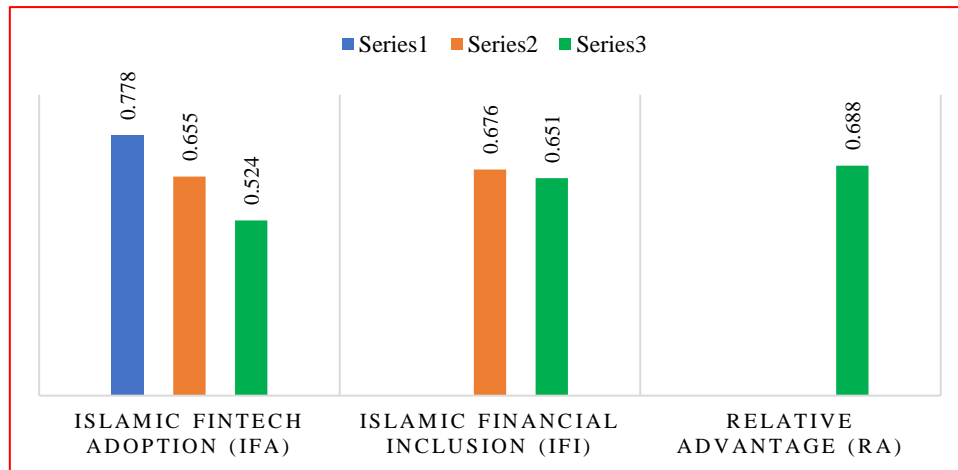


Figure 3: AVE Square Root

Results are shown in Table 6 and Figure 4. These results are obtained by using PLS bootstrapping (Albassami et al., 2019; Alsedrah, 2023; Azeem, 2022; Basheer et al., 2019; Tajeddini et al., 2022; Watanabe & Shafiq, 2023). Results of the study were obtained by using t-value statistics which should be higher than 1.96 and beta value to examine the direction of the relationship. All the hypotheses found significant because the t-value is higher than 1.96 along with the positive beta value.

Table 6: Results

	Beta	Mean	SD	T Statistics	P Values
Relative Advantage -> Islamic FinTech Adoption (IFA)	0.223	0.221	0.017	13.099	0
Relative Advantage -> Islamic FI (IFI)	0.274	0.273	0.09	3.042	0.002
Islamic FinTech Adoption (IFA)-> Islamic FI (IFI)	0.42	0.4	0.061	6.879	0
Relative Advantage -> Islamic FinTech Adoption (IFA) ->Islamic FI (IFI)	0.044	0.042	0.012	3.658	0

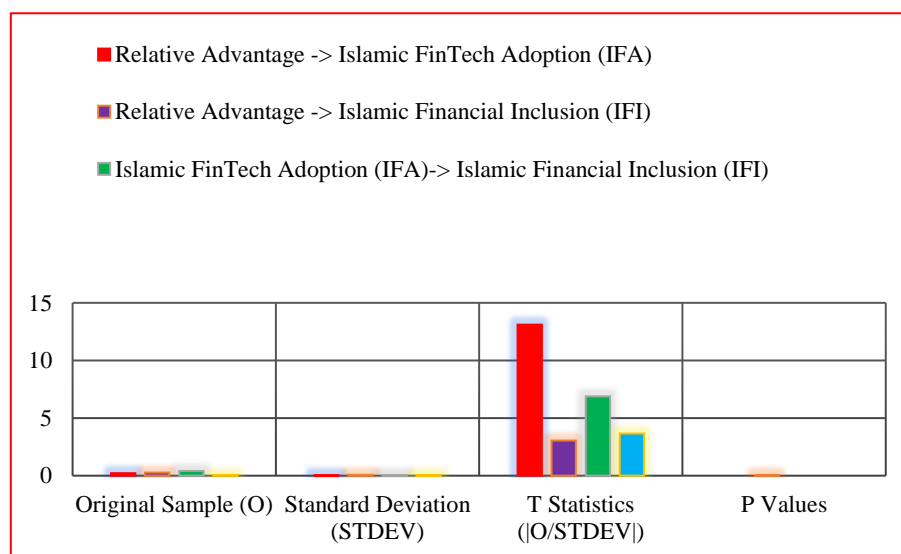


Figure 4: Results



5. CONCLUSION

The objective of this study was to investigate the role of Shariah FinTech diffusion for Islamic FI in Pakistan. It is found that relative advantage has significant role to promote Islamic FI. Findings of the study emphasized that relative advantage has positive effect on Islamic FI which highlighted that with the increase in relative advantage among the innovations can promote FI in Pakistan. Furthermore, it is observed that relative advantage has positive effect on the adoption of Islamic fintech which has important role to promote FI in Pakistan. The adoption of Islamic fintech is one of the ways to promote financial transactions among the general public. It is also observed that Islamic fintech adoption has direct influence on Islamic FI. With the promotion of Islamic fintech adoption with the help of relative advantage, the FI can be promoted. Additionally, it is also observed that Islamic fintech adoption mediates the relationship between relative advantage and Islamic FI. Therefore, Islamic fintech adoption is one of the important constructs which transferred the positive effect of the relative advantage on Islamic FI. These findings are consistent with the diffusion of innovation theory which is employed in this study. However, this theory was not employed in relation to the Islamic FI and Islamic fintech in previous studies. Therefore, this study addressed that this theory is not only applicable to various other fields, but it is also quite fit in the field of FI.

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