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Exploring the role of Islamic Fintech in combating the aftershocks of COVID-19: The open social innovation of the Islamic financial system

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Article

Exploring the Role of Islamic Fintech in Combating the Aftershocks of COVID-19: The Open Social Innovation of the Islamic Financial System

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Abstract: The purpose of the current study is to investigate the role of the Islamic financial system in recovery post-COVID-19 and the way Fintech can be utilized to combat the economic reverberations created by COVID-19. The global financial crisis of 2008 has established the credentials of the Islamic financial system as a sustainable financial system which can save the long run interests of the average citizens around the world while adding value to the real economy. The basic ethical tenets available in the Islamic financial system make it more suited and readymade to fight the economic aftershocks of a pandemic like COVID-19. The basic principles of ethical Islamic finance have solid connections to financial stability and corporate social responsibility within the wide-reaching business context. With the emergence of Financial technology (Fintech) it has provided a missing impetus to the Islamic financial system to compete on equal ground with its conventional counterpart and prove its mettle. The study uses discourse analysis along with the content analysis to extract content and draw a conclusion. The findings of the study indicate that COVID-19 pandemic has provided the opportunity for the social and open innovation to grow and finance world have turned to open innovation to provide a speedy, timely, reliable, and sustainable solution to the world. The findings of the study provide significant implications for governments and policy makers in efficient application of Fintech and innovative Islamic financial services to fight the economic consequences of the COVID-19 pandemic.

Keywords: COVID-19; Islamic banking; Islamic economics; open innovation; social finance; post COVID-19

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1. Introduction and Research Question

The Novel Coronavirus, also known as the COVID-19, is derived from the Latin Corona which means "crown" or "wreath" [1,2]. This deadly virus was first reported to a human being in Wuhan, China on 17 November 2019 [3,4]. This virus has already disrupted the composition of life and the economic consequences brought by the virus are really hard to measure; it will be matter of research for future researchers, academic institutions, governments, and policymakers [5]. In a situation of high uncertainty and uneven impacts, it remains a matter of debate how the recovery will look and how much time it will take to recover from the economic damages done by the pandemic [6]. The role

of banks and financial institutions are going to be huge in recovery during and post COVID-19 [7]. Financial institutions are the backbone of any financial system as it is responsible for the smooth functioning of the economy and ensuring a high level of liquidity in the economy. The financial institutions perform this task by offering credit, managing markets and pooling risk among consumers [8]. The recovery post COVID is going to be huge and Islamic Financial institutions are going to play a key role, as it played during the recovery post financial crisis of 2008. Islamic finance is the only financial system in the world, the principles of which are based on ethics and morality. It is the financial system which ensures community participation, social and economic stability, promotes financial inclusion, and supports and encourages comprehensive human development [9,10]. Islamic finance places great importance on improving quality of life, equal distribution of income, and social justice for everyone. Islamic finance is sustainable as it offers financial services which are asset backed, ethical, and based on the PLS method, which means it shares risks equitably and is subject to good governance [11–13].

Islam embraces and encourages all type of innovation if it does not violate the principles of sharia [14]. Financial technology (Fintech) is one such innovation which has disrupted the whole finance world and found acceptance in the Islamic finance world [15]. Financial technology is defined as the use of modern innovative and disruptive technology like Blockchain, artificial intelligence, Regtech, smart contracts, crowdfunding, P2P lending, digital currency, etc. for providing financial services [16,17]. The global financial crisis of 2008 is regarded as a time when Fintech peaked as a concept and found acceptance at the mass level [18,19]. Financial crisis opened the door for technological advancement in financial services and Fintech is not only innovative, seamless, user-friendly, and faster but also it can provide financial services at an affordable rate. Fintech is an old term coined by the Abraham Leo Battinger, Vice President of a New York bank in August 1972. Bettinger write an article in a magazine interfaces, where he wrote, *"In the last 4 years' bank have developed more than 100 models which are being by the bank for its operations. A group 40 models has been set aside and designated as the Fintech. Fintech is an acronym for the financial technology, combining the modern management science techniques with the information technology"* [20,21]. Various authors have defined Fintech in various ways, but the most comprehensive definition came from [7] "*Fintech is the fusion of finance with the information technology for providing the financial services in the most innovative way, at an affordable cost, at a lighting fast speed and with a seamless user experience"*. Alternatively, Fintech can be defined as follows: "*Fintech is the combination of two words finance and technology which uses modern information technology for providing the financial services with improvement in user experience and at an affordable cost"*.

Islam is the second largest religion in the world after Christianity and it is expected to exceed Christianity in the years to come [22]. The huge 1.8 billion Muslim population provides an opportunity for the banks and financial institutions to find ways and offer them financial services as per the ethos and principles of *Qur'an* (the holy book for Muslims) and *Sunnah* (the practices of the holy Prophet *Muhammad* ﷺ [23,24]. Conventional Fintech based financial services are mainly *Riba* (interest) based innovation and Islam strictly prohibits the transactions with an element of *Riba* (transaction based on the interest), *Maisir* (transaction involving high degree of speculation or gambling), or *Gharar* (high uncertainty, deception and risk) [25]. Islamic Fintech is different from its conventional counterpart as it is more inclusive, transparent, ethical, beneficial to both the parties, and complies with the principles of sharia. Islamic Fintech is a relatively new concept and only a few studies have been conducted in this regard including [26–33]. Both Fintech and Islamic Fintech have essentially same in meaning, but the difference lies in the sharia compliance. Islamic Fintech must comply with the principles of sharia as every Fintech based innovation is welcome and acceptable and it becomes unacceptable and impermissible if there is clear evidence that it violates the principles laid down by sharia [34]. It must be noted that any innovation or advancement is permissible in Islam unless there is clear evidence that prohibits it [35–37].

The financial crisis of 2008 has changed the way banks and financial institutions used do business; now the focus has shifted from short term high earning to long-term and sustainable profit [38,39]. Islamic finance is based on the principle of ethics and morality and it possesses characteristics such as:

- Its services are asset backed which means derivative products such as, option, futures, swap etc. are prohibited.
- It is based on a PLS (profit and loss sharing) method of doing business. The contracts like *Musharaka* (joint enterprise where partners contribute capital and share profits and losses) and *Mudaraba* (joint enterprise where only one partners contribute capital and share losses, the other partners work and share profits only) are popular because of this feature.
- It is ethical as it affords importance to honesty, truthfulness, integrity, and respect for others. Islamic financial institutions not only have to follow the norms of the contract but also must follow Islamic law of transaction.
- Islamic finance is subject to good governance as it governed by sharia; the principles of sharia are derived from the Holy Qur'an and Sunnah of Prophet *Muhammad* ﷺ. Islamic financial must adhere to principles of *Qur'an and Sunnah* to categories permissible (*halal*) otherwise it is declared (*haram*) [40,41].

The above characteristics make Islamic finance more suited to be aligned with the United Nations—Sustainable Development Goals (UN-SDGs) [42–44]. The paper investigates the sustainability of Islamic finance and role of Islamic Fintech in the post-COVID-19 era [45,46]. The emerging and budding literature has given little importance to the sustainability dimension of Islamic finance. The findings show that Islamic finance has all the required ingredients in it and if combined with Fintech it can achieve the economic well-being of masses and restore the previous position. Against this backdrop, this study employs the discourse and content analysis of earlier empirical studies and suggests that Islamic finance can be entrusted with a more decisive and important role in post COVID-19 revival. In this way, this study aims to fill the following research gaps through content analysis by answering the research questions as follows:

1. What is the unique role performed by Islamic Finance and Islamic Fintech in the post COVID-19 period?
2. What are specific Islamic financial services that can be combined with the Fintech based innovative solutions and meet the needs of the COVID-19 affected Islamic finance customers?
3. Is the proposed Islamic Fintech model useful in the short run, medium run, and long run to fight the economic aftereffects of the pandemic?

Our paper contributes to the prevailing filament of literature in several ways. First, we are the first to highlight and investigate the role of Islamic Fintech in fighting the adversities of COVID-19. Second the role of Islamic finance in general has not been examined and analyzed so far. It will prove to be a lighting guide to the government officials and policymakers. The findings of the study will add to the already growing list of literature on the related topic such as [5–7,47–50]. Our research will open an avenue for the future work on the role of Islamic Fintech in the revival of the economy post-COVID-19.

The remaining paper proceeds as follows. The second section provides a literature review of existing studies on Fintech and open innovation during COVID-19 and how Islamic finance is contributing to that growth. The third section explains the research framework and methodology employed in the study along with the economic impact of COVID-19 and peculiarities of Islamic Finance in economic development. The fourth section presents the proposed model of Fintech based Islamic Financial services through content analysis of earlier studies and provide linkages to the previous literature as to how the proposed model can be effective in creating long-term results based on open innovation, social innovation, connecting corporations and communities, and towards an inclusive approach of open social innovation. Finally, the study draws significant conclusions about

the Islamic Financial system based on open innovations, social inclusivity, and embracing societies by highlighting future research avenues.

2. Literature Review and Research Framework

2.1. Significance of Islamic Finance and Islamic Fintech

One of the key features of Islamic finance is that it encourages asset backed financing, ensures financial and social stability, addresses financial inclusion, and supports the comprehensive and overall development of the society, which are important for sustainable development [5,50,51]. Islamic finance places great importance to the quality of life for all, social justice, and fair-trade relations [23]. Islamic finance prohibits the trade and financial transactions with excessive risk, speculation and uncertainly to safeguard the interest of everyone concerned [52,53]. To safeguard the interest of one and all, Islamic finance prohibits several practices such as ambiguity in contracts (*gharar*), gambling, and contracts with high degree of uncertainty and probability (*maisir*), fraud, and all types of interest (*riba*) based transactions [54–56]. The traders are not allowed to trade in the goods and services which are prohibited (*haram*) by Islam such as pork, unlawful illegal goods declared by the state, certain weapons, illegal drugs, pornography, etc. [57,58]. It can be argued that the Islamic financial system has survived the stern test of the global financial crisis and emerged as the winner and is there to stay [59,60]. It can be seen in Figure 1 below that even after the financial crisis, Islamic finance maintained its steady growth and its assets were growing rapidly. It is projected that the Islamic finance assets will reach to 3472 Billion by 2024 [61]. The COVID-19 pandemic has given another opportunity to the Islamic financial system to show its resilience with social financial services and prove its mettle again and emerge as the true contender to the conventional financial system [5–7]. It is argued that Islamic finance has an important role to play post COVID-19 as the open social innovation of the financial system [5].

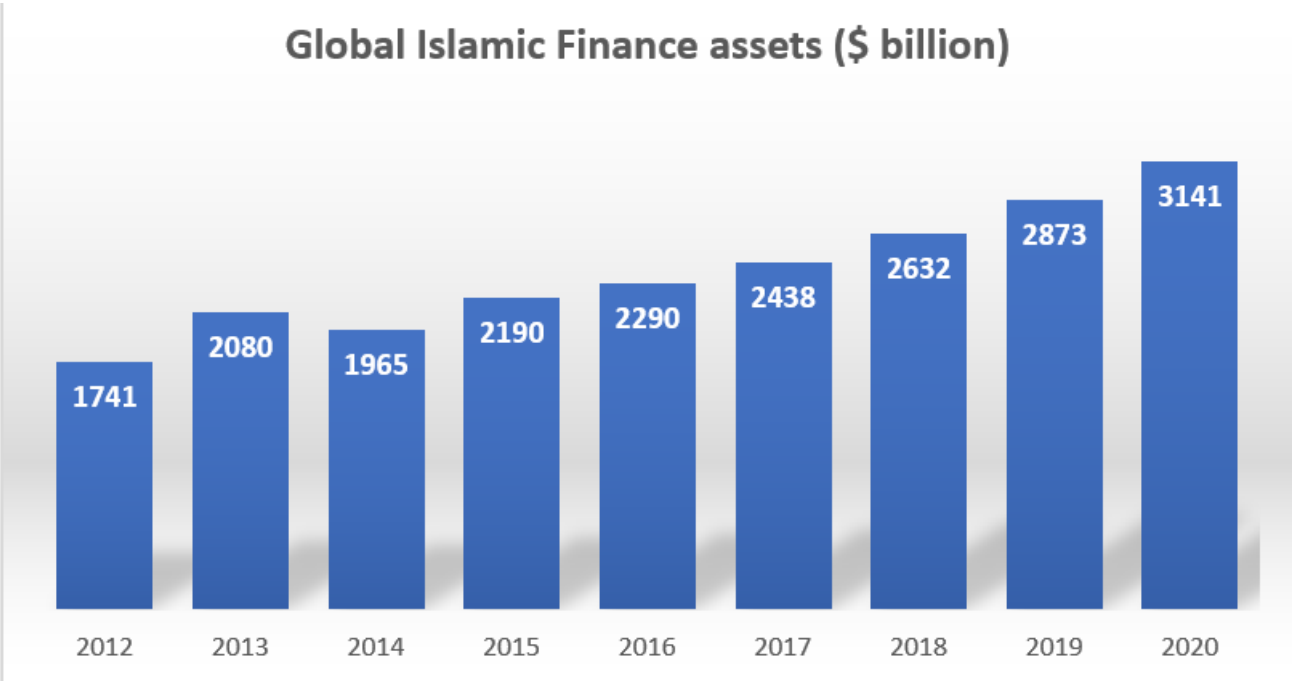

Figure 1. Global Islamic Finance assets ($ billion) Source: World Bank report 2020 [61].

The growing role of Islamic finance is also evident from the following arguments.

1. The sustainability of Islamic finance stems from the fact that Islamic finance is not confined to the Muslims or Muslim countries only; the deep appeal of Islamic finance goes beyond it and reached far to the non-Muslims and western countries also [62,63].

It is argued among the finance scholars and practitioners that sharia-based financial products and services bring impact beyond conventional market practices [52,64].

2. The confidence in the sustainability of the Islamic financial system emerges from the fact that this system is well integrated with the tenets of well-conceived and consistent frameworks [65,66]. It is governed by the principles of sharia which is based on giving equal rights and obligation to the parties to uphold contractual arrangements [67,68].
3. Islamic finance and banking have been growing at an unprecedented pace since the inception of first Islamic bank in Dubai in 1975. Islamic finance and banking has achieved unprecedented growth in the last decade or so and it has also passed the test of time during the financial crisis of 2008 by being the most stable and sustainable financial system [9,69].
4. In contrast to its conventional counterpart, Islamic finance focuses on social justice and equitable distribution of income [70].
5. Islamic finance has social finance tools such as *Qardh-Al-Hassan*, *Zakat*, *Awqaf*, etc. which are more suited to the sustainable characteristics of a financial system [5].

It is widely accepted and recognized that there are many principles of Islamic finance that are complementary in way that influence investment decisions due to its focus on creating a financial system that is more responsive to the real economy and takes care of the all sections of society [7,71,72].

2.2. Why Islamic Fintech industry?

Most of the countries around the globe have prioritized their digital transformation projects for the year 2021 [15]. With the excellent performance of e-commerce and digital payment companies during the COVID-19 pandemic, the significance of Fintech-based financial services has again been proven including the digitization of payments and cashless transactions [7,16]. Digital finance and tech experts are very optimistic about the year 2021 and they are calling this the year of Fintech and the year of digital transformation [73]. The global Fintech industry is booming; for example, it is expected that more than 1.7 billion people will use mobile wallets by 2024 [74]. The Islamic Fintech industry is not behind as it has seized the opportunity and embraced Fintech-based innovative financial services and it is expected that Fintech innovations could add 150 million new customers to Islamic banking by 2021 [33,75]. Islamic Fintech has taken Islamic economics closer to its objective of inclusion and social justice as in Pakistan with the "Ehsaas Emergency cash relief program" by the government of Pakistan where they used mobile money transfer and reached 6.8 million families in less than a week [76]. In the time to come more such efforts from different governments are expected as Islamic Fintech is more inclusive, transparent, ethical, beneficial to both the parties, and complies with the principles of sharia [77]. Islamic financial institutions are required to take a bold strategy and include Fintech-based financial services such as advanced data analytics, artificial intelligence, and Blockchain to its product portfolio [78]. Some of the key areas of development in the Islamic Fintech based services could be P2P lending, crowdfunding, digital payments, digital authentication, and sharia compliant cryptocurrencies [17,79,80]. COVID-19 will prove to be a blessing in disguise for the Islamic Fintech industry [7,81]. Figure 2 presents the future Islamic Fintech ecosystem, where everyone including government, customers, Fintech startups, Fintech developers, and Islamic financial institutions have a role to play in overcoming the aftershocks of COVID-19 pandemic. Fintech startups are slowly becoming the new financial services and it has an important role to play going forward in terms of integration of financial institutions with the Fintech companies, Islamic banks, and other Islamic financial institutions [82]. Similarly, Fintech developers can provide new and innovative solutions to the existing problem by utilizing big data analytics, cloud computing, cryptocurrency, etc. [82,83]. Financial consumers, including individuals and organizations, Islamic financial institutions, and government and regulators, have an important role to play in the future Islamic Fintech ecosystem. The government and regulators must bring this legislation to help in the growth of innovations and Fintech rather than curb innovation [84,85].

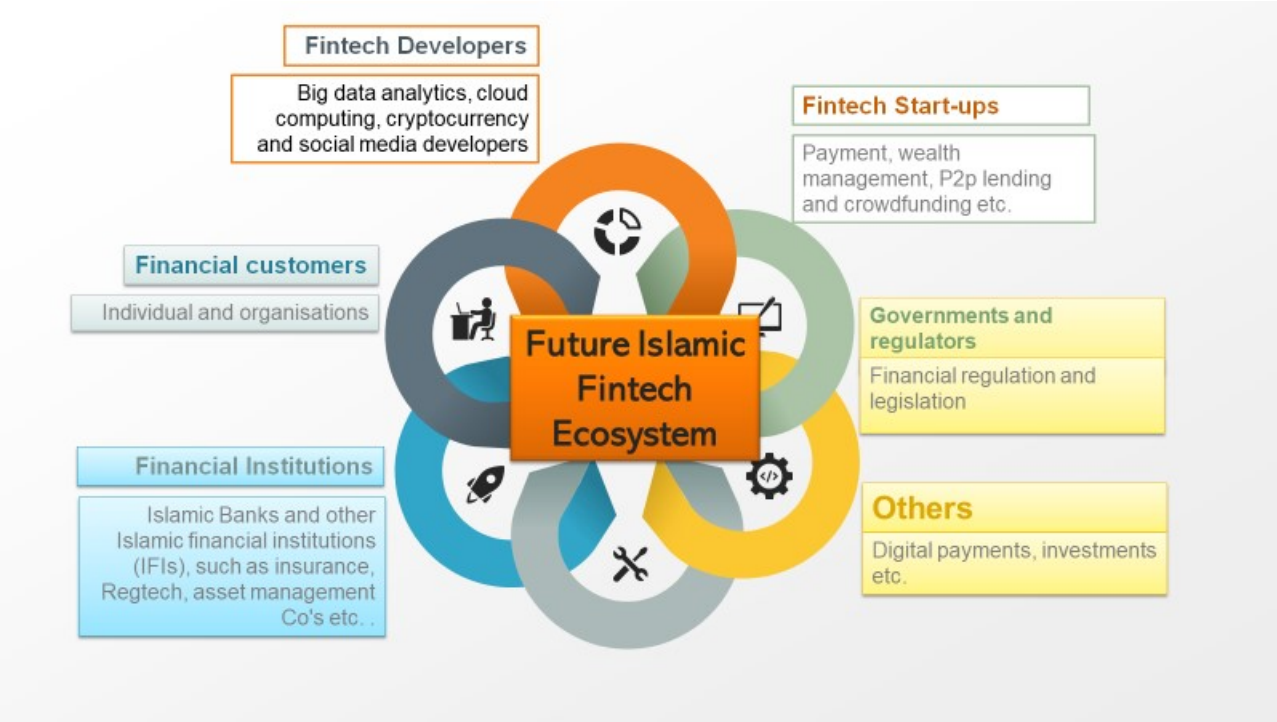

Figure 2. Future Islamic Fintech ecosystem; Source: Author's own compilation.

2.3. The Role of Islamic Fintech in Open innovation and COVID-19

Islamic Financial Technology is the use of financial technology to provide sharia compliant financial services to the customers of Islamic banks and Islamic financial institutions [7,26,81]. Islamic Fintech focuses on the delivery of financial products, services, and investments by complying with the requirements of sharia in the most innovative way at an affordable cost in a seamless manner [33]. Islamic Fintech has gained momentum in the past few years and COVID-19 has provided another impetus to extend its reach further to the millions of affected Muslims and non-Muslim customers [86,87]. With roughly more than 1500 Islamic financial institutions operating across the globe in more than 80 countries, the prospects for Islamic Fintech looks promising [88]. Ref. [15] developed a model for Islamic Fintech named as "IslamicFintech4SD" (Islamic Fintech for Sustainable development) targeted to create an alliance between Islamic financial institutions, multinational companies, startups, and new disruptive crowdfunding and P2P lending institutions, along with the sharia compliance. They developed a five stage Fintech model for sustainable development. First being the simplified account opening and eKYC, AML process along with digital ID, second being the use digital payments system, third the introduction of new innovative AI- and Blockchain-based Islamic financial services, fourth the use of first three to deliver the government services to achieve financial inclusion, and finally the fifth and last pillar to ensure the sharia compliance of all four pillars of sustainable development in Islamic finance [80].

Social and open innovation are the topics to be debated and researched during an emergency situation like the COVID-19 pandemic [5]. Social innovation is required in emergency situations like pandemic and war to bring social changes in the lives of the affected and vulnerable sections of the society [89]. In crises like pandemics and emergency situations open innovation can find innovative ways to find solutions to the pressing problems and build a positive reputation [90,91]. In situations like this the financial institutions have no choice but to go with the innovative financial solution [92,93]. Adopting and practicing innovation is the key to post crisis growth and sustainability [90,94]. COVID-19 has paved way for the adoption of social and open innovation to thrive and grow [92,95].

Islamic finance is a product of social innovation intended to bring the positive changes in the society with its ethical and social financial services, unlike its conventional financial counterpart which is more capitalist in its design [11,96]. The social and open financial innovation like Fintech can provide the solution to the crisis with its sustainable financial services [97,98].

3. Research Framework, Methodology and Methods

The present study used a content analysis approach through discourse analysis to highlight the significance of Islamic-based Fintech and its role in open innovation, social inclusion, and entrepreneurial innovation during and post COVID-19. The current study is highlighting the role of the Islamic financial system in combatting the economic consequences of COVID-19 and supporting the role of Islamic Fintech in overcoming the aftershocks of COVID-19.

The content analysis began with the use of several search engines and available databases such as the Scopus Database, Emerald Data base and searched for relevant studies by using keywords like innovation, open innovation, social inclusion, entrepreneurial innovation, Fintech, COVID-19, Islamic banking, Islamic economics, social finance, and post COVID-19. After gaining a sufficient number of research papers from Online Databases, authors conducted content analysis and extracted the relevant information to propose a new framework of the Islamic open innovation financial system. Table 1 presents a final segregation of articles based on keywords searched on online databases.

Table 1. Final Articles Chosen for Content Analysis.

No.	Keywords	Articles Collected	Articles Finalized
1.	Open Innovation	54	23
2.	Social Innovation	41	26
3.	Entrepreneurial Innovation	25	10
4.	Islamic Fintech	32	12
5.	Islamic Open Innovation	09	04
6.	Islamic Social Innovation	05	02
7.	COVID-19 and Islamic Fintech	19	11
8.	Social Inclusion	56	14
9.	Islamic Finance and COVID-19	23	13
10.	Islamic Financial System	18	10
	Total	282	125

Source: Developed by Author(s).

The study applied content analysis to extract the content. Content analysis is the most widely used tool for extracting useful content in social science research [99]. It is defined as the systematic objective and quantitative analysis of text characteristics [100,101]. The quality approach such as content analysis is quite a useful tool to extract meaningful information along with the other qualitative tools, such as surveys, focus groups, and experiments and its utility is indisputable [99].

The researchers were involved in studying secondary data considering the role of Islamic social financial tools in combination with the technology called Fintech in the period of COVID-19 and the study proposed a suitable framework to meet the requirements of the study aim (Figure 3).

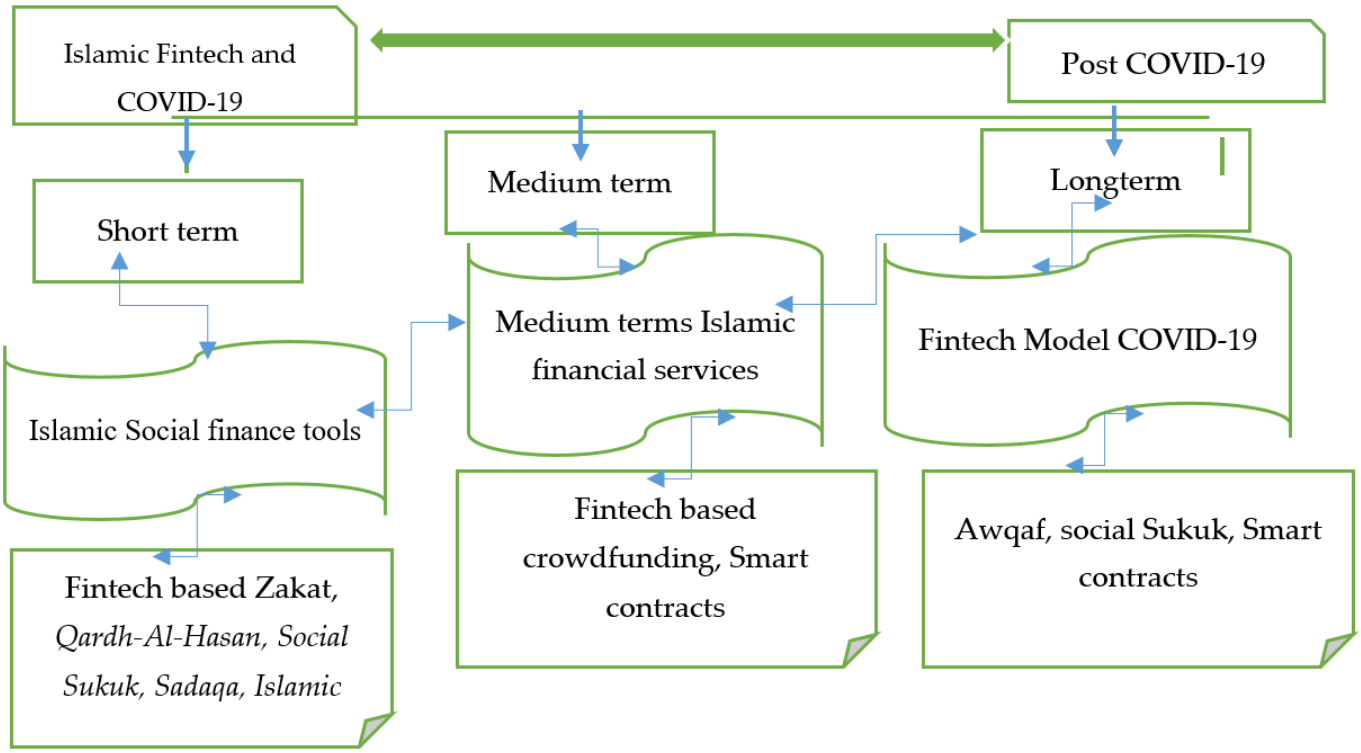

Figure 3. Research Framework.

Economic Impact of COVID-19 and the Role of Islamic Finance

Earlier empirical studies argue that COVID-19 started with a health emergency and now it is turning out to be the biggest financial crisis of modern times [102,103]. It has already created havoc as directly or indirectly it has affected one and all. The economic activities are not expected to resume soon as the vaccine to the masses in still few months away. Scholars have argued that the economic impact of the pandemic of a way higher magnitude than the global financial crisis of 2008 [104–108], due to the fact that the global financial crisis started with the financial shock on demand side and morphed into the recession, whereas the COVID-19 pandemic has affected the real economy first then the supply of production and finally the demand side [6,109]. The economic impact created by the pandemic is scary as tens of millions of people are on the verge of landing in extreme poverty. According to an estimate the number of undernourished people, currently at around 690 million, are expected to increase up to 132 million by the end of the year [107,110]. The extreme uncertainty about the duration, path, magnitude, and economic impact of pandemic could result in a vicious cycle of dampening business and economic activities and the road to recovery could be much longer than anticipated [111,112]. The global DGP is expected to be about 5% lower than what it was estimated at the beginning of the year 2020 [108].

A new paradigm shift in the economic and financial structure of the world economy is needed to respond to the present crisis; institutionalized risk sharing could be the way to buoyantly absorb the shock and stimulate the falling demand [47,81]. Principles of Islamic finance are based on non-interest-based transactions and that make it ideal for the Islamic economy to avoid the crises such as financial crises and COVID-19 [7,15]. Islamic social finance has the tools and financial services suited for a situation like these. Islamic social finance tools such as *Zakat*, *Qardh-Al-hasan*, *Awqaf*, *Islamic microfinance*, *takāful ta'awuni*, etc. must be coordinated and provided with the fiscal and monetary policies of the government in terms of pro-poor initiatives to help the affected and vulnerable sections of society. Islamic social finance refers to the provision of valuable financial services to poor and

vulnerable sections of society to achieve a socioeconomic objective [5,6]. The instruments of Islamic social finance are depicted in Figure 4 below.

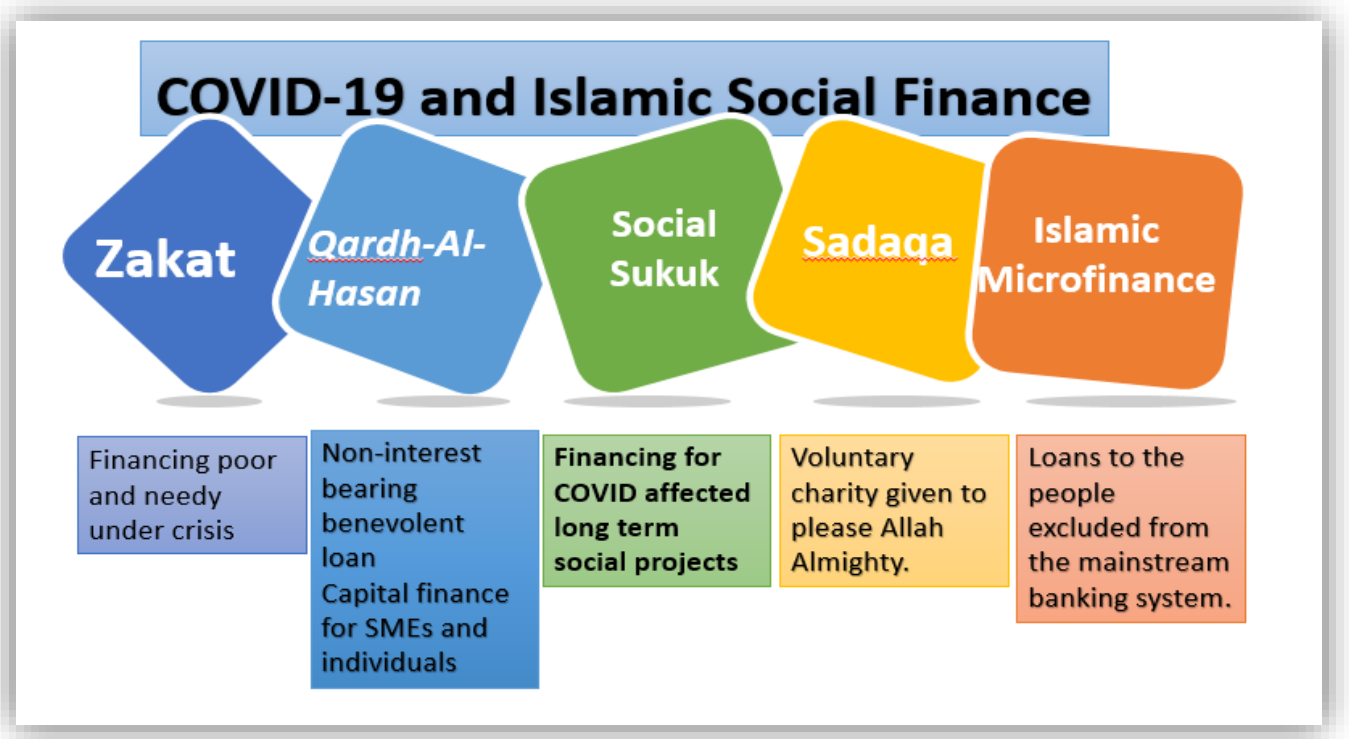

Figure 4. COVID 19 and Islamic social finance tools; Source-Author compilation.

Based on the content analysis, the following Islamic Social Finance Tools are helpful in combating the aftershocks of COVID-19:

1. Zakat: Zakat is one of the five obligations made on Muslim *Ummah* after *Shahadah* (belief that there is none but Allah Almighty to worship), Salah (Muslims needs to pray five times a day), Sawm (It is obligatory for Muslims to fast during the holy month of Ramadan), and Hajj (an annual Islamic pilgrimage during the last month of Islamic (Zilhijjah) month in the holy city of Makkah), who meet certain criteria to donate 2.5% of its wealth each year for the social cause. It is believed that with the payment of Zakat, Muslims purify their yearly earnings [17]. The importance of Zakat in Islam can be understood from the fact that it has appeared 82 times in the Holy Qur'an along with the Salat (second obligation in Islam) [113]. Zakat has been made obligatory to serve a very specific purpose and avoidance of it attracts a very strong penalty. Zakat can play a huge role in a situation like the current pandemic where millions of people have lost their jobs and are on the verge of extreme poverty [5,16,17]. Zakat has a variety of applications as indicated in the Holy Qur'an also [114], but general consensus among Muslim scholars is that the best application of Zakat is the eradication of poverty [16]. It is the duty of a Muslim to help their Muslim brothers and sisters in the time of need and COVID-19 has badly affected the poor and daily wage laborers and the best of application of Zakat would be to help COVID-19 affected people [5,7,17].
2. Qardh-Al-Hasan: Qardh-Al-Hasan is a form of benevolent loan which is provided by the lender to the borrower free of interest charge. In Islamic social finance, Qardh-Al-Hasan has a special mention as it is an interest free loan, without interest, markup, or share in profit in case of business loan and the borrower has flexibility regarding repayment. It is extended on a goodwill basis mainly to extend a helping hand to the poor and needy for the purpose of benevolence (kindness) [5]. The basic purpose of

Islam is eradication of poverty by helping the poor and vulnerable and Qardh-Al-Hasan can prove to be a valuable financing tool for the vulnerable and COVID-19 affected poor [115,116]. Qardh-Al-Hasan has more significance in comparison to Zakat as it can be extended to any person no matter how rich a person is; on the other hand Zakat can be extended to the poor, needy, and eligible as per the rules of sharia. Qardh-Al-Hasan is the Islamic social finance tool used to reinforce to social harmony, integrity, cooperation, and the ethical principle of social justice. It can be used during and post COVID-19 to help and empower the poor and needy to please Allah Almighty [5].

3. Social Sukuk: Social Sukuk is another Islamic social finance extremely important tool to fight the economic adversities of COVID-19 during and post COVID [117]. Social Sukuk is the new and innovative way to fund social services for redistribution of wealth and achievement of social justice [118,119]. Social Sukuk brings the social sector into the discourse of Islamic finance, which has largely been ignored compared to the private, business, and government sectors. Islamic Development Bank (IsDB) has issued a COVID-19 related Social Sukuk in the market showing the contribution of banks in the capital market to help COVID-19 affected people. The intention of issuing the social *Sukuk* is to minimize the economic damages caused due to COVID-19 and build resilience against future shocks. The IsDB Sukuk is serving as the starting point in the Islamic capital market as other Islamic financial institutions follow suit in the coming months and these Sukuk serve as a boost to the struggling industries due to COVID-19 [5,6].
4. *Islamic Microfinance:* Islamic microfinance is a relatively new market in the Islamic finance market. Islamic microfinance is like the conventional microfinance, providing financial assistance to the people excluded from the traditional financial system with only difference being the sharia compliance of the financial services [120,121]. One of the objectives of microfinance as a concept itself is to provide valuable financial services to people and small and medium enterprises (SMEs) excluded from the mainstream financial system [122,123]. These individuals are either very poor or SMEs who cannot fulfill the extensive documentary formalities of the financial institutions [82]. Microfinance institutions, Islamic banks, governments, and other Islamic financial institutions can play a massive role and can make a big difference by providing a small amount of collateral free loans to the poor and COVID-19 affected SMEs [26,83].

In sum, empirical evidence on Islamic open innovation and social innovation suggests that the Islamic Financial System is providing strength to the existing economic development through different tools and products to combat the aftershocks of COVID-19.

4. Results and the Proposed Model

This study aims to explore the impact of Fintech in overcoming the aftershock of COVID-19 by applying the novel tools of the Islamic financial system using content analysis. For this reason, the study proposes a unique model to observe the positive effect of Islamic financial system in the post-COVID-19 period. The wide range of Fintech based financial services such as Big data, Blockchain, Artificial intelligence, InsureTech, Regtech, and smart contracts are offering a great deal of opportunities to the Islamic financial institutions to gain a foothold in an ever growing financial market space [71,83,108]. Focusing more on the smart Blockchain-based financial services during COVID-19 and post COVID-19 are facilitating more competitiveness, transparency, better reach, product standardization, and efficiency against its conventional counterpart [124]. The Figure 5 below describes the Islamic Fintech-[based financial services at three levels post-COVID-19.

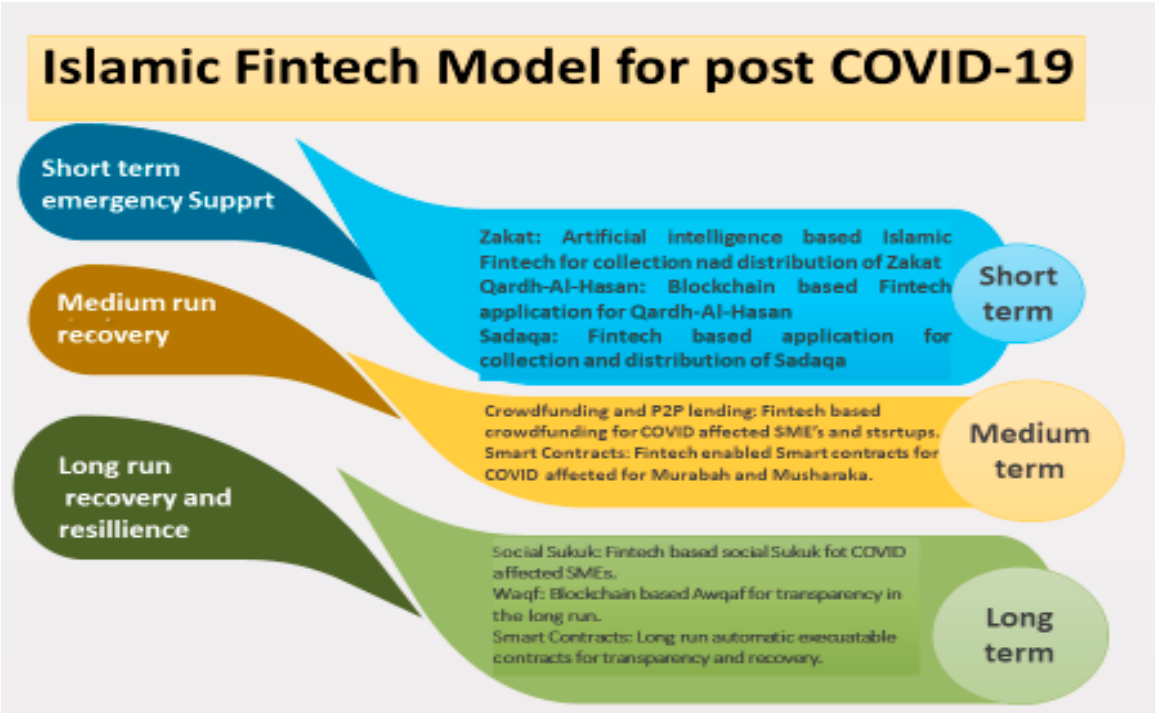

Figure 5. 3-stage Islamic Fintech for post COVID-19. Source: Author's own compilation.

The COVID-19 pandemic is at its last stage, due to the news of the vaccine coming up and the broader economy shifting from 'respond' to 'recovery' mode. New opportunity arises for some Fintech companies to leverage their unique assets and skills to seize this opportunity. It also provides the prospect of the Islamic financial institutions (IFIs) grabbing this opportunity and providing a sustainable and enduring financial service with the use of technology called Fintech. Islamic financial services are based on the principles of value creation, risk sharing, ethics, and economic wellbeing for all. If combined with the Fintech it has the potential to emerge as the alternative financial system and challenge its conventional counterpart [7,82]. Based on 125 finalized studies, the proposed model "3-stage Islamic Fintech for post COVID-19" assumes to work in three stages, namely short run emergency support, medium run recovery, and long run recovery and resilience. The short run, medium run, and long run are defined as per the definitions given by [125]. The short run is identified as a period less than a year, medium run is defined as the period between one year to five years, and a period of more than five years is classified as long run. The proposed model is described in the section below.

4.1. Short Run Emergency Support

Short run is the period less than one year and it needs to tackle some of the most urgent matters. The most important and urgent matter of concern is, of course, managing the current uncertainty and providing financial benefits to the affected and vulnerable sections of the society. This is where Islamic finance is strong, and it has certain financial services like *Zakat*, *Qardh-Al-Hasan*, and *Sadaqa*, which are tailor made and well suited for such a situation. Zakat is one of the most powerful financing tools available in Islamic social finance and its basic principle is for it to be given to the poor and marginalized. Zakat cannot be given to everyone but only to the one who are poor and fulfills the criteria laid down by sharia to be called poor [126]. An artificial intelligence-based *Zakat* system must be developed to provide immediate cash transfer benefits to COVID-affected individuals, SMEs, and those who are eligible to receive it as per sharia. The Fintech based Zakat management system as proposed by [17,82] will ensure more transparency and efficiency in the Zakat collection and distribution.

Another Islamic social finance tool which can be utilized in the short run is the *Qardh-Al-Hasan*. It is a benevolent loan provided to the poor and needy in the time of crisis without any interest. The interest free loan is the need of the hour as during the global financial crisis Nobel prize winner economist '*M. Allais*' suggested to bring the interest rate to zero in order to overcome such a crisis [17]. He proposed the idea that Islamic Fintech-based *Qardh-Al-Hasan* can reach individuals and SMEs to provide immediate relief in the short run. *Qardh-Al-Hasan* can be provided to anyone with need as it has no conditions as in the case of *Zakat* [127]. As it is depicted in the Figure 6 below, zero or non interest based financial services and tax rate of around 2% (2.5% in case of Zakat) is the core competency of the Islamic economics.

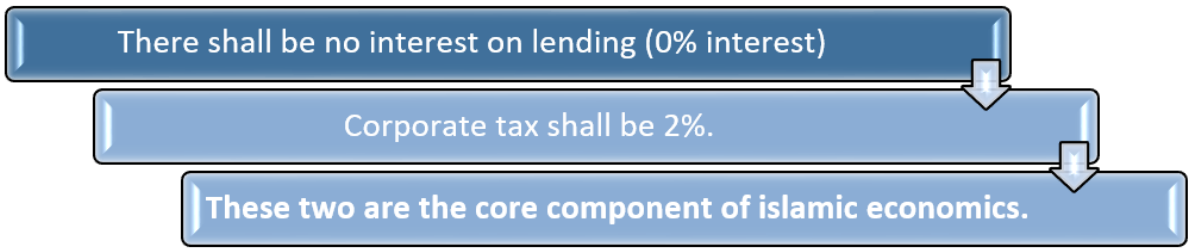

Figure 6. Core competencies of the Islamic economics.

Sadaqa is the vulnerary charity given by the Muslims to its needy and poor brothers and sisters without any interest and without expectation of any return either. It is given purely to please ALLAH Almighty and to help the needy and affected. *Sadaqa* is the potential Islamic social finance tool which must be utilized in order to help the COVID affected poor and vulnerable. Muslims give *Sadaqa* in huge amounts and there is no platform which ensures transparency and accountability in collection and distribution of *Sadaqa* [128,129]. Islamic Fintech on *Sadaqa* during COVID-19 can provide emergency short run relief to the COVID-19 affected individuals and SMEs by ensuring greater transparency and accountability.

4.2. Medium Term Recovery

Medium term is defined as the period of transition from the business cycle fluctuation to growth [130]. For the current study, we identified medium run as the period between one year to five years. The after effects of the pandemic are going to be long and it can be felt even a few years from now [84,131]. The role of financial institutions and especially Islamic financial institutions will be key in the medium term when small scale industries and corporates need finances to restart business. The industries with a small amount of capital will certainly find it hard to survive and maintain its growth. Islamic Fintech based financial services such as sharia compliant crowdfunding, P2P lending, and smart contract based financial services can help these organizations to survive and seek easy liquidity and inject easy liquidity into the business. There is an option of UNDP's Global Islamic finance investing platform launched in 2015 to help the firms to raise capital in the medium run [132,133].

4.3. Long Run Recovery and Resilience

Long run resilience is defined as the period of stability in cash flow. When we move from transition to growth and from growth to stability in the cash flow, it becomes increasingly important to look for the innovative Islamic financial services which can provide stability. The economic impact of the pandemic is somewhat the same as the damages created by the global financial crisis of 2008, if not higher [47,134]. The economic disruption caused by the global financial crisis is still felt even 12 years down the line and it is expected that the economic damages done by the pandemic will be there for a longer period as the recovery is going to be u-shaped [103,135]. Islamic Finance has some of the financial services which must be utilized in the long run to fight the damages caused by

the pandemic. The financial services such *as Awqaf*, *Social SUKUK*, Smart contract-based *Musharaka* and *Mudaraba* financing can be utilized in the long run to provide the long run recovery and resilience [7].

Overall, it can be asserted that the proposed model based on Islamic financial system provides substantial support to the open social innovation by implying several key strategies of social inclusion, entrepreneurial innovation, and embracing all societies equally in the system. The surge of COVID-19 has made societies disconnected and isolated with its long-term impact on economic development. In this case, the Islamic Financial System provides sound grounds for financial institutions, development authorities, and for the whole society to overcome the aftermaths of COVID-19 through effective and long-lasting steps.

5. Conclusions

Primarily, this study aimed to investigate the impact of financial technology in overcoming the aftershocks of COVID-19 through the open innovation of the Islamic financial system. The study employed content and discourse analysis for proposing the Islamic based financial system of open innovation. Out of 282 collected studies based on 10 keywords used for open innovation, social innovation, Islamic Finance, entrepreneurial innovation etc., this study finalized 125 studies for devising the model of Islamic-based open social innovation financial system. This study attempted to understand and explore the characteristics of Islamic finance and importance of Fintech in fight against the economic disruption caused the COVID-19 pandemic. For this purpose, we developed an Islamic finance based Islamic Fintech to help COVID-affected individuals, SMEs, and other section of the society.

First, our findings suggest that Islamic finance has the capacity and potential to provide an alternative finance during the pandemic and its social finance tool in combination with the Fintech can be extremely helpful in fight against the economic consequences of COVID-19. Islamic social finance tools are based on the principle of helping the poor and marginalized and they are helpful in reaching out to the affected with the use of Fintech. Second, the rise of Financial technology (Fintech) has provided the much-needed tonic to the Islamic finance to regroup and fight with the conventional financial system on equal grounds [7,82]. The sharia compliant Fintech services have provided another opportunity to the Islamic banks and Islamic financial institutions to solve the sustainability challenge and provide a more sustainable and enduring financial system which is unaffected by situations like the financial crisis or current pandemic [76].

Finally, to realize the dream of a more sustainable Islamic financial system, Islamic financial institutions are required to add more innovative Fintech based financial services as proposed in the current study to provide an alternative financial system. The proposed system can help Islamic finance to achieve the goal of a sustainable Islamic financial system if implemented properly [48]. The promise of both social and commercial reward must help and motivate the stakeholders to put this model in right perspective to fight the aftershocks of COVID-19. The study further highlights the need and importance of open innovation amid COVID-19 pandemic. The study concludes that open innovation is having a role to play in this pandemic and challenges like current pandemic provides the much-needed tonic for social and open innovation to grow and provide solution to the society.

Despite the support from governments and regulating bodies and rapid rise of Islamic Fintech ecosystem, there are few key areas which require attention from researchers and policymakers to maintain its steady growth. The study is practically significant for government officials and policy makers to design an effective policy to fight the economic consequences of the COVID-19 pandemic. By implementing the techniques of big data and artificial intelligence in more areas of Islamic finance to reduce cost, regulators, and policy makers can improve the productivity and reduce the operating errors.

The study identifies its limitations, as the Islamic Fintech is still at its growth stage unlike its conventional counterpart which has taken the innovation to another level. Further innovation in services and consolidation in the payment sector is needed to make it more sustainable. There is need to develop secure communication and customer authentication

systems to make payment services more secure and give more confidence to the new and first time users. The proposed model is based on the findings of the final studies chosen for the study that is yet to be tested with the empirical data. The proposed model offers significant practical and theoretical implications for Islamic financial institutions, regulatory authorities, and policy makers to overcome the aftershocks of COVID-19.

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