FINANCIAL INCLUSION INDEX: THE CASE OF COUNTRIES WITH PRESENCE OF ISLAMIC FINANCE

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Abstract: An established measure of financial inclusion has still not been found and the link between Islamic finance and financial inclusion has yet to be established. This paper aims to fill the gap in the discourse on Islamic finance by examining the level of financial inclusion in 44 countries in which Islamic finance has an established presence. A multidimensional Financial Inclusion Index (FII) is constructed, which incorporates four indicators (ATMs, branches, deposits and loans) covering the period from 2013 to 2019. The results show that the average level of financial inclusion in these countries is low but with significant variation between countries. Muslim countries in general have lower levels of financial inclusion than the non-Muslim countries. However, some Muslim countries have managed to achieve medium level of financial inclusion by leveraging on Islamic finance, particularly Islamic financial technology (fintech). While the index is easy to compute, the sample is relatively small and the study is unable to include indicators of new fintech channels due to data constraints. Despite this caveat, the findings of this study provide a bigger case for policymakers to further develop and promote Islamic finance as a means to improve financial inclusion, especially in Muslim countries. Further research in this area is recommended.

Keywords: Islamic finance, financial inclusion, financial inclusion index, fintech, sustainable development goals.

Introduction

While there are various definitions of financial inclusion, this paper describes it in simple terms as an individual's access to and use of basic financial services. Financial inclusion has become a global agenda and policy priority in many countries (Sarma & Pais, 2011).

It has been identified as one of the drivers of economic growth and plays a critical role in reducing poverty (Abubakar, Daneji, Muhammed & Chekene, 2020). Furthermore, financial inclusion enables individuals to manage their daily expenditure and invest in their future, while access to credit facilities provide an opportunity for businesses to grow and create various job opportunities (International Monetary Fund, 2016).

Generally, the global community has made significant progress in recent years to enhance the level of financial inclusion. The 2017 Global Findex Database reported that 69% of adults now own an account at formal financial institutions, an increase from 51% in 2011. In addition, the share of adults reported as having formally saved rose from 23% in 2011 to 27% in 2014. Furthermore, 54% of the adults globally are now able to come up with emergency funds. These statistics shows that improving access and use of financial services shall empower the people to improve their lives (Demirguc-Kunt *et al.*, 2018).

While remarkable progress has been made, financial inclusion remains a major challenge in many countries, particularly among developing economies (MIFC, 2014). Worldwide 1.7 billion adults are still without a formal bank account

(Demirguc-Kunt *et al.*, 2018). In addition, most Muslim countries with Islamic finance options are also found to be lagging behind the other developing economies in terms of access to and use of financial services (Zulkhibri, 2016).

Meanwhile, the world has witnessed a remarkable growth of Islamic finance in the past three decades. The global Islamic finance asset base has grown from US\$2.458 trillion in 2017 to US\$2.524 trillion in 2019 (ICD-Refinitiv, 2019). Although only 6% of adults without proper banking facilities cited religious concerns as the reason they do not have a bank account, the portion is noticeably higher in Muslim majority countries (Demirguc-Kunt *et al.*, 2018). Shariah-compliant products and services could be the best solution to include these Muslims who voluntarily opt to remain outside the formal financial system.

The latest discourse on Islamic finance points to the need to address the issue of financial inclusion (Mirakhor & Iqbal, 2012; Mohieldin *et al.*, 2012; Zulkhibri, 2016). As Islam strongly emphasises the fair and equitable distribution of wealth between the rich and poor, the Islamic finance industry should play a crucial role in narrowing the financial inclusion gap (Mirakhor & Iqbal, 2012; Mohieldin *et al.*, 2012). Hence, countries which have an Islamic finance presence should have a high level of financial inclusion. However, few studies have examined the level of financial inclusion in these countries.

The objective of this paper is to examine the level of financial inclusion across 44 countries in which Islamic finance has a presence. By adopting and revising the methodology developed by Sarma (2008) and following the guidelines laid down by the OECD (2008), the paper constructs a multidimensional Financial Inclusion Index (FII) using the data from the International Monetary Fund's (IMFs) Financial Access Survey (FAS), covering the period between 2013 and 2019.

If the association between Islamic finance and financial inclusion can be recognised, this would provide policymakers with a more solid reason to promote Islamic finance in an effort

to improve financial inclusion, particularly in Muslim countries.

Financial Inclusion: Definition and Measurement

Financial intermediaries such as banks, microfinance, and other licensed financial institutions pool funds from depositors and give them to borrowers who request financing (Bongomin *et al.*, 2015). Financial intermediation theory explains the *raisons d'être* of these financial intermediaries especially with regard to their function of encouraging financial inclusion and economic development (Swamy & Tulasimala, 2011). The financial intermediation process ensures that resources are efficiently channelled from those with a surplus of units to those with a deficit, thereby reducing the cost of capital and improving financial inclusion. Access to finance can also stop the growth of informal financial services that are usually exploitative (Sarma & Pais, 2011).

A growing body of literature has highlighted the importance of measuring financial inclusion and tracking its progress over time. Having a clear definition of the term therefore is the best place to start measuring it. However, a globally accepted definition of the term financial inclusion has not yet been established.

The Scottish Government was the first to attempt to define financial inclusion as an individual's access to appropriate financial products and services (Scottish Executive, 2005). Sarma (2008) then described financial inclusion as a process that ensures the ease of access, availability, and usage of a formal financial system for all members of an economy.

While financial inclusion is not explicitly mentioned in any Quranic verses or hadith, Islam strongly advocates the just, fair and equitable distribution of wealth and resources. As highlighted in *Surah al-Hashr* verse 7; "*wealth should not merely circulate between the rich among you*" (Salim, Hossain & Al-Mawali, 2016).

Islam endorses financial inclusion through Islamic wealth distribution and risk-sharing instruments, which significantly set the Islamic financial system apart from its conventional counterpart. These two vehicles provide a comprehensive way to enhance financial inclusion, eradicating poverty and promoting an inclusive economy (Mirakhor & Iqbal, 2012).

Researchers agree that the concept of financial inclusion is multidimensional in nature. However, the available literature on financial inclusion lacks a comprehensive measure that can be used to compare the levels of financial inclusion across countries. Existing studies highlight the constraints in measuring financial inclusion such as the absence of a universal definition and lack of data (Cámara & Tuesta, 2017; Sarma, 2008). Currently, there are two main financial inclusion databases which are the IMF's Financial Access Surveys (FAS) Database and World Bank's Global Findex Database.

The first pioneering research on the financial inclusion index is that of Sarma (2008). Sarma argues that using only one single indicator fails to comprehensively capture the extent of financial inclusion, thus he proposes an index that captures information from various dimensions of financial inclusion.

Sarma includes three dimensions in his study, which are:

- a. Penetration,
- b. Availability, and
- c. Usage.

While the proposed index follows the United Nations' Development Programme's (UNDP) approach, Sarma has made several improvements.

First, Sarma uses the distance from the ideal method for aggregation instead of the average. Second, while the UNDP uses the pre-fixed minimum and maximum values, Sarma adopts observed minimum and maximum values for each dimension. Many other later researchers have come up with financial inclusion indices which have improved upon Sarma's initial

methodology in terms of increasing the number of indicators used and using the latest data, making it more robust and indicative (Arora, 2010; Goel & Sharma, 2017; Gupte, Venkataramani & Gupta, 2012; Mukherjee & Malik, 2015; Piñeyro & Manuel, 2013; Sethy, 2016).

A study that focused on financial inclusion in Islamic countries is that of Suseno and Fitriyani (2018) which uses Organisation of Islamic Cooperation (OIC) countries for the year 2015 as their sample. The study uses a similar methodology as Sarma (2008) except for the availability dimension in which they specifically use the number of Islamic bank branches.

The most common dimensions used by most studies are access and usage dimensions (Goel & Sharma, 2017; Sarma, 2008; Yorulmaz, 2016). Several studies have also included other dimensions such as ease and cost dimensions (Arora, 2014; Gupte *et al.*, 2012) and barrier dimensions (Cámara & Tuesta, 2014). While using as many dimensions and indicators as possible will make the index more robust, researchers must consider the availability of data.

The methodology used for weight assignment also varies between studies. Most researchers believe that all variables contribute equally to the index, thus they assign equal weights to all dimensions and indicators (Goel & Sharma, 2017; Gupte *et al.*, 2012; Kainth, 2013; Sarma, 2008; Sethy, 2016; Yorulmaz, 2016).

Conversely, some researchers used statistical methods such as Principal Component Analysis (PCA) (Arora, 2014; Cámara & Tuesta, 2014; Mukherjee & Malik, 2015; Piñeyro & Manuel, 2013) and while the statistical method is definitely more robust, it is arguably more complicated to compute.

Methodology

The methodology used to construct the Financial Inclusion Index (FII) is adopted and revised from the study done by Sarma (2008) and refers

to the Organisation for Economic Co-operation and Development's (OECD) Handbook of Constructing Composite Indicators (OECD,

2008). The handbook outlines seven steps to construct the index. First, a framework outlined in Figure 1 below is developed to show the combination of indicators.

Figure 1: Framework for constructing Financial Inclusion Index (FII)

The study uses both access and usage dimensions which comprises the four indicators shown in Table 1. While there are other relevant indicators such as mobile and Internet

banking, data for measuring these indicators are unavailable for most countries and as such must be excluded.

Table 1: Dimensions and indicators used in constructing the FII

Dimensions	Indicators		Measurement
Access	1. ATM	1.	No. of Automated Teller Machines (ATMs) per 100,000 adults
	2. BRANCH	2.	No. of commercial bank branches per 100,000 adults
Usage	1. DEPO	1.	Outstanding deposits with commercial banks (percentage of GDP)
	2. LOAN	2.	Outstanding loans with commercial banks (percentage of GDP)

Although the study focuses on countries that have Islamic finance options, the indicators used are not specifically focused on Islamic finance like the study done by Suseno and Fitriyani (2018). Using specific indicators could underestimate the level of financial inclusion since there are also conventional banks operating in these countries and people could be using services from those banks. Thus, using general indicators will give a more comprehensive view of the inclusiveness of the financial system.

The second step involves the collection of data. The Islamic Finance Country Index 2019 listed 48 countries with a significant Islamic finance presence (Sheikh, 2020). The study

eliminates four countries without sufficient data, and thus ends up with 44 countries (25 Muslim countries and 19 non-Muslim countries). A Muslim country is defined as country where Muslims make up more than 50% of the population (Pew Research Center, 2011). The data used to ascertain this is taken from the IMF's Financial Access Survey for the years 2013 to 2019 (seven years).

Third, a linear regression imputation is used to substitute any missing values in the data set.

Fourth, a preliminary test is conducted to examine the underlying structure of the indicators. The study performs a correlation

analysis to ensure that at least two indicators are correlated with a value of 0.30 or more. Table 2 shows that all indicators are correlated

with values more than 0.30, with the exception of ATM_ADT and DEPO that are correlated at 0.1670. This shows that the indicators explain the same concept to wit financial inclusion.

Table 2: Correlation analysis

	ATM_ADT	BCH_ADT	DEPO	LOAN
ATM_ADT	1			
BCH_ADT	0.5764	1		
DEPO	0.1670	0.3180	1	
LOAN	0.3747	0.4331	0.7567	1

Fifth, since the indicators used have different measurement units, they must be normalised using a Min-Max normalisation method to render them comparable. Formula (1) as employed by Sarma (2008) is used. Normalisation ensures the value of falls between 0 and 1. For each indicator, there are n variables. Thus, for each variable, the study computes d_i :

$$d_i = \frac{A_i - m_i}{M_i - m_i} \quad (1)$$

where,

A_i : the actual value of variable i ,

m_i : the observed minimum value of variable i

M_i : the observed maximum value of variable i .

The sixth step involves weighting and aggregation. The study gives equal weight for each indicator as all dimensions are equally important. For aggregation, distance from the ideal approach shown in Formula (2) is used as proposed by Sarma (2008). Country i is represented by a point $D_i = (d_1, d_2, \dots, d_n)$ on the n -dimensional Cartesian space.

Point $O = (0, 0, \dots, 0)$ represents the lowest achievement in all dimensions while point $I = (1, 1, \dots, 1)$ represents the best-case scenario. The FII for the i^{th} country is measured by the normalised inverse Euclidean distance of the point D_i from the ideal point I . The inverse Euclidean distance method is considered so that a higher value of FII implies a higher level of financial inclusion.

$$FII = 1 - \frac{\sqrt{(1-d_{atm})^2 + (1-d_{bch})^2 + (1-d_{depo})^2 + (1-d_{loan})^2}}{\sqrt{4}} \quad (2)$$

Finally, to assess the robustness of the index, a sensitivity analysis is done by comparing the newly constructed FII with the best comparable development index that is UNDP's HDI. Kendall's rank correlation coefficient (Kendall's Tau) is used to evaluate the degree of similarity between the ranking of countries based on FII with the UNDP's HDI.

Results and Discussions

Sensitivity Analysis

The 7-year average FII values and the corresponding 7-year average HDI values for the countries were calculated along with their ranks. To assess the movements of these two indices in terms of their rank, Kendall's Tau is estimated.

The value of Kendall's Tau is 0.6025, statistically significant at a 1% level of significance. Since Kendall's Tau is more than 0.50, it can be concluded that FII and HDI move in the same direction and are consistent with each other, showing that the FII constructed in this study is robust and can be used to compare the performance of countries in terms of financial inclusion.

Categories of Financial Inclusion

Depending on the value of the FII, countries are categorised into three levels as proposed by Sarma (2008):

1. $0 \leq FII < 0.3$ categorised as low financial inclusion
2. $0.3 \leq FII < 0.5$ categorised as medium financial inclusion
3. $0.5 \leq FII < 1$ categorised as high financial inclusion

Table 3: Financial Inclusion Index (FII) for 44 countries with presence of Islamic finance, 2013-2019

Country	2013	2014	2015	2016	2017	2018	2019
Panel A: Muslim Countries							
Afghanistan	0.0135	0.0138	0.0137	0.0128	0.0143	0.0126	0.0101
Algeria	0.0923	0.1081	0.1170	0.1169	0.1215	0.1256	0.1295
Azerbaijan	0.1043	0.1187	0.1440	0.1199	0.1042	0.1039	0.1130
Bangladesh	0.1188	0.1235	0.1256	0.1265	0.1272	0.1289	0.1285
Brunei	0.2317	0.2283	0.2517	0.2536	0.2319	0.2292	0.2334
Egypt	0.1039	0.1167	0.1311	0.1745	0.1651	0.1571	0.1524
Indonesia	0.1756	0.1851	0.1886	0.1897	0.1883	0.1846	0.1815
Iran	0.2077	0.2397	0.2704	0.2873	0.2987	0.3447	0.3003
Jordan	0.2790	0.2765	0.2808	0.2866	0.2874	0.2853	0.2799
Kazakhstan	0.1396	0.1391	0.1445	0.1402	0.1321	0.1283	0.1262
Kuwait	0.2199	0.2373	0.2893	0.3043	0.2977	0.2916	0.3090
Lebanon	0.4105	0.4139	0.4153	0.4217	0.4247	0.4049	0.3860
Malaysia	0.3232	0.3170	0.3162	0.3070	0.2955	0.2963	0.2916
Morocco	0.2783	0.2831	0.2826	0.2854	0.2857	0.2882	0.2890
Nigeria	0.0542	0.0583	0.0538	0.0558	0.0502	0.0474	0.0480
Oman	0.1842	0.1876	0.2152	0.2248	0.2210	0.2157	0.2336
Pakistan	0.0742	0.0755	0.0777	0.0840	0.0852	0.0921	0.0938
Qatar	0.2372	0.2518	0.3005	0.3396	0.3314	0.2937	0.3204
Saudi Arabia	0.1842	0.2016	0.2322	0.2401	0.2237	0.2098	0.2100
Senegal	0.0862	0.0930	0.1005	0.1047	0.1108	0.0927	0.0959
Sudan	0.0220	0.0167	0.0169	0.0219	0.0274	0.0444	0.0361
Tunisia	0.2243	0.2314	0.2371	0.2440	0.2596	0.2616	0.2653
Turkey	0.2460	0.2538	0.2600	0.2650	0.2619	0.2589	0.2537
UAE	0.2973	0.3114	0.3474	0.3583	0.3442	0.3334	0.3359
Yemen	0.0259	0.0256	0.0268	0.0254	0.0253	0.0251	0.0249
Panel B: Non-Muslim Countries							
Australia	0.4652	0.4708	0.4818	0.4890	0.4947	0.4776	0.4925
Canada	0.4318	0.4297	0.4390	0.4458	0.4390	0.4489	0.4503
China	0.2992	0.3126	0.3606	0.3726	0.3714	0.3831	0.3870
France	0.3017	0.3004	0.3001	0.2986	0.2959	0.2906	0.2924

Germany	0.2009	0.2031	0.2006	0.1982	0.2041	0.2002	0.2010
Ghana	0.0608	0.0695	0.0781	0.0788	0.0777	0.0629	0.0706
India	0.1658	0.1783	0.1835	0.1845	0.1863	0.1799	0.1853
Kenya	0.0882	0.1035	0.1021	0.0934	0.0949	0.0937	0.0812
Mauritius	0.3538	0.3580	0.3639	0.3478	0.3356	0.2902	0.2893
Philippines	0.1108	0.1178	0.1251	0.1351	0.1423	0.1385	0.1425
Russian	0.3374	0.3621	0.3542	0.3336	0.3290	0.3184	0.3206
Singapore	0.3713	0.3693	0.3619	0.3622	0.3667	0.3498	0.3507
South Africa	0.2073	0.2181	0.2231	0.2204	0.2189	0.2167	0.2152
Spain	0.5602	0.5317	0.5118	0.4934	0.4788	0.4622	0.4455
Sri Lanka	0.1435	0.1475	0.1601	0.1669	0.1751	0.1837	0.1919
Switzerland	0.6111	0.6080	0.6036	0.6012	0.5989	0.5954	0.5886
Thailand	0.3035	0.3151	0.3190	0.3151	0.3130	0.3123	0.3079
UK	0.5159	0.4986	0.4961	0.5027	0.5055	0.4912	0.4796
USA	0.3762	0.3757	0.3817	0.3867	0.3826	0.3774	0.3761

Table 3 shows the annual FII values for the sample countries for the year 2013-2019. Switzerland recorded the highest FII value at 0.6111 and it is the only country maintaining its position in the high FII category. However, Spain and the United Kingdom which belong in the high FII group initially in 2013 have dropped to medium FII group. As evident, the top five countries are all non-Muslim countries including, Switzerland, Spain, the UK, Australia, and Canada. These countries are developed economies which are often associated with high incomes per capita and nearly universal bank account ownership.

Countries that have been consistently in the medium category are Australia, Canada, Lebanon, The United States, Singapore, Russia and Thailand. However, some countries which belonged to the medium FII category slipped down to the low FII category, such as Mauritius, Malaysia, and France. In contrast, China, The United Arab Emirates, Qatar, Kuwait, and Iran which were in the “low FII” category in 2013, have since moved up to “medium FII” group.

On the other hand, some countries have very low FII values with the lowest being

0.0101 (Afghanistan). The table also shows that 26 countries have been trapped in the low FII group from 2013 to 2019, the entire duration under review.

The majority of these countries are either middle or low-income countries, with the exception of Brunei, Germany, Saudi Arabia and Oman. Meanwhile, four countries with the lowest FII values throughout the period namely Nigeria, Yemen, Sudan and Afghanistan are all Muslim countries. Thus, it is evident that the non-Muslim countries are performing better at achieving financial inclusion as compared with Muslim countries.

Empirical Distribution of Financial Inclusion

The average financial inclusion level of the 44 countries is generally low, at 0.2435, but with a significant variation among countries. Further dividing the sample countries into Muslim and non-Muslim group yields noteworthy insights. The empirical distribution of FII based on level of inclusion is illustrated in Figure 2 for Muslim countries and Figure 3 for non-Muslim countries.

Figure 2: Empirical distribution of FII for Muslim countries

Figure 2 shows that the levels of financial inclusion in Muslim countries is highly concentrated on the “low” level FII - of between 80% and 92%, while the remaining 8% and 20% are in the “medium” range FIIs. There is no Muslim country in the “high” FII category as Muslim countries predominantly consists of middle-income and low-income countries.

Some of the countries in this sample are also unstable, due to internal conflicts or have just entered a post-war period and have yet to stabilise, such as Afghanistan, Sudan, and Yemen. As a result, these countries tend to have very low financial inclusion rates.

However, over the 7-year period, there has been a gradual increase in the percentage of countries that have “medium FII” values, and this shows that Muslim countries are making significant progress in financial inclusion.

Although Bangladesh fell in the “low FII” category in the seven-year period under review, its index values improved from 0.1188 in 2013 to 0.1285 in 2019. This increase could be attributed to Bangladesh’s inclusive financing initiative that provides cost-efficient financial service delivery channels, particularly mobile-banking (Alliance for Financial Inclusion, 2018).

Figure 3: Empirical distribution of FII for non-Muslim countries

In contrast, Figure 3 shows that the rates of financial inclusion in non-Muslim countries were almost equally concentrated at the “low” and “medium” levels of FII. With between 5% and 16% of the countries in the “high” level of FII, between 42% and 53% in the “medium” level of FII and between 37% and 47% in the “low” level of FII. This is because most non-Muslim countries are high-income countries, which are often associated with a higher level of financial inclusion. For example, Credit Suisse, a bank based in Switzerland, gives microfinance institutions access to grants and technical assistance through a philanthropically-funded Financial Inclusion Initiative (Accion, 2018; Credit Suisse, 2020).

Islamic Finance and Financial Inclusion

Table 4 shows the top three Muslim and non-Muslim countries in terms of average FII values and their respective income category. As expected, financial inclusion is highly associated with income as Switzerland, the UK, and Spain exhibit higher levels of financial inclusion. However, there are still some high-income non-Muslim countries with lower level of financial inclusion than Lebanon, the UAE and Malaysia such as France (FII=0.2971) and Germany (FII=0.2012). This shows that there are other factors influencing financial inclusion in addition to income level. A closer look at these three Muslim countries reveals significant insights with respect to the role of Islamic finance towards financial inclusion.

Table 4: Average FII values for top three Muslim and non-Muslim country

Country	Average FII	Income Category
Panel A: Non-Muslim Countries		
Switzerland	0.6010	High-income
UK	0.4985	High-income
Spain	0.4977	High-income
Panel B: Muslim Countries		
Lebanon	0.4110	Upper-middle-income
UAE	0.3326	High-income
Malaysia	0.3067	Upper-middle-income

Malaysia has established its position as an international Islamic financial hub and has one of the highest levels of financial inclusion among the middle-income countries. The World Bank reported that 85% of Malaysia’s adult population has an account at a financial institution (Demirguc-Kunt *et al.*, 2018).

One of the key factors for this success is expanding the outreach of Islamic finance by leveraging Islamic fintech. The percentage of the population in Malaysia that does not use formal banking services is rapidly gaining access to Islamic financial services through innovative solutions such as mobile banking, Internet banking, and agent banking (Martinez & Campillo-Diaz, 2017).

The digitalisation of operations and service delivery allows Islamic finance to reach the unbanked segments in a cost-effective, safe, and sustainable manner, thereby enhancing financial inclusion.

Meanwhile, the United Arab Emirates has one of the highest levels of financial inclusion among Muslim countries and is one of the leaders in the development of Islamic finance. Bank account ownership in the UAE reaches 88% of the population (Demirguc-Kunt *et al.*, 2018). UAE also utilises fintech to expand the outreach of Islamic financial products and services. The Dubai International Finance Centre allocates US\$100 million to fund investments in Islamic fintech start-ups. Since Islamic finance

could appeal to a wider global ethical finance and social finance audience, UAE is leveraging social impact finance by supporting companies that are focused on the ethical economy (Dinar Standard, 2018).

On the other hand, while Lebanon exhibits the best performance in financial inclusion among Muslim countries, the Islamic banking sector in the country is still in its nascent stages (Sujud & Hachem, 2018). A factor that contributes towards financial inclusion in Lebanon is related to the partnership between the public, private, and third sectors. The most notable programme is the We Initiative introduced by BLC Bank Lebanon to help women that own businesses obtain financial services from the banking sector (International Finance Corporation, 2017).

Nevertheless, Hammoud (2017) mentioned that Islamic finance has great potential to grow its market share in Lebanon by offering products that meet the needs of the customers.

Conclusion

This paper provides preliminary evidence on the level of financial inclusion in countries with the presence of Islamic finance. The results show that these countries are at various levels of financial inclusion. Countries like Switzerland, UK and Spain have achieved high levels of financial inclusion as expected for high-income economies, but financial inclusion remains a major challenge in Muslim countries. While income clearly affects financial inclusion, a closer look at top-performing Muslim countries reveals that Islamic finance also plays a major role in advancing financial inclusion.

The presence of Islamic finance provides greater outreach of shariah-compliant financial services to the Muslim population by leveraging on fintech to reach the unbanked in remote areas in a cost-efficient way. Islamic finance is not restricted to Muslims but can appeal to ethical and social finance investors.

Nevertheless, this study is subject to some limitations. First, due to data constraints, only

physical access can be measured. Second, the sample of countries used in the study is relatively small which limits the study to making more generalised conclusions.

Third, the equal weight assignment did not take into consideration the statistical importance of the indicators. These offer room for improvement in future research. As the financial sector is now moving beyond traditional banking channels, it is recommended to include other relevant indicators such as mobile and Internet banking.

More countries could also be added in the sample to make the index more robust. It is also recommended that a statistical method for weight assignment such as Factor Analysis or Principal Component Analysis is employed. These suggestions could be made possible as more data becomes available in future.

Despite these limitations, the initial findings of the study support the needs of the policymakers and multilateral agencies to leverage Islamic finance in its effort to improve financial inclusion levels in Muslim countries. This requires not only expanding the outreach of banking services but also providing information, knowledge and awareness to make Islamic finance better understood.

Lastly, for policymaking decisions, further research is recommended to empirically analyse the impacts of Islamic finance towards financial inclusion using panel data analysis.

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References

- Abubakar, A. M., Daneji, B. A., Muhammed, A. I., & Chekene, I.-A. B. (2020). Driving faster financial inclusion in developing nations. *Technology Audit and Production Reserves*, 2(4(52)), 35–40. <https://doi.org/10.15587/2706-5448.2020.201120>
- Accion. (2018). Credit Suisse and Accion: Exploring new frontiers in financial inclusion. Retrieved January 2, 2021, from <https://www.accion.org/credit-suisse-and-accion-exploring-new-frontiers-in-financial-inclusion>
- Alliance for Financial Inclusion. (2018). *Bangladesh: Bringing the Light Into the Blind Spot*. Kuala Lumpur. <https://www.afi-global.org/publications/bangladesh-bringing-the-light-into-the-blind-spot/>
- Arora, R. U. (2010). *Measuring financial Access* (Discussion Papers in Economics No. 2010–07). Gold Coast.
- Arora, R. U. (2014). Access to finance: An empirical analysis. *The European Journal of Development Research*, 26(5), 798–814. <https://doi.org/10.1057/ejdr.2013.50>
- Bongomin, G. O. C., Munene, J. C., Ntayi, J. M., & Malinga, C. A. (2015). Financial intermediation and financial inclusion of the poor: Testing the moderating role of institutional pillars in rural Uganda. *International Journal of Ethics and Systems*, 34(2), 146–165. <https://doi.org/10.1108/IJOES-07-2017-0101>
- Cámara, N., & Tuesta, D. (2014). *Measuring Financial Inclusion: A Multidimensional Index* (BBVA Research Working Paper No. 14/26). Madrid.
- Cámara, N., & Tuesta, D. (2017). Measuring financial inclusion: A multidimensional index. In *Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on Financial Inclusion* (pp. 1–23). Marrakech: Bank for International Settlements.
- Credit Suisse. (2020). Financial inclusion-Credit Suisse. Retrieved January 2, 2021, from <https://www.credit-suisse.com/about-us/en/our-company/corporate-responsibility/economy-society/financial-inclusion.html>
- Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *Global Findex Database 2017: Measuring financial inclusion and the fintech revolution*. Washington DC. <https://doi.org/10.1596/978-1-4648-1259-0>
- Dinar Standard. (2018). *Islamic Fintech Report 2018: Current landscape & path forward*. Dubai. <https://www.dinarstandard.com/wp-content/uploads/2018/12/Islamic-Fintech-Report-2018.pdf>
- Goel, S., & Sharma, R. (2017). Developing a Financial Inclusion Index for India. *Procedia Computer Science*, 122, 949–956. <https://doi.org/https://doi.org/10.1016/j.procs.2017.11.459>
- Gupte, R., Venkataramani, B., & Gupta, D. (2012). Computation of Financial Inclusion Index for India. *Procedia - Social and Behavioral Sciences*, 37, 133–149. <https://doi.org/10.1016/j.sbspro.2012.03.281>
- Hammoud, J. (2017). The challenges and opportunities of Islamic banking in Lebanon. In R. Benlamri & M. Sparer (Eds.), *Leadership, innovation and entrepreneurship as driving forces of the global economy* (pp. 809–815). https://doi.org/10.1007/978-3-319-43434-6_72
- ICD-Refinitiv. (2019). *Islamic Finance Development Report 2019: Shifting dynamics*. Jeddah. https://icd-ps.org/uploads/files/IFDI_2019_DEF_digital1574605094_7214.pdf
- International Finance Corporation. (2017). *Investing in women: New evidence for the business case*. Washington. <https://openknowledge.worldbank.org/handle/10986/28973>

- International Monetary Fund. (2016). Financial inclusion: bridging economic opportunities and outcomes. Retrieved August 31, 2018, from <https://www.imf.org/en/News/Articles/2016/09/20/sp092016-Financial-Inclusion-Bridging-Economic-Opportunities-and-Outcomes>
- Kainth, G. S. (2013). Developing an index of financial inclusion. *Anvesha the Journal of Management*, 6(2), 1–11.
- Martinez, J. D. L., & Campillo-Diaz, S. (2017). *Financial inclusion in Malaysia: Distilling lessons for other countries. The Malaysia development experience series*. Kuala Lumpur. <https://doi.org/10.1596/27543>
- MIFC. (2014). *Global financial inclusion: Islamic finance meets the challenge. MIFC Insights Report*. Kuala Lumpur. Retrieved from <http://www.mifc.com/index.php?ch=28&pg=72&ac=79&bb=uploadpdf>
- Mirakhor, A., & Iqbal, Z. (2012). Financial inclusion: Islamic finance perspective. *Journal of Islamic Business and Management*, 2(1), 35–64.
- Mohieldin, M., Iqbal, Z., Rostom, A., & Fu, X. (2012). The role of Islamic finance in enhancing financial inclusion in Organization of Islamic Cooperation (OIC) Countries. *Islamic Economic Studies*, 20(2), 55–120. <https://doi.org/10.1596/1813-9450-5920>
- Mukherjee, S., & Malik, S. S. (2015). *Is Financial Inclusion Cause or Outcome? A State-Wise Assessment in India* (Working Paper Series No. 132/2015). Chennai.
- OECD. (2008). *Handbook of constructing composite indicators: Methodology and user guide*. Paris: OECD Publishing.
- Pew Research Center. (2011). The future of the global Muslim population. Projections for 2010-2030. *Population Space and Place*, 13(1), 1–221. <https://doi.org/10.1021/ic0611948>
- Piñeyro, Z., & Manuel, C. (2013). Financial Inclusion Index : Proposal of a Multidimensional Measure for Mexico. *Revista Mexicana de Economía y Finanzas*, 8(2), 157–180.
- Salim, R., Hossain, M. Z., & Al-Mawali, N. R. (2016). Distribution of wealth and resources in Islam: Restoring social justice, peace and prosperity. *International Journal of Economic Research*, 13(2), 571–586.
- Sarma, M. (2008). *Index of Financial Inclusion* (Indian Council for Research on International Economic Relations Working Paper Series No. 215). New Delhi.
- Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of International Development*, 23(5), 613–628. <https://doi.org/10.1002/jid.1698>
- Scottish Executive. (2005). *Financial Inclusion Action Plan. Closing the opportunity gap*. Edinburgh.
- Sethy, S. K. (2016). Developing a financial inclusion index and inclusive growth in India. *Theoretical and Applied Economics*, XXIII(2), 187–206.
- Sheikh, S. A. (2020). *Islamic Finance Country Index - IFCI 2019. Global Islamic Finance Report 2019*. Cambridge. <http://www.gifr.net/publications/gifr2019/ifci.pdf>
- Sujud, H., & Hachem, B. (2018). Reality and future of Islamic banking in Lebanon. *European Journal of Scientific Research*, 149(4), 410–422.
- Suseno, P., & Fitriyani, Y. (2018). Role of the development of Islamic finance to financial inclusion: empirical study in Islamic banking countries. *Jurnal Ekonomi & Keuangan Islam*, 4(1), 1–8. <https://doi.org/10.20885/JEKI.vol4.iss1.art1>
- Swamy, V., & Tulasimala, B. K. (2011). Financial intermediaries and economic development: Transaction costs of borrowing by the poor. *The International Journal of Banking and Finance*, 8(3), 54–72.

- Yorulmaz, R. (2016). Construction of a Financial Inclusion Index for the member and candidate countries of the European Union. *Court of Accounts Magazine*, 102(3), 91–106.
- Zulhibri, M. (2016). Financial inclusion, financial inclusion policy and Islamic finance. *Macroeconomics and Finance in Emerging Market Economies*, 9(3), 303-320. <https://doi.org/10.1080/17520843.2016.1173716>