THE IMPACT OF MACROECONOMIC MACRO-INSTITUTIONAL AND DIGITALIZATION ON THE PERFORMANCE OF MICROFINANCE INSTITUTIONS: EVIDENCE FROM OIC

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Abstract

The aim of this paper is to elaborate the performance of microfinance institution in OIC countries at macroeconomic and country-institutional level. This study composed of panels, based on the type of microfinance institutions classification with respect to Islamic and conventional microfinance. Using panel data on 146 microfinance institutions of OIC countries for the period of 2008-2018, we find complementary and rivalry outcomes with respect to macroeconomics and country level institutional variable. Furthermore, digitalization has significant effect in the performance of microfinance institution (MFIs).

Introduction

The attraction of microfinance obtains from the fact of achieving the double bottom line objectives such as it socially impacts on poverty reduction and at the same time remains financially sustainable. Microfinance is an institution based on the objectives of serving poor people whether live in rural or urban areas, generally known as non-banking population together with achieving financial sustainability as well (Morduch, 1999). Nevertheless, microfinance and microcredit has been appeared for last 50 years, but breakthrough was recognised and spread all over the world when Grameen Bank started to provide financial service in Bangladesh and considered as part and parcel of the economic development strategy and financial development tool for combating poverty for developing countries (Ledgerwood,1999; Robinson, 2001; Barr, 2004).

Arthur (2013) defines the financial performance of MFIs as the capability of the institution to work efficiently in the management of its resources and attaining of objectives such as profitably and stability in economic terms. The financial performance of microfinance institutions has paramount importance in the microfinance sector as well as the countries in which they operate (Befekadu, 2007). Measuring the performance is not only involve the sustainable development of MFIs but also other features such as the outreach particularly if the major mission of MFIs is reaching the poor of a country (Nelson, 2011). Therefore, by knowing proper financial and social performance leads to make finance for easy access to the large number of poor people, alleviating poverty and helpful for MFIs own sustainability (Raja Kassim & Mohd Shamsir, 2012). According to Kauffman and Riggins, (2012) and Ismail et al. (2018) it is appropriate to assess their performance not only in financial ratios, but also in the

aspect of social indicators.

According to SESRIC (2015), the proportion of the population living on the benchmark of less than US$1.25 a day at 2005 international prices is the highest in OIC member countries of sub-Saharan Africa and reports that about 33.1% of the world's total poor lived in the Organisation of Islamic Cooperation (OIC) countries. The World Bank report, (2020) categories the world's economies into four groups based on GNI per capita in current USD by using the Atlas Method exchange rate. Under this classification, The GNI per capita below $1045 is classed in low-income group. Between $1046- $4095 and $4096 -$12695 are classified into lower middle-income and upper middle-income economies respectively. In addition, economies with GNI per capita above 12696 is placed in high-income group. OIC member countries covers a large geographic area in the world and has a great economic potential but out of 48 least developed economies 21 are OIC members.

According to Microfinance Information Exchange (MIX Market) report, 981 MFIs submitted their performance reports in 2017 revealed that the estimated size and expansion of MFIs worldwide is US$114 billion and 139 million customers respectively (Valette & Fassin, 2018).Therefore this sector include large number of variety of microfinance institution based on religious and interest based nature to achieve microfinance dual objectives (e.g., Armendáriz & Morduch, 2010; Banerjee, Karlan, & Zinman, 2015; Morduch, 2016)

Islamic microfinance has been recognized as a valuable tool in alleviating poverty provided that Islamic microfinance institutions (IMFIs) are being managed in accordance with Shariah principles. Islamic microfinance can play an important role in OIC members countries for two reasons. One, millions of Muslims do not want to indulge in non-shariah financial services provided by conventional banking system only on the basis shariah compliance (Karim et al., 2008). Second, according to market failure theory, formal banking system do not get access of financial services to the poor due to lack of collateral (Armendariz & Morduch, 2005).

IMFIs based on Islamic values and principles, which prohibit any exploitation through interest, maysir (gambling) and gharar (uncertainty) contracts and exclusively different from conventional financing (CGPA, 2013; Abdel Kader & Salem, 2013; Mohini et al., 2017; Fianto & Gan, 2017; Ahmad & Ahmad, 2009). The principal objective of IMFIs is to make financial and non-financial inclusion under the principle of co-operation, clarity, acquiesce to deprived community and at the same time being financial sustainable through waqaf, qard hassan, zakat, sadaqat and etc. In this sense, Islamic microfinance could break down the blockades and make wider access to finance for development.

Table 1. Islamic Microfinance Institutions in the OIC Countries

	conventional MFIs	Islamic MFIs	Islamic MFIs
Afghanistan	15	6	1.470588
Bangladesh	79	9	2.205882
Indonesia	69	7	1.715686
Iraq	8	6	1.470588

Jordan	6	2	0.490196
Kosovo	11	2	0.490196
Kyrgyzstan	45	1	0.245098
Lebanon	5	2	0.490196
Pakistan	31	13	3.186275
Palestine (West Gaza Bank)	2	7	1.715686
Syria	2	1	0.245098
Yemen	0	6	1.470588
Malaysia	0	1	0.245098
Bosnia	6	2	0.490196
Azerbaijan	5	4	0.980392
Tajikistan	9	5	1.22549
Senegal	11	2	0.490196
Niger	4	1	0.245098
Nigeria	13	1	0.245098
Uganda	6	2	0.490196
Bahrain	0	1	0.245098
Total	327	81	19.852

Sources: *MIX Market*

Table 1 shows distribution of conventional and Islamic MFIs in OIC countries. Islamic microfinance has approximately 20% of total microfinance institution OIC countries having dual institutions in a country. Pakistan is leading in this region followed by Bangladesh and Palestine. Pakistan, Bangladesh and Indonesia are leading in number of microfinance institution but stand at Yemen, Malaysia and Bahrain are embraced with only Islamic microfinance institution in their country.

Table 2. Number of IMFIs and their outreach under study

Country	No. of Islamic MFIs	NAB	As a % of TNAB	GLP in US$	As a % of TGLP
Afghanistan	2	43789	1.061470172	25143189	1.591200859
Pakistan	3	1532809	37.15615867	464432902	29.39189744
Bangladesh	1	799834	19.38842936	265987150	16.8331464
Indonesia	2	1019324	24.70899132	182117782	11.52542627
Yemen	3	39733	0.963150433	13957591	0.883313997
Egypt	1	152904	3.706479598	22205974	1.405317555
Bosnia	1	8586	0.208129505	9200698	0.582271348
Iraq	1	15241	0.369450476	27236230	1.723660136
Kyrgyzstan	2	175415	4.252158993	179984398	11.39041387
Lebanon	1	78809	1.910374814	80780936	5.112266973
Senegal	1	96717	2.344474881	71894890	4.549908554
Azerbaijan	1	8613	0.208784	8140397	0.515169603

Sudan	1	11277	0.27336895	3819559	0.24172294
Tajikistan	1	24360	0.590500203	14787293	0.935822155
Uganda	1	35158	0.852244454	30600017	1.936539302
WGB	4	50226	1.217506699	155960961	9.870077144
Bahrain	1	4180	0.101325568	8945227	0.566103722
Jordan	1	28341	0.687001898	14944036	0.945741724
Total	**28**	**4125316**	**100**	**1580139230**	**100**

MIX-Market, NAB=Number of Active Borrowers, GLP=Gross Loan Portfolio

Table 2 shows the outreach of Islamic microfinance institution in term of gross loan portfolio and active number of borrowers. Data reveals that Asia is the hub of Islamic microfinance facilities and Pakistan, Indonesia and Bangladesh are top provider of microfinance services in OIC countries. Furthermore, Kyrgyzstan, West Gaza Bank and Lebanon also has nominal contribution in offering their services to the poor.

However, outreach of microfinance flourish in developing countries across the world such as in South Asia (Afghanistan, Bangladesh, Indonesia, Pakistan and Malaysia), Middle East (Bahrain, Egypt, Iraq Jordan, Lebanon, Palestine, Sudan and Yemen), Central Asia (Kazakhstan, Kyrgyzstan) and eastern Europe (Bosnia Herzegovina, Kosovo). However, the market share of Islamic microfinance is relatively very small as compared to conventional microfinance and cover approximately only 1% globally. According to Karim (2008) 20 to 60 percent of Muslim population intent to get access in Islamic finance. This outreach is insufficient because there are millions of poor people are the resident of these Muslim's majority developing countries. Furthermore, Islamic microfinance is an important tool for economic growth in many Muslims community by facilitating access of financial services (Dhaoui, 2015; Ali, 2015; CGPA, 2013). According to ISEFE (2019) out of 7 billion of the world population, 20% are Muslims and 50% of global poorest people are lived in Islamic countries, even though these Muslim's countries hold 70% of world's natural resources.

Karim et al. (2008) claim that Islamic agreements provide the borrower more sharing power, more attention and incentive to repay their financial burden in time particularly when the project produces earnings. Islamic microfinance has huge growth potential and is considered as "the key to providing financial access to millions of Muslim poor who currently reject microfinance products that do not comply with Islamic law". Furthermore, microfinance institutions are facing increasingly competitive environments, which force them to achieve social and financial performance. To achieve these two goals, Kauffman and Riggins, (2012) foresees that information and communication technology (ICT) is an important driver in the nurturing microfinance industry.

According to World Bank (2014) approximately 50 % population of developing countries are using mobiles phone, therefore digital finance can make greater financial inclusion and not only expand financial services to non-financial sector, help millions of poor customers and move them from cash-based transaction to formal digital financial transaction but also create a long-

term positive effect on profitability of banking overall performance which leads to improve GDP level and economic stability. This environment is achieved due to increase of financial intermediation both for customer and the economy.

Zulkhibri and Imail, (2017) and Omar (2017) endorse that financial inclusion increase the wellbeing of poor in OIC countries as well as tackling poverty, corruption and stability of the government. Hasan (2015) suggests that designing and delivery of Islamic microfinance product with the help innovative approach based on shariah are favourable for improving delipidated condition of poor Muslim countries. Furthermore, Mirakhore and Iqbal, (2012) claim that Islamic finance has potential and comprehensive framework to increase redistribution method but still under realized in Muslim countries A digital transformation in MFIs may reduce their cost and friction points of delivering services. Digitalizing channels provide technology platforms which improve customer acquisition and user experience

A digital transformation in MFIs may reduce their cost and friction points of delivering services. Digitalizing channels provide technology platforms which improve customer acquisition and user experience. The emergence of digital platforms has changed the way of customers do their business. Furthermore, digitalization provides facilities with a stronger social purpose. The digital revolution offers a swift, responsive, and distinguished financial and social services to low-income people in a way that never did in the past. (Bearfeild & Bowman, 2017; Ma & Zheng, 2017).

In the light of above discussion, this study is different from the previous studies to some extent. This study examines the different impairment measures in finding the relationship between macroeconomics and macro-institutional variable with social and financial performance microfinance institution; investigation is based on types of microfinance institution such as Islamic and conventional microfinance taking OIC members countries and third, investigation is based on the impact of digitalization on the two set of classification.

2. Literature Review

This section provides the theories and principles on which this study is based. These are theory of market failure and theory of microfinance performance. In the perspective of these theories, we can gauge the performance of microfinance institution at country level context.

The first underpinning theory is the market failure theory, supported by many prominent macroeconomists and welfarist of Keynesian schools, such as, Arthur C. Pigou, Francis Bator, William Baumol, and Paul A. Samuelson. In brevity, market failure is the failure of system or market to reach the optimal level in term allocative efficiency. Technically, market failure is happened when marginal social cost is greater than marginal social benefits. In the context of microfinance, market failure theory says that in developing countries many people are live in the zenith of extreme poverty and many poor people have capability to establish their own business for their livelihood but remain excluded from the formal financial services due to lack of adequate surety and collaterals and thus, have no access to credit (Hermes, 2007). Consequently, these deprived people, in order to overcome financial constraints, turn to

informal sector such as moneylenders and bear high rate of interest for borrowing loan (Barr, 2004). Because of this market failure created by formal banking system, provide a ground where microfinance offers their services in order to meet social and financial objectives by providing variety of financial services to unbanked, deprived people (Vanroose & D'Espallier, 2009).

Ahlin et al. (2011) and Vanroose and D'Espallier (2009) stated that besides internal factors, the evaluation of MFI cannot be accurate and cleared without the consideration of macroeconomic environment where an MFI operates and therefore the importance of macroeconomic environment cannot be ignored. Therefore, a comprehensive awareness about what factors promote MFIs performance and what influence badly and hinder in the path of progress has become of great importance. To give attention on these factors make understandable the basic ingredients of MFI success and likely to serve more people as well as remains financial sustainable and therefore, fall under the explanation of microfinance performance theory.

Studies recommend that country-level variables that affect the performance of MFIs are manifold. We discuss some macroeconomics variable such as consumer price index for inflation, GDP per capita growth, domestic saving rate, labour force participation +15 for employment rate, domestic credit to private credit, together with country-level institutional variable, such as, control of corruption, voice and accountability, regulatory quality, rule of law, political stability and government effectiveness one by one.

Inflation is defined as the continuous increased in the price of goods and services in the market during a period. In this relevance, Huybens and Smith (1998) posits that fall in inflation rates results into reduced microfinance institutions revenues, reduced profitability and then lead to MFIs bankruptcy. Theoretically, inflation hinders the MFI lending mission. An unanticipated inflation lowers real rates of return for an MFI and increase the amount payments due to interest rates. Similarly, inflation also affect an MFI's expense to funds, lender's incentives for delay and rate of defaults.

Microfinance performances are interdependent to the performance of macroeconomic environment. Robinson, (1952) Luintel and Khan (1999) believe that expansion of financial sector is a root cause for economic growth. These studies show a unidirectional causality between economic growth and financial development. However, a bi-directional relationship was presented Berthemely and Varoudakis (1996) Luintel and Khan (1999) Greenwood and Jovanovic (1990). According to them, economic growth and financial development occur in a collaborative style, where growth in real income promotes financial sector first and when the growth in the banking sector takes place due to increase in return on savings and increase in capital accumulation ultimately impetus to the economic growth. For microfinance performance, the most common measure for economic growth is adjusted per capita GDP or real per capita GDP is used in order to investigate the impact of economic growth on the financial and social performance of microfinance institutions. Ahlin et al. (2011) Sefa Awaworyi Churchill (2018) channelize that an economy with high growth provides opportunities for existing microenterprises in the shape of providing of new venue for microenterprises. It also raises households present and expected future

incomes to the level of investment in a business and cause increase in level of investment, especially, in microenterprises and increase the demand for microfinance services. This shows a complimentary relationship between broader economy and microfinance business. However, in the low economic growth, people want those products which are produced by micro-enterprises as an alternative to the imported or high-quality product. High quality and imported goods become more expensive for the customers. Similarly, most micro-credit customers are effective in the small, unorganised domestic markets that are not highly responsive to macroeconomic environments. During this situation, demand for microfinance services is increased.

Microfinance found financially stable during higher growth in income due to (1) enhance borrower ability to payback their loan (2) decreases in default rate (3) cut operating cost (4) raise microenterprise returns and (5) provide greater solvency limit in the project. However, social performance measured by outreach is below par due to (1) increase in wage earning prospect (2) availability of fund from own individual savings, family or friends (3) nature of microfinance that thrive informal economy (Ahlin et al., 2011; Sefa Awaworyi Churchill, 2018) and are not following the predetermined priori.

Theoretically, savings mobilization gives a boost to the sustainability of the MFI's. Savings fuels the fund base and able the institutions to offer facilities to additional clients. Besides, MFIs make available opportunities to invest in elsewhere institutions (banks) and gain more profits. So, increase of savings makes more liquid assets for the MFIs. Developing countries in South Asia are still not fully build up a financial system apt for employing the savings of various households and do not satisfactorily deal with the influence of financial sector development and access to financial institutions on national resource utilization (Horioka & Yin, 2010; Jha et al.,1996) The savings mobilization has just been acknowledged as a major drive-in microfinance. Previously, micro finance concentrating almost solely on credit; savings were the "overlooked- half" of financial intermediation. Exclusive of savings, the economy cannot flourish unless there are other sources of investment (Harper, 2003).

The private credit variable equals the amount of domestic credit to the private sector, divided by GDP. It is arguably the most common measure of financial development in the finance and growth literature and used for overall financial depth of the country in which the MFI operates in a way to signifies the main financial service provided by these institutions, mainly in developing countries. The relationship between financial sector development and performance of microfinance institution is on two theoretical concepts. According to first concept, microfinance and financial development are substitute to each other and has contrarywise relationship (Richter, 2004; Demirgüç-Kunt et al., 2008). However, the second concept supports the spill over of financial development on microfinance performance and therefore has complimentary relationship between them (Hermes et al, 2009; Isern & Porteous, 2005).

The workforce participation rate is used to measure the ratio of labour force over the total population having an age of above 15 years of a country. This measure reflects the occurrence of labour opportunities within the economy which may be complementary or

crowding out the microfinance activities. Emran et al. (2011); Ahlin et al. (2011) and Sefa Awaworyi Churchill, (2018) suggest that a broad-based wage employment substitutes for microfinance outreach by limiting the client base. In this condition workforce participations may work as a rivalry when wage labour opportunities act substitutes for microfinance and reduces the growth of number of borrowers. While MIFs loans and workforce participation may seem to work complimentarily when labour force and microenterprises boost demand and opportunities for micro-funds. Mincer theorem identifies that the workforce participation rate is vital because it describes the nature and dynamics of unemployment during business cycles in an economy.

A weak quality of institutional environment, such as, lack of customer protection, weak in rule of law, corruption in government bureaucracy, abundance loan borrowing and loan delinquencies, enormous procedural administration difficulties, fraudulent crime and etc. altogether create an unfavourable business environment for the growth and performance of microfinance industry (Barry & Tacneng, 2014; Schicks, 2013; Chowdhury, 2005; Giné and Karlan, 2014). On the other hand, corruption may affect lower wages and pushing more household towards self-employment and may lead to foster MFIs borrowers' growth. Similarly, may create stable environment for micro-borrowers but also create hardship for micro-enterprises to operate avoiding regulations and tax-free. Therefore, an environment, characterized by high institutional quality is not conducive for microfinance institutions (Ahlin, 2006; Fisman & Svensson, 2007).

3. Methodology

In order to grasp the relationship between microfinance performances with external country-level factors, the panel model is used for estimation purpose. The term panel data is the combination of time series data and cross-sectional data and is most commonly used to estimate the behaviour of different entities at different period of time. Panel data is expressed by the following equation:

$$Y = \alpha + \beta_1 X + U \qquad \text{Eq. (3.1)}$$

Where α = constant, β = slope, and U = random error

$$U = mu + v \qquad \text{Eq. (3.2)}$$

Where mu= mean of random error distribution, and v= random error.

The panel the regression model is expressed as:

$$MFI\ Performance_{it} = \alpha + \beta J_{it} + \beta L_{it} + \beta M_{it} + \beta N_{it} + \beta O_{it} + \beta\ region_{it} + \mu_{it}$$

Where MFI performance is a set of dimensions for social and financial performance of MFI *i*

in year t, with $i=1…$. N, $t=1…$T; α is the regression constant β is the coefficient, J_{it} is a set of macroeconomics variables, L_{it} is a set of external governance variables, M_{it} is digitalization used as moderator variables, N_{it} is a set of variable capturing formal financial sector development, O_{it} is a set of MFI-specific characterised by total asset for controllable variable, *region* is a set of dummies capturing the type difference of microfinance institutions in OIC, μ_{it} is the stochastic error-term.

3.1 Dependent Variables

This study focuses on the two dimensions of MFI performance: financial sustainability and outreach. Financial sustainability is measured by indicators such as; 1) operational self-sufficiency (OSS) is a focus variable and is calculated as the total financial revenue divided by financial expense plus net loan loss expense plus operating expense and 2) Loan loss rate (LLR) is the ratio of net write off to average gross loan portfolio (AGLP). Whereas social performance is measured by; 1) Number of active borrowers (ANAB) to measure the breadth of outreach and, 2) Average gross loan size (AGLP) to measured depth of outreach. Beside these, MFI size is calculated by taking the log of total assets of each MFIs for controllable variable.

3.2 Independent Variable

Macroeconomics variables are included as independent variables and obtained from WDI database incorporated by the World Bank. Indicator used for the estimation are: GDP per capita (GDPC). gross domestic savings (GDS), consumer price index (CPI) for inflation, labour-force participation+15(EMP) for employment and gross domestic private credit (DPC) for financial depth. DPC is used to measure the financial development of regulated, formal financial sector especially banks in a country and data are taken from WDI by the World Bank. Traditionally, the most common proxy to measure financial depth of the financial system is domestic credit to private sector as a percentage of GDP as used by (Ahlin et al., 2011)-, and liquid liabilities as a percentage of GDP.

Another set of independent variables is related to external governance, taken from the WGI by Kaufmann et al (2009) that are produced and collected by The World Bank and based on large extent of survey taken from citizen and experts in the developing. The WGI develop six dimensions to measure external governance scoring from -2.5 to +2.5, higher positive value shows better external governance.

The data consist of 146 microfinance institutions, selected from 28 OIC members countries from 2008-2018. We use different sources, such as MIX Market Database for MFIs data, World Development Indicator (WDI) by the world Bank for macroeconomics indicators, World Governance Indicator (WGI) by the World Bank of macro-institutional quality indicators. The MIX's website is openly accessible and holds a great amount of information exceeding 1500 MFIs across the world. The MFIs data is reported by institution itself and on voluntarily basis implies that data is self-reported. The MIX Market scrutinize MFI data on a scale from 1 to 5, bases on accuracy and integrity of data provided by MFIs. The higher number of scales shows

more accuracy and integrity (trustworthiness) of the data'

In order make interpretation of results we use log-log form following Nitin Navin and Pankaj Sinha (2020) For brevity we only explain the significance and increase/decrease impact of determinant on microfinance performance rather than using the word of % increase(decrease) of explanatory variables leads to % of increase(decrease) in explained variable. Initially we apply fixed-effect on first data set in order to make comparison between Islamic microfinance institutions (IMFIs), conventional microfinance institution (CMFIs) and overall microfinance institutions (MFIs). Secondly, we apply fixed-effect on low income, lower middle income and upper middle income data set.

4. Result

The results shown in table 3 were obtained after testing the diagnostic tests and model selection tests. The robust estimation method has been employed to overcome the issue of heteroskedasticity and autocorrelation. However, the Hausman test was taken into consideration after the LM test, which pointed out that the random effect is a best-fit model. After this, the Hausman test directed the fixed effect as the appropriate model for estimation with a p-value less than 0.05 significance level.

Table 3. Estimation outcome

Table2	Fixed Effect											
DVs →	log. Ave. no. of active Borrowers (LANAB)			log. Ave. Gross Loan Portfolio (LAGLP)			log. Operational Self-Sufficiency (LOSS)			log. Loan Loss Rate (LLLR)		
IVs↓	IMFIs	CMFIs	MFIs	IMFIs	CMFIs	MFIs	IMFIs	CMFIs	MFIs	IMFIs	CMFIs	MFIs
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
LGDS	-0.073	0.089***	0.074**	-0.05	0.024	0.017	0.099	-0.049*	-0.009*	0.032	0.092***	0.096***
LGDPC	0.022	0.021	0.025	-0.03	0.013	0.002	0.097	0.189	0.172	-0.019***	-0.134***	-0.08**
LEMP	3.213***	-0.077	-0.04	3.134**	0.361	0.067	-1.528	-0.109	-0.039	-0.342	0.078	-0.417**
LPDC	-0.068	-0.066	0.099	0.007	-0.015	0.475	-0.383***	0.025	-0.867	0.037	0.073**	0.059*

LCPI	0.17	0.867***	0.789***	0.386**	1.03***	1.044***	0.09	-0.168	0.021	-0.21	-0.041	-0.065
LCC	0.123	-0.199	-0.026	0.518***	0.174	0.341**	0.148	-0.421**	-0.019	-0.166***	-0.078	-0.031
LPS	0.439	-0.014	0.058	0.423	1.117***	1.055***	-0.063	0.588**	0.29	-0.007	-0.185***	-0.282***
LVA	-0.262	1.364***	1.18**	-0.976**	0.821**	0.663*	-0.058	-0.028	0.152**	0.03	-0.201**	-0.182*
LGE	0.42	1.09***	0.891***	-0.114	-0.057	-0.312	-0.399**	-0.551*	-0.444	0.093	0.242	0.074
LRL	-0.123	-0.227	-0.271	0.549	-0.086	-0.166	0.207	0.169	0.11	-0.144	-0.294	-0.178
LRQ	-0.161	-0.613**	-0.5**	-0.202	-0.205	-0.021	-0.207*	0.208	0.135	0.195**	-0.006	0.063
LITU	-0.024	0.192***	0.178***	0.168**	0.314***	0.298***	-0.034	0.017	0.021***	-0.068*	-0.054***	-0.05**
LTA	0.658***	0.062**	0.089***	0.827***	0.127***	0.148***	0.154***	0.079***	0.049***	0.104*	-0.024***	-0.015***
Const.	-5.83***	1.34	1.083	-4.83**	2.354	2.059	-4.83**	2.354	2.059	1.815**	1.277***	2.197***
R^2	0.53	0.378	0.364	0.802	0.494	0.499	0.303	0.095	0.144	0.132	0.073	0.144
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.002

*** p<.01, ** p<.05, * p<.1

IMFIs represents Islamic microfinance institution: CMFIs represents conventional microfinance institutions and MFIs represents combination of Islamic and conventional microfinance institutions.

Table 3 reports on the impacts of independent variables on the Islamic microfinance institution

performances. It shows that gross domestic saving (GDS) has no impact on average number of active borrowers (ANAB) of Islamic microfinance institutions in four model but has positive effect on conventional and overall micro finance institution with respect to average number of active borrower and loan loss rate (LLR) while negative with operational self-sufficiency (OSS). This result shows the conformity with (Schreiner,2002) as GDS increases in supply of loan to the poor however increase in LRR is due to adverse selection. The negative effect with OSS shows the fall in generation of institution self-yield.

While growth gross domestic per capita (GDPC) effect negatively significant only on loan loss rate of conventional microfinance institutions as growth in GDPC increase the payment capability of MIF customer. Labour force participation effect positive on average number of active borrower (ANAB) and gross loan portfolio (GLP) of Islamic microfinance institution as it boosts the availability new avenues for self-employment with sharia products. However, has effect negatively on loan loss rate (LLR) of overall micro finance institution (MFIs) as labour force became able to pay debt on time. Cull et al. (2013) and Ahlin et al. (2011) found that annual growth in real GDP per capita was correlated positively with MFI portfolio growth pointing better social performance in term of outreach as well as it reduced default rates and MFIs' operating costs.

Gross domestic private credit (DPC) is proxy of financial inclusion from formal sector. It impacts negatively on operational self-sufficiency (OSS) of Islamic microfinance institutions as rivalry effect by formal credit. It has positive effect with loan loss rate (LLR) in conventional (CMFIs) and overall microfinance institution (MFIS) as it attracts MIF client towards formal sector and these led to fall in payment mechanism of micro finance institution. Cull et al. (2013) and Ahlin et al. (2011) proved that a negative relationship exists between private and microfinance sector growth measured by MFI portfolio growth. On the other hand, financial sector development had no significant effect on an MFI's overall financial self-sufficiency despite.

Consumer price index (CPI) is a measure of current inflation play a positive role in average number of active borrower (ANAB) and average gross loan portfolio (GLP) of convention al and overall microfinance institution as increase inflation leads to increase profit margin of CMFIs and MFIs. CPI also increase average gross loan portfolio (AGLP) of IMFIs as in Islamic countries clients of CMFIs and MFIs move towards the Islamic MFI. However, any effect is shown in OSS and LLR in all datasets of MFIs. With respect to the relationship between inflation and microfinance performance, our finding shows the conformity with (Nurmakhanova et al., 2015; Ahlin, 2011; Vanroose, 2008)

The institutional variable such as control of corruption has positive effect with gross loan portfolio (AGLP) of Islamic microfinance (IMFIs) and overall microfinance institutions (MFIs) as MFIs are a type of informal institutions as drive a negative a relationship with OSS in CMFIs and negative with LRR in IMFIs. Political stability (PS) shows positive relationship with (AGLP) and (OSS) and negative with LRR both in CMFIs and MFIs. Voice & accountability (VA) shows positive relationship with (LANAB) and (GLP) of CMFIs and MFI while has negative relationship with (AGLP) of IMFIs. Moreover, it has positive relationship with OSS

and negative with LLR of CMFIs and MFIs respectively. Government efficiency (GE) is positively correlated with (LANAB) in CMFI and MFIs due to Govt. support. While negative with OSS with respect to IMFI and CMFIs. Rule of low (LR) remain insignificant throughout the dataset while regulatory quality (RQ) has negative association with (LANAB) of CMFIs and MFI however has negative correlation with OSS and positive with LRR in IMFIs. Sefa Awaworyi Churchill,2018; Ahlin et al., 2011 and Mueller and Uhde,2013 studies show that country level institutional variable has MFI significantly affects an MFI's success in term of average loan size and number of active borrowers and its financial sustainability including its components.

The effect of digitalization measure in number of mobile users in hundred individuals is very prominent as it has positive correlation with (LANAB) of CMFI and MFIs and also has positive effect with (AGLPL) of all three microfinance institutions, positive with OSS of overall microfinance institutions (MFI) as well as and negative with LRR. in all three microfinance institutions of the data sets. This indicate that use of digitalization not only the help in the expansion of microfinance services to the poor but also lead to sustainability by reduction in loan loss rate. Therefore, it is an important tool to achieve microfinance dual objectives. Digitalization results confirm the finding of (Zulkhibri & Imail,2017; Mirakhore & Iqbal,2012).

5. Conclusions

We conclude that our findings elaborated the finding of macroeconomics and country-level institutional variable by using different data set with respect to nature of microfinance institutions of the OIC members countries.

Gross domestic has no impact on average number of active borrowers of Islamic microfinance institutions in our model but has positive effect on conventional and overall micro finance institution with respect to average number of active borrower and loan loss rate while negative with operational self-sufficiency.

Growth helps to increase financial sustainability due to reducing default or loan loss rate. The result is consistent with the view that higher growth provides greater solvency to the projects for which micro-banks lend. This appears only in CMIs and MFIs and insignificant in IMFIs.

Growth in MFI outreach is harder to come by when more people are economically active because the need for financial services may be lowest precisely in these contexts. While IMIFs portfolio size is surged when broad-based wage employment complement for microfinance leads to maximize the client base growth prospects. Our IMFIs finding, support the priori as well as labor force participation is negative with LLR in MFIs.

Private credit is negatively and significantly associated with OSS in IMFIs. This explanation is consistent with the possibility that financial depth crowds out microfinance to some degree. Our results show that increases in domestic credit to private sector has insignificant effect on the portfolio in all types. On the other hand, domestic credit to private sector produces positive impact on LLR of MFIs because MFIs function becomes more active in period when depth of the financial sector is high may lead to adverse selection of portfolio.

Inflation has positive significant effect on the gross loan portfolio in CMFIs and MFIs as well as with number of active borrowers in all types of MFIs because the inflation and interest rate

is not considered in the growth of IMFIs portfolio size.

It is potentially insightful into the workings of microfinance to see how specific institutions and institutional outcomes affect an MFI's operation. Theoretically, it is observed that corruption may hinder microenterprises' ability to operate and grow, much as it has been seen to impact small and medium enterprises throughout the world (Fisman & Svensson, 2007). On the other hand, if corruption does not hinder micro-enterprises directly, its main effect may be lowering wages (Ahlin, 2005) and pushing more households toward small scale self-employment, allowing for faster MFI portfolio to growth. Therefore, lower corruption is related to faster growth in gross loan portfolio in IMFIs and MFIs together with decrease in default rate in IMFIs.

Political stability, voice and accountability and government efficiency supports in increase of outreach in all type of MFIs and reduce cost of default, one interpretation of these results is that "good" regulations and government while negative with OSS may make it costlier for IMFIs to operate in a fully compliant way. However regulatory quality seems vice versa. Overall institutional factors are seemed accordingly with the priori.

Furthermore, together with above country level variables in consideration, the digitalization has very significant role in achieving objective of microfinance institution. Our result shows that digitalization not only increase the size of average gross loan portfolio and number of active borrower but also reduced cost of default and help in achieving dual objective of MFIs. So, for microfinance institutions, policy makers and those have ambition to reduce poverty level in their country, this study suggests them to develop innovation, such as digitalization in their operational activities.

In summary, our findings tend to indicate that (i) macroeconomic determinants such as, Gross domestic saving, Per Capita GDP growth, Labor force participation, Inflation, Domestic Credit to the Private Sector (ii) macro institutional determinants such as, Control of Corruption, political stability, government efficiency, etc. and (iii) Digitalization do matter and have significant and impact on the performance of the Islamic microfinance as well as conventional microfinance institutions. The findings are plausible and have strong policy implications.

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