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THE INFLUENCE OF INSTITUTIONAL CHARACTERISTICS ON FINANCIAL PERFORMANCE OF MICROFINANCE INSTITUTIONS IN THE OIC COUNTRIES

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ABSTRACT. Microfinance institutions (MFIs) proved to be a powerful tool for financial inclusion through developing entrepreneurial activities in rural areas. MFIs provide small-scale loans to the poor who have no access to traditional banking and financial system. However, in the pursuit to meet their social obligation, MFIs need to be financially sustainable and this sustainability largely depends on the institution's characteristics. This study investigates the influence of MFIs' characteristics on their financial performance, using the panel dataset of 57 microfinance institutions from the member countries of the Organisation of Islamic Cooperation (OIC). The empirical results show that, as expected, the interest rate charged and the period of existence in the market have a significant positive relationship with the financial performance of MFIs. The results also indicate that credit union and cooperatives, non-bank financial institutions and non-governmental organisations outperformed their counterparts financially. Therefore, the study concludes that charging a high rate of interest may improve institutions' financial self-sufficiency; however, it is unable to secure MFIs' profit maximization strategy. Conversely, not-for-profit MFIs can ensure their financial viability while serving the poorest clients which is the prime goal of any microfinance program. Hence, MFIs can earn profits, but within limits, complying with their social promise at the same time.

JEL Classification: G21, L25

Keywords: microfinance; financial performance; sustainability; OIC.

Introduction

The initial concept of microcredit coined by Muhammad Yunus stems from the idea of enhancing financial inclusion through serving credit to the poorest productive-age women without collateral. It is aimed at alleviating poverty through involving economically and socially

disadvantaged citizens in income-generating activities. This initial idea was later developed into microfinancing when more innovative products were developed to meet the growing market demands (Chan & Lin, 2015; Cull *et al.*, 2011). Microfinance institutions (MFIs) are said to have an important role in poverty reduction as they can stimulate economic and social development by providing quality financial services to disadvantaged population groups.

Microfinance can be defined as a programme that extends small-scale loans and financial services to the ultra-poor for their further self-employment that generates income, thus leading them and their families out of poverty. Continuous developments in the microfinance industry always have the prime objective of poverty reduction in various ways. Hence, the operation of microfinance as such is far way different from traditional financial institutions. MFIs provide small-scale credits that mature in short period and rely on trust and character rather than on collateral as a guarantee (SESRIC, 2008). Running an MFI thus is neither an easy task, nor inexpensive (Abate *et al.*, 2014; Dehem & Hudon, 2013).

Historically, external donors have been providing large funds and technical assistance for better and more efficient operations of MFIs (Ahmed *et al.*, 2016; Lacalle-Calderón *et al.*, 2015; Ronzoni & Valentini, 2015). However, higher rate of competition due to constantly increasing numbers of new entries in the industry made funding more complicated and competitive (Armendariz *et al.*, 2011). The attempt of MFIs to find a different path to boost their financial self-reliance has resulted in commercialization of many MFIs (Butcher & Galbraith, 2015; Pinz & Helmig, 2015).

The first cases of such commercialization in microfinance have been observed during this decade in Latin America (Battiliana *et al.*, 2012; Ledgerwood & White, 2006). This commercialization process welcomes investments from institutional investors in the institution's equity. For example, ACCION, an institutional investor, bought the largest share during the first commercialization in Bolivia (Ledgerwood & White, 2006). As a result, microfinance started to turn into a profitable business venture, attractive enough for many private equity investors.

As commercial entities, MFIs need to attain their financial mission apart of fulfilling their social mission, in order to attract investors and to ensure sustainability. Sustainability, which has been defined by Woolcock (1999) as "a program's capacity to remain financially viable in the absence of domestic subsidies or foreign support", also indicates the importance of financial motive for MFIs. Without sustainability, MFIs could not exist, and hence the goal of poverty alleviation would become unreachable (Otero, 1999).

It is argued that pursuing financial sustainability is important to attain desired social outreach in the microfinance program because financial sustainability strengthens institutions' ability to serve countless million poor (Rhyne, 1998). The author revealed that the profit motive does not harm MFIs' social motive, rather it facilitates achieving better outreach. Moreover, the study also argued that MFIs should allow private funding into the institutions to grow in scale. Though relying on donor and government is more trustworthy for MFIs but those will not be enough to fulfil the growing demand in the future. Moreover (Gutiérrez-Nieto *et al.*, 2009) also confirmed that there is an inverse relationship between financial performance of MFIs and their poverty outreach. Hence, it is suggested that MFIs need to be financially sound, because financially weak institutions are unable to obtain a viable social return.

This study thus attempts to investigate the characteristics of MFIs that contribute to their financial performance using datasets from the member states of the Organisation of Islamic Cooperation (OIC). The OIC is an intergovernmental organisation and has 57 member countries on four continents, which makes it second largest of its kind, after the United Nations, though data on 23 nations only have been utilized here (see *Table 1*). The study focuses on MFIs in the OIC countries for 3 key reasons, namely: (1) OIC is home for

1.563 billion population, thus representing 22.7 percent of the total global population (WDI, 2010), with half of its total population still living under poverty (PED, 2010), hence, MFIs of OIC region usually have more opportunities to demonstrate its impact within the society, (2) no study, to the best knowledge of the authors, has yet examined MFIs' financial performance in the context of the OIC, and (3) findings based on MFIs in the OIC can provide a better picture for policy-making regarding poverty reduction among the member countries through own development agencies; such as, the Islamic Development Bank (IsDB). The findings of this study can help policy makers in guiding and regulating MFIs in the OIC countries towards greater sustainability.

Table 1. Economic and social classification of the OIC member countries

Country	Income Group[1]	Least Developed Countries (LDCs)[2]	Low Income Food Deficit Countries (LIFDCs)[3]	Highly Indebted Poor Countries (HIPCs) [4]	Human Development Category[5]	Countries included in the study
Afghanistan	Low	X	X	X	Low	X
Albania	Lower Middle				High	
Algeria	Upper Middle				Medium	
Azerbaijan	Lower Middle		X		Medium	X
Bahrain	High				High	
Bangladesh	Low	X	X		Medium	X
Benin	Low	X	X	X	Low	
Brunei	High				Very High	
Burkina Faso	Low	X	X	X	Low	X
Cameroon	Lower Middle		X	X	Medium	X
Chad	Low	X	X	X	Low	
Comoros	Low	X	X	X	Medium	
Cote d'Ivoire	Lower Middle		X	X	Low	
Djibouti	Lower Middle	X	X		Medium	
Egypt	Lower Middle		X		Medium	X
Gabon	Upper Middle				Medium	
Gambia	Low	X	X	X	Low	
Guinea	Low	X	X	X	Low	
Guinea-Bissau	Low	X	X	X	Low	
Guyana	Lower Middle			X	Medium	
Indonesia	Lower Middle				High	X
Iran	Lower Middle				Medium	
Iraq	Lower Middle		X		Medium	
Jordan	Lower Middle				Low	X
Kazakhstan	Upper Middle				High	X
Kuwait	High				Very High	
Kyrgyzstan	Low		X	X	Medium	X
Lebanon	Upper Middle				High	X
Libya	Upper Middle				High	
Malaysia	Upper Middle				High	
Maldives	Lower Middle	X			Medium	
Mali	Low	X	X	X	Low	
Mauritania	Low	X	X	X	Medium	
Morocco	Lower Middle		X		Medium	X
Mozambique	Low	X	X	X	Low	X
Niger	Low	X	X	X	Low	X
Nigeria	Lower Middle		X		Medium	X

Oman	High				High	
Pakistan	Lower Middle		X		Medium	X
Palestine	Lower Middle				Medium	X
Qatar	High				Very High	
Saudi Arabia	High				High	
Senegal	Low	X	X	X	Low	X
Sierra Leone	Low	X	X	X	Low	
Somalia	Low	X	X	X	Low	
Sudan	Lower Middle	X	X	X	Medium	
Suriname	Upper Middle				Medium	
Syria	Lower Middle		X		Medium	
Tajikistan	Low		X		Medium	X
Togo	Low	X	X	X	Low	X
Tunisia	Lower Middle				Medium	X
Turkey	Upper Middle				High	
Turkmenistan	Lower Middle		X		Medium	
Uganda	Low	X	X	X	Medium	X
UAE	High				Very High	
Uzbekistan	Low		X		Medium	X
Yemen	Low	X	X		Medium	

Source: World Bank[1,4], UNCTAD[2], FAO[3] and UNDP[5], estimations of 2010.

1. Literature review

Among a few studies that examine the determinants of MFIs' financial performance are Daher and Le Saout (2015), Kharti (2014), Janda and Turbat (2013), Nasrin *et al.* (2017) and Wijesiri *et al.* (2017). Apart from that, several studies suggested that the MFIs' financial performance are determined by interest rate charged (Kar & Swain, 2014; Roberts, 2013), size of the MFI (Cull *et al.*, 2007), maturity of the MFI (Kar, 2011), and legal status of the MFI (Meyer, 2015; Tchakoute-Tchuigoua, 2010). The country context variables, such as inflation rate and GDP growth rate are also important in the financial performance analysis of MFIs (Ahlin *et al.*, 2011; Nurmakhanova *et al.*, 2015).

Janda and Turbat (2013) examined MFIs in Central Asia for the period 1998-2011 and concluded that the outreach to the female clients, governance and macroeconomic factors enhance the financial performance of MFIs. The authors admitted possible scope of further study and suggested to include ROA and risk indicators, such as, portfolio at risk (PAR30) for complete picture. Subsequently, Kharti (2014) considered PAR30 along with other factors to determine the financial performance of MFIs in Morocco. Utilizing a panel data analysis, the author revealed that PAR30 and age of MFI are the main determinants of financial performance in regard to Moroccan MFIs. The study further concluded that MFIs can enhance their financial growth through reach out to women borrowers, increase employee productivity and enlarge the share of equity in total assets (Kharti, 2014).

Similarly, Nasrin *et al.* (2017) also asserted that outreach to female borrowers, serving more clients and increasing the average loans can significantly improve the financial performance. Their study focused on MFIs in Bangladesh over the period 2007–2013 using portfolio yield and profit margin as the financial performance indicators, but excluded other key financial performance indicators, such as, financial self-sufficiency (FSS), operational self-sufficiency (OSS) and return on assets (ROA) that may keep the findings ambiguous.

Additionally, Daher and Le Saout (2015) analysed a global dataset from 2005 to 2011 and identified that MFIs that have high credit portfolio quality, large assets, high capital-to-

assets ratio, low cost inefficiencies, large loans and high share of microcredit portfolios are financially outperformed. Moreover, the study also found that rural banks and MFIs located in Latin America and the Caribbean, or less developed countries with high institutional quality, and low dependence on external financial markets also gain better financial growth. The evidence of large loans found in the study (Daher & Le Saout, 2015) indicates that MFIs shift toward better-off clients that may causes mission drift. Despite a comprehensive use of various factors, the study did not include the interest rate indicator, whereas it is a key earning source of MFIs.

The easiest way to achieve better financial performance is charging high-interest rates. Roberts (2013) revealed that the average effective interest rate was 28.06 percent in his study, despite some other charged the annualized interest rate as high as 85 percent. Several studies confirmed that interest rate has a significant positive relationship with the financial performance (Kar & Swain, 2014). However, the same author also revealed that MFIs can implement better interest rate policy instead of imposing a high rate of interest and still can be profitable (Kar, 2011).

Some studies also found that association between size and the financial performance is negative (Kar & Swain, 2014). Though contradict evidence also available in this regard, where the size of MFI significantly influences the financial performance (Bogan, 2012; Cull *et al.,* 2007). In addition, Cull *et al.* (2007) and Nurmakhanova *et al.* (2015) also found that the MFIs' experience has a significant positive relationship with financial performance. On the other hand, counter-evidence reported that negative association between maturity and financial attainment (Ahmed *et al.*, 2016; Kar & Swain, 2014). The actual influence of size and maturity on the financial performance of MFIs is still ambiguous.

A recent study that critically analysed the role of age and size of MFIs on their financial performance found very convincing evidences. Wijesiri *et al.* (2017) used a two-stage data envelopment analysis (DEA) bootstrapped metafrontier approach and revealed that MFIs with longer market experience attain better financial growth than newly established ones and larger MFIs are more financially efficient. The authors further concluded that using traditional financial ratios are unable to reflect adequately MFIs' dependence on subsidies (Wijesiri *et al.*, 2017). Hence, several studies suggested to include subsidy indicator while examining the financial performance of MFIs (Kharti, 2014).

In addition to the above factors, the financial performance was also found to be explained by the governance, ownership and board characteristics (Hartarska, 2005; Mersland & Strøm, 2009; Mori & Mersland, 2011), or by the lending techniques (Armendáriz & Morduch, 2000; Cull *et al.*, 2007). However, limited attention has been given in the existing literature of the MFIs' financial performance on the institutions' type. The latest study that considered the legal status in examining the financial performance found that rural banks generate more profits in compared to its counterparts (Daher & Le Saout, 2015).

Kar and Swain (2014) distinguished several types of organisations in microfinance; such as, commercial bank, rural bank, non-bank financial institution, credit union, co-operative and non-profit non-governmental organisations. Bank among others are subjected to high regulatory and supervisory policies, thus, MFIs that follow banking regulation are allowed to collect deposits which increase institutions' fund and leads to better financial growth (Campion & White, 1999). Nasrin *et al.* (2017) identified similar connections between savings mobilization and the financial performance of MFIs in Bangladesh.

Mersland and Strøm (2009) however found no significant difference in the financial performance of NGOs and for-profit MFIs. Meyer (2015) on the contrary showed that NGOs, credit union and co-operative perform better financially relative to bank and non-bank

financial institution. This is perhaps because of managers in NGOs have greater autonomy, thus, they preserve dominating decision making authority (Tchakoute-Tchuigoua, 2010).

Mersland *et al.* (2011) investigated the linkage between network affiliation and the performance of microbanks using a global dataset from 73 developing countries for the period 2001-2008. The authors employed a panel data approach and found that network affiliation of microbanks to a large extend amplifies their social achievement, but fail to improve the financial performance. Conversely, another study argued that network membership can actually support MFIs in achieving institution's financial viability (Golesorkhi *et al.*, 2011).

2. Methodological approach

2.1. Data

The study followed by the quantitative research approach. Thus, the article used data from 57 microfinance institutions of the OIC member countries for 5 years; from 2011-2015. As a result, a cross-country panel data set has been constructed for this research. Individual MFI data were collected from the *Microfinance Information Exchange* or the MIX Market, a voluntary organisation that works as an information database for global microfinance institutions. Apart from that, data related to institutions' types and geographic location were abstracted from the *MicroBanking Bulletin* (MBB) – A MIX Market publication. Moreover, the country context data were retrieved from the *Work Bank* databank and checked with data of the *International Monetary Fund* (IMF).

The institutions were selected within the OIC countries based on the global ranking of MFIs suggested by the leading supervisory committee. The MFIs with at least 3-diamonds have been selected for this sample. Hence, the data set used in this study does not represent the whole microfinance industry in the OIC region. However, they are collectively serving a large number of microfinance clients globally. Honohan (2004) found that "the largest 30 microfinance firms account between them for more than 90 per cent of the clients served worldwide by the 234 top firms (and hence for more than three-quarters of those served by all of the 2572 firms reporting to the Microcredit Summit)." Thus arguably the MFIs' sample used in this study served majority of the clients in the OIC region during the examination period.

2.2. Variables

The dependent variables of this study are proxies for MFI performance used by previous researchers which include the Operational self-sufficiency (OSS), Return on Assets (ROA) and Profit Margin (PM). ROA and PM are widely used indicators to analyse financial performance or profitability of financial institutions, while OSS has been widely used in microfinance research. OSS is derived after dividing the operating income by the total of financial expense, operating expense and loan-loss expense. Thus, in the event where the value of OSS of MFIs is equal to or greater than one, it is implied that the institutions are able to cover all its administrative expenses and loan losses from its operating income. *Table 2* briefly explains all variables employed in the study.

Table 2. Variables descriptions

Variables	Definitions
OSS: Operational self-sufficiency	Financial Revenue / (Financial Expense + Impairment Losses on Loans + Operating Expense)
ROA: Return on Assets	(Adjusted Net Operating Income - Taxes) / Adjusted Average Total Assets
PM: Profit Margin	Adjusted New Operating Income / Adjusted Financial Revenue
Size	The natural logarithm of total assets in US$
Maturity	Years functioning as an MFI
CUC: Credit union and cooperative	A dummy that equals 1 if the legal status of the MFI is credit union or cooperative, 0 otherwise
NBFI: Non-bank financial institution	A dummy that equals 1 if the legal status of the MFI is non-bank financial institution, 0 otherwise
NGO: Non-governmental organisation	A dummy that equals 1 if the legal status of the MFI is an non-governmental organisation, 0 otherwise
Network	A dummy that equals 1 if the MFI is the member of national or international network, 0 otherwise
Inflation rate	Annual change in average consumer prices
GDP growth rate	Annual growth in the total output of goods and services occurring within the territory of a given country
Yield (nominal)	Adjusted Financial Revenue from Loan Portfolio / Adjusted Average Gross Loan Portfolio
SSA: Sub-Saharan Africa	A dummy that equals 1 if the MFI is in the Sub-Saharan Africa region, 0 otherwise
EAP: East Asia and the Pacific	A dummy that equals 1 if the MFI is in East Asia and the Pacific region, 0 otherwise
EECA: East Europe and Central Asia	A dummy that equals 1 if the MFI is in the East Europe and Central Asia region, 0 otherwise
MENA: Middle East and North Africa	A dummy that equals 1 if the MFI is in the Middle East and North Africa region, 0 otherwise
SA: South Asia	A dummy that equals 1 if the MFI is in the South Asia region, 0 otherwise

Source: Prepared by the authors.

2.2. Empirical Approach

The purpose of the benchmark regression is to explore the impact of institutional characteristics on the financial performance of microfinance institutions in the OIC member countries. The base regression explains the correlates of financial growth, focusing especially on the influence of institutions' size, maturity, types and membership in the network. As per our previous discussion on data, this study addresses the issue with a balanced panel dataset.

Several advantages of panel data have been stated in the econometric literature, which includes; granted a large number of data points, reduced the collinearity among explanatory variables and increased the degree of freedom that indicates an increased precision in estimation (Hsiao, 2014). In order to analyse panel data in this study, we assume the models are exogenous, homoscedastic, not stochastic, linear in function and have no exact linear relationship among explanatory predictors, hence the ordinary least squares is preferred, as suggested by econometric literature (Greene, 2008; Kennedy, 2008), and previous studies in microfinance (Cull *et al.*, 2007; Olivares-Polanco, 2005; Quayes, 2015).

Besides, we also assume that some of the basic assumptions of a linear regression analysis – such as, non-influence of outliers and normality, independence of observations and homoscedasticity of the residual distribution – are not adequately fulfilled in our analysis after taking care of almost all available measures including transformation of variables and so on. Though any empirical investigation may suffer from these common circumstances, and there are ways to solve these issues and strengthen the model against unruly data.

To address fully or partially unfulfilled fundamental assumptions, robust regression analysis provides a precise estimation than the ordinary least squares. Therefore, as a check on robustness to possible unfulfilled assumptions the Driscoll and Kraay (1998) *or DK standard errors* have been used in all estimations, that is robust to heteroscedasticity, autocorrelation and the general form of cross-sectional and temporal dependency (Driscoll & Kraay, 1998).

Despite Driscoll and Kraay (1998), Huber (1967), Eicker (1967), White (1980), and Newey and West (1987), all these covariance matrix estimating techniques are robust to certain violations of model assumptions in the regression, however the cross-sectional correlation is not considered in their methods (Eicker, 1967; Huber, 1967; Newey & West, 1987; White, 1980). Fortunately, Driscoll and Kraay (1998) propose a nonparametric covariance +matrix estimator that produces heteroscedasticity and autocorrelation-consistent standard errors that are robust to general forms of spatial and temporal dependence (Hoechle, 2007). Ordinary least squares with robust clustered standard error, Huber-White standard errors, and Newey-West standard errors are also run, but all of them came up with mostly similar coefficients. Hence, only robust estimation with Driscoll and Kraay (DK) standard errors is reported.

The measurement of financial performance can be estimated by the following equations:

$$OSS_{it} = a + \beta_1 Yield_{it} + \beta_2 Size_{it} + \beta_3 Maturity_{it} + \beta_4 CUC_{it} + \beta_5 NBFI_{it} + \beta_6 NGO_{it} + \beta_7 Network_{it} + \beta_8 Inflation_{it} + \beta_9 GDP_{it} + \beta_{10} Region_i + u_{it} \quad (1)$$

Where, *OSS* is the operational self-sufficiency ratio of microfinance institution *i*. *OSS* measures how well an MFI capable to cover its expenses from operating income it generates.

$$ROA_{it} = a + \beta_1 Yield_{it} + \beta_2 Size_{it} + \beta_3 Maturity_{it} + \beta_4 CUC_{it} + \beta_5 NBFI_{it} + \beta_6 NGO_{it} + \beta_7 Network_{it} + \beta_8 Inflation_{it} + \beta_9 GDP_{it} + \beta_{10} Region_i + u_{it} \quad (2)$$

Where, *ROA* is the return on assets ratio of microfinance institution *i*. The widely used profitability proxy *ROA* represents how well an MFI utilizes its total assets and operational revenues to bear costs or generate income.

$$PM_{it} = a + \beta_1 Yield_{it} + \beta_2 Size_{it} + \beta_3 Maturity_{it} + \beta_4 CUC_{it} + \beta_5 NBFI_{it} + \beta_6 NGO_{it} + \beta_7 Network_{it} + \beta_8 Inflation_{it} + \beta_9 GDP_{it} + \beta_{10} Region_i + u_{it} \quad (3)$$

Where, *PM* is the profit margin ratio of microfinance institution *i*. *PM* portrays the percentage of operating revenue remains after all financial, loan-losses provision, and operating expenses are paid. Both *Table 2* and *Table 3* show the construction of the mentioned measures and the summary statistics, respectively.

The *Yield* is the nominal gross portfolio yield, a proxy measure of interest rate charged by the MFIs on its clients, is explained in *Table 2*. The unadjusted yield for inflation (nominal) is a better proxy because MFI can determine the expected nominal interest rate need to be

charged, not the real interest rate. Though the real interest rate, which is adjusted for inflation (real gross portfolio yield) turns clear only *ex-post*. The matrix *Yield* employed in the model summarizes its effect on the *OSS*, *ROA* and *PM* respectively. The coefficient matrix β_2 includes size (natural logarithm of total assets) to explain its impact on the financial attainment. The purpose of using logarithmic value is to terminate possible heteroscedasticity (Quayes, 2012).

The coefficient matrix β_3 involves the maturity (natural logarithm of operating years) of MFIs to identify its influence on the financial progress. The maturity implies the total functioning years as an MFI. It has been observed that not all MFIs were established as micro-credit or microfinance institutions. There are MFIs which previously operated as traditional financial intermediaries and later transformed as microfinance institutions. The coefficient vectors β_4, β_5 and β_6 present the institutions' types; a set of dummy variables that include Credit Union and Co-operative (CUC), Non-bank financial institutions (NBFI) and Non-governmental organisations (NGOs) and summarize the effect on the financial growth.

The coefficient vector β_7 shows network membership. MFIs that maintain the membership within national or international association have been categorized in this matrix as dummy variables. The matrix *inflation* and *GDP* are included to control for the effect of financial viability, since the economic condition and the environment vary from country to country. Finally, the coefficient matrix β_{10} includes a set of dummy variables for each main region of the OIC member countries, with 'SA' as the omitted category. Regional dummies are employed to specify the MFIs' financial sufficiency in the different geography.

3. Analyses and Findings

3.1. Descriptive Analysis

The summary statistics in *Table 3* shows that the mean value of *OSS* is above 1, suggesting that the microfinance institutions in the OIC countries are doing well in terms of earning expenses-covering revenue. The summarized values of *ROA* vary between -0.18 to 0.18 and the mean value of 3.6 percent clearly indicates that the return on assets of a majority of the sampled MFIs is on the low end. *PM* ratio ranges within -0.54 to 0.61 and the mean value of 14 percent simply shows that most of the selected MFIs are attaining lower profit margins.

Table 3. Summary statistics

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
OSS	285	1.22	0.27	0.59	2.63
ROA	285	0.04	0.05	-0.18	0.18
PM	285	0.14	0.19	-0.54	0.62
Size	285	17.71	1.40	14.23	21.24
Maturity	285	17.72	10.22	5.00	65.00
Inflation	285	5.41	3.77	-3.75	18.69
GDP	285	4.61	2.67	-4.15	14.43
Yield	285	0.32	0.12	-0.06	0.66
Bank	285	0.16	0.37	0	1
CUC	285	0.16	0.37	0	1
NBFI	285	0.33	0.47	0	1
NGO	285	0.33	0.47	0	1
Other	285	0.02	0.13	0	1
Network	285	0.98	0.13	0	1

SSA	285	0.19	0.40	0	1
EAP	285	0.04	0.18	0	1
EECA	285	0.39	0.49	0	1
MENA	285	0.25	0.43	0	1
SA	285	0.14	0.35	0	1

Source: Authors' calculations, based on data from the MIX, MBB and World Bank.

The minimum, maximum and standard deviation values of the major explanatory variables other than the legal status, network membership and regional dummies again indicate their extensively disproportionate distribution within the OIC microfinance industry. The mean value of *Size* indicates that only 18 percent of all microfinance institution owns fixed assets. Hence, a remarkable number of MFIs assets are current and intangible in nature. In addition, the average functioning years as MFI in the sample are little over 17.5 years. Therefore, it can be said that the majority of sampled MFIs is relatively matured.

In terms of institutions' types, this study sample comprises equal shares for both NBFI and NGOs at above 33 percent each. Similarly, both the bank and credit union/co-operative also account equal portion of the sampled MFI at above 15 percent each, while another type of legal status shares less than 2 percent of the sample. The *Yield* rate is between -5.6 to 65 percent that simply referring sampled MFIs is quite disproportionately distributed. The average 31 percent nominal yield is indeed at the high end. In addition, an average of 4.6 percent GDP growth rate and 5.4 percent inflation rate are reflected toward economic normality of the nations, where sampled MFIs are located.

Furthermore, the study sample is reasonably balanced across the region shown in the summary statistics of *Table 3* with the possible exception of East Asia and Pacific (EAP). The highest percentage, which is 38 percent, comes from Eastern Europe and Central Asia (EECA) and 25 percent institutions come from Middle – East and Northern African region. Besides, 19 percent of the MFIs comprise of those from the Sub-Saharan African (SSA) OIC member countries, while MFIs from South Asia (SA) represent 14 percent of the sample and MFIs from East Asia and Pacific (EAP) represent 4 percent of the study sample. The study considers regions as dummy variables in the regression model to justify the financial performance of MFIs in different geographic context.

Table 4. Correlation between independent variables

	Yield	Size	Maturity	Bank	CUC	NBFI	NGO	Network
Yield	1							
Size	-0.2848*	1						
Maturity	-0.3834*	0.1408*	1					
Bank	0.1032	0.2924*	-0.3800*	1				
CUC	-0.4923*	-0.0588	0.2150*	-0.1875*	1			
NBFI	0.2633*	-0.2790*	-0.2332*	-0.3062*	-0.3062*	1		
NGO	0.0163	0.1227*	0.3354*	-0.3062*	-0.3062*	-0.5000*	1	
Network	0.1439*	0.1760*	-0.1142	0.0579	-0.3086*	0.0945	0.0945	1
Inflation	0.2788*	-0.0704	-0.1929*	0.2084*	-0.3674*	-0.0224	0.1781*	-0.0124
GDP	-0.0046	0.0487	-0.0567	0.1532*	0.0034	-0.0155	-0.0935	-0.0448
SSA	-0.0948	-0.0463	0.1249*	0.0321	0.6417*	-0.2515*	-0.2515*	0.0653
EAP	0.0342	-0.1256*	-0.002	-0.0826	0.1789*	0.0674	-0.1348*	-0.7008*
EECA	0.1773*	-0.0709	-0.5089*	0.2497*	-0.2445*	0.5096*	-0.4842*	0.1059

MENA	0.0103	-0.0226	0.2012*	-0.2471*	-0.2471*	-0.1441*	0.4611*	0.0762
SA	-0.1717*	0.2465*	0.3230*	-0.0365	-0.1750*	-0.2857*	0.4643*	0.054

Note: * indicates correlation is significant at the 5% level.

Table 4. Correlation between independent variables (continued)

	Inflation	GDP	SSA	EAP	EECA	MENA	SA
Inflation	1						
GDP	0.2296*	1					
SSA	-0.2739*	0.0894	1				
EAP	0.0176	0.0639	-0.0933	1			
EECA	0.1960*	0.074	-0.3877*	-0.1512*	1		
MENA	-0.1438*	-0.3471*	-0.2790*	-0.1088	-0.4524*	1	
SA	0.2053*	0.1910*	-0.1976*	-0.0771	-0.3203*	-0.2306*	1

Note: * indicates correlation is significant at the 5% level.

Table 4 presents the correlations between explanatory predictors. As per the table, many correlations are significant, but all are less than 0.8. Based on Kennedy (2008) there is no indication of multicollinearity issues here. Moreover, the variation inflation factor (VIF) for all the independent variables in the regression models is not greater than 10 as per *Table 5*, which rules out any problem of multicollinearity (Hair *et al.*, 2010).

Table 5. Variance inflation factor (VIF)

Variable	OSS		ROA		PM	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
EECA	5.11	0.195839	5.11	0.195839	5.11	0.195839
SSA	4.72	0.211715	4.72	0.211715	4.72	0.211715
CUC	4.15	0.240813	4.15	0.240813	4.15	0.240813
NGO	3.29	0.303895	3.29	0.303895	3.29	0.303895
EAP	2.91	0.343342	2.91	0.343342	2.91	0.343342
MENA	2.64	0.379455	2.64	0.379455	2.64	0.379455
NBFI	2.61	0.382959	2.61	0.382959	2.61	0.382959
Network	2.48	0.402447	2.48	0.402447	2.48	0.402447
Yield	2.12	0.471676	2.12	0.471676	2.12	0.471676
Maturity	1.77	0.564970	1.77	0.564970	1.77	0.564970
Inflation	1.48	0.676963	1.48	0.676963	1.48	0.676963
Size	1.43	0.700078	1.43	0.700078	1.43	0.700078
GDP	1.22	0.817162	1.22	0.817162	1.22	0.817162
Mean VIF	2.76		2.76		2.76	

Source: Authors' calculations, based on the study dataset.

3.2. Estimation results and discussions

Table 6 summarises the results of the analyses. The evidence indicates that high-interest rate charged is significantly associated with better financial growth. The coefficient for nominal gross portfolio yield (the measure of nominal interest rates on loans to clients) is significantly positive across all three financial performance indicators, indicating that MFI which charges a higher average interest rate tends to be more profitable and financially viable

compared to one who charged lower average interest rate. This result also supports the findings of Ayayi and Sene (2010), Cull *et al.* (2007), Kar (2011) and Kar and Swain (2014). However, referring to the agency problems of moral hazard, mainly in two ways the interest rates charged to the borrowers may affect the financial growth of MFIs. First, it impacts on the overall financial sustainability level, and second, it also affects loan delinquency rate.

Conversely, size of MFI is found to have a significant positive association with ROA and PM. Hence, the evidences indicate that larger MFIs attain better return on asset and profit margin. In addition, this study records a significant negative relationship between size indicator and operational self-sufficiency. This finding directly contradicts with that of Kar and Swain (2014), who found insignificant association between size and financial performance indicators. However, the finding supports to some extend the conclusion of Cull *et al.* (2007) that the size of MFIs has a very strong positive relationship with ROA, but their findings of OSS was opposite to this study.

In addition, MFI's maturity was found to has a significant and positive influence on the operational self-sufficiency and the return on assets. Our findings are in line with those of Ahlin *et al.* (2011), Ayayi and Sene (2010) and Nurmakhanova *et al.* (2015), hence, confirm that MFIs functioning for a longer period in the market have more experience that enhances their likelihood of obtaining better operational self-sufficiency and return on assets than MFIs that are newly established (Ahlin *et al.*, 2011; Ayayi & Sene, 2010).

The study also shows the presence of associations between different type of MFI and their financial performance. The coefficients for the credit union and cooperative (CUC), non-bank financial institution (NBFI) and non-governmental organisations (NGOs) are significantly positive in the model involving operational self-sufficiency, return on assets and profit margin. The only exception is noticed in the relationship between NBFI and OSS. It is therefore can be concluded that credit union and cooperative, non-bank financial institution and non-governmental organisations are more financially sustainable compared to their counterparts in the OIC countries. Our results are consistent with the findings of Bogan (2012), Meyer (2015) and Nurmakhanova *et al.* (2015).

Apart from that, the coefficients of network membership present statistically significant results across all the financial performance indicators. The evidence suggests that maintaining membership with the national or international network helps to enhance institution's operations and generate better profits. Our results are in line with the statement from Fitch rating agency that being a member of local or international network positively influences MFIs' rating (Fitch, 2009) which eventually supports them to attract donors, investors and monitory agencies with finance, consultancy and technical assistance which further enhance the financial growth of MFIs. The findings are also consistent with the results of Golesorkhi *et al.* (2011) that revealed network affiliation significantly increases the financial self-reliance.

Table 6. The financial performance of MFIs in the OIC countries

Variables	OSS	ROA	PM
Yield	0.483***	0.161***	0.460***
	(0.157)	(0.00729)	(0.0453)
Size	-0.0198***	0.00126***	0.00560*
	(0.00510)	(0.000409)	(0.00322)
Maturity	0.135***	0.0225***	0.0248
	(0.0438)	(0.00538)	(0.0521)
CUC	0.159**	0.0609***	0.197***

	(0.0631)	(0.00412)	(0.0223)
NBFI	-0.0168	0.0194***	0.0407***
	(0.0191)	(0.00191)	(0.0130)
NGO	0.141**	0.0359***	0.117**
	(0.0637)	(0.0111)	(0.0483)
Network	0.401***	0.0717***	0.167***
	(0.0444)	(0.00815)	(0.0287)
Inflation	0.0108***	0.00206***	0.00333
	(0.00146)	(0.000345)	(0.00366)
GDP	-0.00391**	-0.000568**	-0.00211
	(0.00151)	(0.000253)	(0.00127)
SSA	-0.271***	-0.0584***	-0.284***
	(0.0316)	(0.00360)	(0.0243)
EAP	0.127**	0.0246***	-0.00446
	(0.0629)	(0.00914)	(0.00774)
EECA	0.0742***	0.0136*	-0.00222
	(0.0231)	(0.00815)	(0.0447)
MENA	0.0206	0.00963	-0.0283
	(0.0605)	(0.00983)	(0.0605)
Constant	0.564***	-0.203***	-0.367**
	(0.184)	(0.0179)	(0.160)
R-squared	0.332	0.431	0.324
Observations	285	285	285

Note: All models are estimated via ordinary least squares with DK standard errors. Total assets and age of MFIs are in natural logarithmic form. Standard Errors are given in the parentheses. Statistically significant at the level where * $p<0.10$; ** $p<0.05$ and *** $p<0.01$.

In addition, this study reveals convincing evidences that MFIs in the inflationary economies attain better operational self-sufficiency and return on assets. Likewise, Nurmakhanova *et al.* (2015) revealed complying findings of the positive relationship between inflation and financial enhancement with Hartarska and Nadolnyak (2007); the authors asserted that MFIs today have developed safeguards to operate consistently even in an inflationary environment (Hartarska & Nadolnyak, 2007). On the other hand, GDP growth rate has inverse relation with financial performance indicators, especially with OSS and ROA. These evidences also in line with Nurmakhanova *et al.* (2015) that identified that GDP growth rate is highly significant and negatively related to financial performance.

The regional dummies allow additional empirical evidence on the variation in MFI performance across different geographic location. The negative and highly significant coefficients for the SSA across all models in *Table 6* indicate that MFIs in Sub-Saharan African region attain lower financial sustainability in comparison to their counterparts. Conversely, MFIs in the EAP and EECA region show a significant positive relationship with the operational self-sufficiency and return on assets. Therefore, this study shows that MFIs in East Asia and Pacific and MFI in East Europe and Central Asia financially outperformed their counterparts. The coefficients for MENA region are not statistically significant.

Conclusion

This study attempts to reveal the impact of institutional characteristics on the financial performance of the microfinance institutions in the OIC member countries. The findings in this study clearly indicate that MFIs that charge a high interest rate on loans to customers are

more profitable and financially viable. Despite the fact of financial sustainability, we suggest MFIs must be in line with ethical operations and good management. The unethical hunger of profit growth by charging high-interest rates may result in mission drift. The government should overcome this by imposing an annual interest rate cap for MFIs to avoid future incidents like the Andhra Pradesh crisis.

Moreover, long existed and experienced MFIs tend to attain better operational self-sufficiency and return on assets. As MFIs get maturated they become more efficient, since they learnt to deal with issues in the industry. In addition, the study reveals that larger MFIs attain higher return on assets and profit margin, but they might lose their operational self-sufficiency.

Legal status of MFIs is another factor that affects institutional performance. These legal barriers also vary in different countries. For instant; MFIs in many countries is allowed to take deposits, similarly it is also strongly prohibited in some others. This study confirms that credit union and cooperatives, non-bank financial institutions and non-governmental organisations outperformed across majority of the financial performance indicators, except an insignificant correlation between NBFI and OSS.

The study also found that being a member of the national or international network boost financial progress. Membership in networks facilitates MFIs to increase their rating and attract institutional investors and agencies to invest in finance, technical assistance and consultancy. We also control our models with macroeconomic variables to justify the output from the county context. Our study identifies that MFIs in inflationary and least developed economies attain better financial performance. Finally, the regional dummies indicate that MFIs in Sub-Saharan African region performs lower profitability.

Future studies may look into lending methodology and board committees of MFIs. Previous studies already have addressed few aspects of governance in achieving better financial performance in MFIs; however, there are still rooms for further investigation, such as, individual characteristics of board members. Moreover, portfolio quality, especially credit risk issue in MFIs needs further attentions.

Lastly we would like to emphasise that the mission of microfinance is not to gain financial independence by overlooking its social obligations. It is important for any MFI to balance their mission in order to achieve mutual objectives. MFIs may still get its financial viability by improving efficiency in cost reduction, rather just increasing interest rates. Since recent evidence indicates that charging high-interest rates is the preferable way of managing administrative and operational expenses and obtains financial independence, the debate of mission drift is reignited again. Therefore, our study indicates that to address this emerged issue will be an ongoing challenge.

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