

Efficiency and Performance of Microfinance Institutions in Emerging Market after Global Financial Crisis

¹Anjali Prava Mishra, ²Debasis Pahi, ³Pruthiranjana Dwibedi, ⁴Antarjyami Sahu

¹Ph.D Research Scholar, School of Social, Financial & Human Sciences,
KIIT Deemed to be University, Bhubaneswar-24, Odisha, India
anjalipravamishra@gmail.com

²Assistant Professor-II, School of Social, Financial & Human Sciences,
KIIT Deemed to be University, Bhubaneswar-24, Odisha, India
drdebasis.research@gmail.com (Corresponding Author)

³Ph.D Research Scholar, School of Social, Financial & Human Sciences,
KIIT Deemed to be University, Bhubaneswar-24, Odisha, India
pruthi.ranjan95@gmail.com

⁴Ph.D Research Scholar, School of Social, Financial & Human Sciences,
KIIT Deemed to be University, Bhubaneswar-24, Odisha, India
antarjyami09.research@gmail.com

ABSTRACT

Microfinance Institutions (MFIs) play a crucial role in promoting financial inclusion and socioeconomic advancement, particularly in emerging markets. This study seeks to assess the diverse efficiency and performance aspects of Indian MFIs using Data Envelopment Analysis (DEA). The evaluation covers financial, social, and overall technical efficiency, offering a comprehensive analysis. Data for the research is sourced from the MIX data repository, encompassing 77 Indian MFIs over a span of 9 years from 2010 to 2018 covering the performance of MFIs after Global Financial Crisis. The findings obtained from the DEA Malmquist Index indicate that the efficiency and performance of Microfinance Institutions (MFIs) are significantly influenced by factors such as legal status, profit orientation, and size. The results suggest that aligning with specific internal factors allows MFIs to potentially contribute to societal development through the implementation of appropriate policies.

Keywords: *Microfinance Institutions (MFIs), Data Envelopment Analysis (DEA), Financial Efficiency, Social Efficiency, Technical Efficiency*

1. INTRODUCTION:

Microfinance Institutions (MFIs) have played a pivotal role in shaping India's financial landscape, particularly in meeting the financial requirements of the under served and economically marginalized segments. The contribution of MFIs in India to financial inclusion is noteworthy, as they provide credit and financial services to individuals excluded from the formal banking sector (Pal, 2010). This has resulted in enhanced income generation, improved living standards, and empowerment, particularly among rural women. Despite their positive impact, the rapid expansion of MFIs in India has encountered challenges, including issues related to interest rates, over-indebtedness, and aggressive loan recovery practices (Vanroose, & D'Espallier, 2013). These challenges have prompted debates on the ethical and responsible lending practices of MFIs. Consequently, studying the efficiency of Indian Microfinance Institutions (MFIs) is imperative for several reasons, offering valuable insights into their operations, impact, and long-term viability. Evaluating the efficiency of MFIs is instrumental in appraising their success in accomplishing financial inclusion goals. By scrutinizing their functions, one can assess how effectively MFIs are reaching and catering to marginalized and economically vulnerable demographics (Mia, & Soltane, 2016). Efficiency analyses facilitate the identification of how well MFIs allocate and employ resources, encompassing capital, human resources, and technology (Hartarska et al., 2007). This data holds paramount importance in optimizing resource distribution and enhancing the overall efficacy of microfinance operations. The evaluation of efficiency offers valuable insights into the sustainability of diverse microfinance models (Vanroose et al., 2013). An understanding of MFIs' efficiency aids stakeholders in making well-informed decisions regarding resource allocation for maximal impact (Widiarto, 2015). Moreover, it sheds light on

ethical considerations within the microfinance sector, specifically pertaining to interest rates, equitable lending practices, and the prevention of client over-indebtedness.

In addition, the 2008 Global Financial Crisis (GFC) had a big effect on the world economy, which included developing nations like India. The Great Financial Crisis (GFC) revealed weaknesses in the microfinance industry, including over-indebtedness among borrowers and reliance on short-term funding. For MFIs to efficiently continue serving their clients, they must maintain a stable financial position. MFIs may reach a larger clientele and offer a greater range of services by using research to find methods to increase profitability and efficiency. Studies may pinpoint elements including ownership structure, the regulatory landscape, and risk management techniques that influenced MFI performance both during and after the Great Financial Crisis. This information can help build a more resilient microfinance industry and guide policy initiatives. In this study, we are trying to finding out the answer to some the research questions like i.e does the legal status of firms impact the efficiency of Indian MFIs? Is the profit orientation of firms a determining factor for the efficiency of Indian MFIs? Which MFIs, categorized by size, exhibit superior performance in different dimensions of outreach? What are the various factors influencing the efficiency and performance of Indian MFIs?.

The findings obtained from the DEA Malmquist Index indicate that the efficiency and performance of Microfinance Institutions (MFIs) are significantly influenced by factors such as legal status, profit orientation, and size. We found banks are consistently exhibit higher financial, social and Overall technical efficiency compared to NBFI and NGO. As per the profit orientation analysis it is noticed that the Profit Making MFIs consistently outperforming Non-Profit Making MFIs in financial, social and Overall technical efficiency. And finally organizational size wise study reveals large-sized banks demonstrating the highest technical efficiency compared to profit-making firms classified as NGOs and NBFIs. The results suggest that aligning with specific internal factors allows MFIs to potentially contribute to societal development through the implementation of appropriate policies.

The subsequent sections of the article are organized as follows: Section 2 provides a review of existing literature, while Section 3 delves into the research methodology, detailing data, variables, and study hypotheses. Section 4 presents the results and discussions, and the final section, Section 6, offers the study's implications and conclusion.

2. LITERATURE REVIEW

As social and financial entities, MFIs must consistently prioritize their social as well as financial performance, which is a key aspect explored in existing literature. A critical dimension of this analysis is the efficiency assessment of MFIs, measuring their capacity to produce outputs. Efficiency is often evaluated through Data Envelopment Analysis (DEA), comparing the performance of an MFI with the best-performing one through frontier analysis. MFIs on the frontier line are deemed efficient in providing diverse financial products and services to clients.

The distance between this frontier and the area below it indicates the extent of inefficiency, with a predominant focus on cost efficiency in microfinance literature. Notably, not-for-profit MFIs typically outperform their for-profit counterparts in terms of social performance, as serving the poor aligns with their core objectives (Tchakoute-Tchuigoua, 2010). However, literature also presents evidence of for-profit MFIs exhibiting higher social performance when coupled with better financial strength acquired through profitable operations.

The legal status of MFIs significantly influences their social performance, with regulatory frameworks differing for for-profit (e.g., NBFC, NBFC-MFI) and not-for-profit (e.g., societies, trusts, local area banks, cooperatives) institutions (Nayak et al., 2023). Not-for-profit MFIs generally exhibit higher social performance, while stringent regulations may negatively impact the social performance of for-profit counterparts. Regulation-compliant MFIs must adhere to prescribed rules, maintaining minimum net worth and assets as per regulatory requirements (Barry & Tacneng, 2014). This can lead to a standardized financial performance, potentially causing mission drift and reduced social performance. However, evidence also exists of for-profit MFIs surpassing not-for-profit counterparts in social performance, as financial strength contributes to more efficient social responsibility fulfillment.

The size of MFIs is another crucial factor affecting performance, as larger institutions possess greater financial resources to serve clients effectively, (Engels, 2009). Several studies such as- Cull et al. (2009), D'Espallier et al. (2013), Gutiérrez-Nieto et al. (2009) have confirmed better social performance scores of not-for-profit MFIs compared to their for-profit counterparts. Economies of scale enable larger MFIs to expand their financial products and services across various geographical areas, benefiting from improved resource allocation. However, literature suggests that larger size

may have a negative impact on the social performance of MFIs (Wijesiri, 2017). As they grow, diversification into ancillary businesses and risky activities may occur, limiting their ability to take additional risks in lending to the economically disadvantaged. This study aims to analyze the influence of various institution-specific factors on the social performance of MFIs, focusing on a unique set of independent variables.

Microfinance, as a potent tool for addressing poverty, targets underserved populations and provides a range of financial and non-financial services (Fisher, et al., (2002) & Nghiem, (2006). To contribute more effectively to India's economic development, MFIs in the country must prioritize performance improvement. This research endeavor aims to scrutinize the determinants impacting the efficiency and performance of Microfinance Institutions (MFIs) in India, with a specific focus on various internal factors inherent to these institutions. The factors under investigation include legal status, profit orientation, and the size of the firms. The meticulous examination of each of these elements and their subsequent influence on performance is of paramount importance, contributing to the existing body of literature by underscoring their pivotal role in augmenting the performance standards of Indian MFIs. The followings are the objectives of the study.

1. To investigate how the legal status of firms influences the financial and social efficiency of Indian Microfinance Institutions (MFIs).
2. To examine the relationship between the profit orientation of firms and the dual dimensions of financial and social efficiency in Indian MFIs.
3. To assess the effects of the size of firms on the financial and social efficiency of Indian Microfinance Institutions (MFIs).

Following a comprehensive review of the literature, we formulate our hypotheses as follows:

H₀₁: The legal status of a firm does not exert a significant influence on the performance of Microfinance Institutions (MFIs).

H₀₂: The profit orientation of a firm does not have a noteworthy impact on the performance of Microfinance Institutions (MFIs).

H₀₃: The size of a firm does not significantly affect the efficiency of Microfinance Institutions (MFIs).

3. RESEARCH METHODOLOGY

The study employs secondary data encompassing a span of 9 years (2010 to 2018) from 77 Indian MFIs out of a total of 250 operating in India. The selection of these 77 MFIs is based on the availability of information on both dependent and independent variables. The data utilized is sourced from MIX market financial data, Sadhan reports, annual reports of individual MFIs, and other relevant sources. The study employs a datasets comprising financial and social performance metrics gathered from MIX Market database. Furthermore, the research integrates these financial and social dimensions into an overall technical efficiency framework, providing a holistic evaluation of MFI performance.

The research methodology relies on DEA, a non-parametric technique capable of evaluating the relative efficiency of multiple decision-making units by comparing their inputs and outputs (Sedzro, 2009; Haq, 2010; Widiarto, 2015). DEA is the chosen technique for measuring the efficiency of Indian MFIs, with the obtained efficiency score serving as the dependent variable for analysis. Ten indicators, derived from input-output combinations, are utilized for generating the efficiency score. These indicators draw on the works of Gutierrez-Niéto et al. (2009), Ahlin et al. (2011), Hermes et al. (2011), and Wijesiri (2016). This comprehensive approach aims to capture the nuanced interactions between financial sustainability and social impact within the microfinance sector. The utilization of Data Envelopment Analysis (DEA) as a predictive model in the analysis of performance holds promising advantages for MFIs in the management of diverse aspects related to performance enhancement.

Table 1: DEA Input-Output Variables

Input	Initial	Unit
Total Assets	ta	USD
Borrower Per Loan Officer	bplo	Number
Cost Per Borrower	cbp	USD
Operational Expenses	oexp	USD

Number Of Personnel	prsl	Number
Output (Financial Sustainability)		
Financial Revenue	fr	USD
Operational Self-Sufficiency	oss	%
Output (Social Outreach)		
Gross Loan Portfolio	glp	USD
Number of Active Borrowers	nab	Number
Number of Loan Outstanding	nlout	Number/Clients
MFIs Characteristics		
Firms Size	s	Total Assets

Source: MIX Market, compiled by author

4. DATA ANALYSIS & DISCUSSION

This section outlines the approach of using Categorical Output-Based Data Envelopment Analysis (DEA) and provides a concise overview of the input and output variables employed in our research model. The following table examines the legal status-wise efficiency differences among Indian Microfinance Institutions (MFIs) using the Malmquist Index.

Table 2 contains legal status-wise efficiency score and we have considered 74 MFIs from the total Indian MFIs over the period 2011-2018. The analysis categorizes MFIs into three legal statuses: Bank (N=9), Non-Banking Financial Institutions (NBFI) (N=42), and Non-Governmental Organization (NGO) (N=23). The study focuses on Financial Efficiency (Panel A), Social Efficiency (Panel B), and Overall Efficiency (Panel C) to provide insights into the dynamic efficiency trends within each legal status category.

Table 2: Legal Status Wise Malmquist Index Summary of Indian MFIs

Panel A: Financial Efficiency						
year	Bank (N=9)		NBFI (N=42)		NGO (N=23)	
	TEC	TFPC	TEC	TFPC	TEC	TFPC
2011	1.148	1.232	0.988	0.977	1.021	0.87
2012	0.999	0.89	1.046	0.934	1.067	1.017
2013	0.977	0.934	0.977	0.937	1.031	0.903
2014	1.025	1.111	1.07	1.013	0.99	1.073
2015	0.992	1.129	0.968	0.985	0.92	1.006
2016	1.008	0.875	0.912	1.097	1.089	1.067
2017	0.997	1.34	1.077	1.046	1.036	0.989
2018	0.97	0.828	1.026	1.052	0.927	0.987
mean	1.013	1.028	1.006	1.004	1.008	0.987
Panel B: Social Efficiency						
2011	1.109	1.213	1.046	0.968	1.01	0.945
2012	0.988	0.984	0.956	0.982	0.946	0.976
2013	0.99	1.107	0.836	1.056	0.986	1.039
2014	1.017	1.193	1.187	1.008	1.017	1.148
2015	0.927	1.165	0.834	1.099	0.874	1.072
2016	1.082	1.164	1.138	1.078	0.932	0.976
2017	1.007	1.141	1.134	1.01	0.774	0.842
2018	0.993	1.298	0.691	1.242	1.184	1.197
mean	1.013	1.155	0.963	1.052	0.959	1.019
Panel C: Overall Efficiency						
2011	1.069	1.146	0.988	0.922	0.979	0.834
2012	1	0.92	1.006	0.935	1.016	0.968

2013	0.994	1.034	0.963	0.991	0.987	0.945
2014	1.006	1.11	1.054	0.983	1	1.104
2015	0.992	1.143	0.961	1.074	0.979	1.114
2016	1.008	0.924	0.977	1.022	1.015	0.995
2017	1	1.173	1.065	1.035	1.028	1.019
2018	1	1.019	0.972	1.224	0.956	0.983
mean	1.008	1.054	0.998	1.02	0.995	0.991

Note: Bank= Commercial Bank, NBFi= Non-Banking Financial Institutions, NGO= Non-Governmental Organization, Technical efficiency change (TEC), Total factor productivity change (TFPC) and N= no. of firms
Source: Authors own calculation based on the data from MIX Market

Panel A presents variations in financial efficiency across different legal statuses. Banks consistently exhibit higher technical efficiency change (TEC) and total factor productivity change (TFPC) compared to NBFi and NGO. The mean TEC for Banks is 1.013, indicating an improvement in financial efficiency over the study period. NBFi and NGO show fluctuations in TEC and TFPC, suggesting varying levels of financial efficiency changes. Overall mean values suggest marginal differences in financial efficiency between the legal statuses. Panel B explores social efficiency trends among legal statuses. Banks consistently outperform in social efficiency, with a mean TEC of 1.013 and a mean TFPC of 1.155, indicating improvements in both technical efficiency and total factor productivity. NBFi and NGO display mixed trends, with varying levels of social efficiency changes. The results suggest that Banks maintain a competitive edge in social efficiency over the study period.

Panel C integrates financial and social efficiency measures to provide an overall efficiency perspective. Banks again show consistent and higher overall efficiency compared to NBFi and NGO, with a mean TEC of 1.008 and a mean TFPC of 1.054. NBFi and NGO exhibit fluctuations, indicating varying levels of overall efficiency changes. The overall mean values suggest that Banks maintain a relatively stable level of overall efficiency, as they adopt innovative financial and operational practices. This could include leveraging technology for streamlined operations, implementing effective risk management strategies, and introducing new financial products.

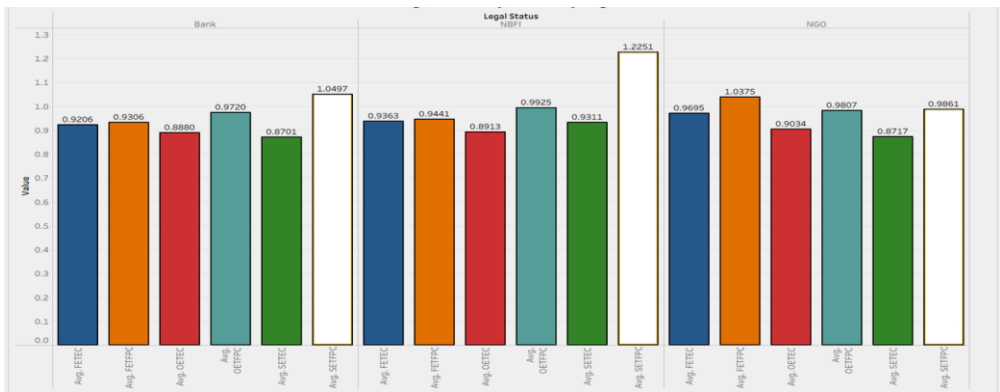


Figure 1: Average Efficiency Scores by Legal Status wise of Indian MFIs

Source: Author's Compilation through Tableau

Figure 1 reveals significant legal status-wise differences in efficiency dynamics among 74 Indian MFIs. Banks consistently demonstrate higher levels of financial, social, and overall efficiency, suggesting a stable and competitive position in the microfinance sector. NBFi and NGO, while exhibiting varying levels of efficiency changes, do not match the consistently high efficiency levels of Banks. These results provide insights into the comparative performance of different legal status MFIs in India. Policymakers and stakeholders can utilize these insights to formulate targeted strategies for different legal status categories to enhance overall efficiency in the microfinance sector.

Table 3: Profit Orientation-wise Malmquist index summary of Indian MFIs

year	Profit Making MFIs (N=52)			Non-Profit Making MFIs (N=24)		
	OE	FE	SE	OE	FE	SE

	TEC	TFPC	TEC	TFPC	TEC	TFPC	TEC	TFPC	TEC	TFPC	TEC	TFPC
2011	1.006	0.935	1.033	0.985	1.079	0.988	0.979	0.825	1.027	0.862	1.037	0.973
2012	1.016	0.931	1.073	0.913	0.935	0.977	1.004	0.995	1.045	1.055	0.941	0.98
2013	0.982	0.99	1.008	0.937	0.872	1.068	0.984	0.949	1.007	0.907	0.96	1.005
2014	1.036	1.002	1.04	1.033	1.175	1.022	1.006	1.107	1.003	1.083	1.001	1.105
2015	0.978	1.045	1.001	0.967	0.82	1.113	1	1.11	0.992	1.031	0.857	1.068
2016	0.971	1.049	0.899	1.106	1.152	1.065	0.985	0.964	1.002	0.993	0.956	1
2017	1.065	1.009	1.067	1.021	1.136	1.008	1.019	1.025	1.031	0.995	0.802	0.88
2018	0.954	1.27	1.008	1.065	0.693	1.25	0.969	1.101	0.961	1.024	0.934	1.44
mean	1	1.024	1.015	1.002	0.968	1.058	0.993	1.005	1.008	0.991	0.933	1.046

Note: OE= Overall Efficiency, FE= Financial Efficiency and SE= Social Efficiency, technical efficiency change (TEC), Total factor productivity change (TFPC) and N= no. of firms
Source: Authors own calculation based on the data from MIX Market

Table 3 examines the profit orientation-wise efficiency differences of categorized MFIs into Profit Making MFIs (N=52) and Non-Profit Making MFIs (N=24). We have considered 76 MFIs for finding Profit motive wise efficiency score from the total Indian MFIs taken for the study. Profit Making MFIs consistently demonstrate a higher overall efficiency (OE) compared to Non-Profit Making MFIs over the study period. The mean OE for Profit Making MFIs is 1.024, indicating a slight improvement in overall efficiency. Non-Profit Making MFIs, on the other hand, show relatively stable overall efficiency levels, with a mean OE of 1.005. The results suggest that Profit Making MFIs maintain a competitive edge in terms of overall efficiency.

Financial Efficiency (FE) and Social Efficiency (SE) reveals similar notable differences between profit orientations. Profit Making MFIs consistently outperforming Non-Profit Making MFIs. The mean FE for Profit Making MFIs is 1.002, indicating improvements in financial efficiency over the study period. Non-Profit Making MFIs exhibit a mean FE of 0.968, suggesting stability but with a slightly lower level of financial efficiency compared to their profit-making counterparts. Profit Making MFIs consistently exhibit higher SE, with a mean of 1.058, indicating improvements in social efficiency. Non-Profit Making MFIs show a mean SE of 1.046, suggesting stability but with a lower level of social efficiency compared to Profit Making MFIs.

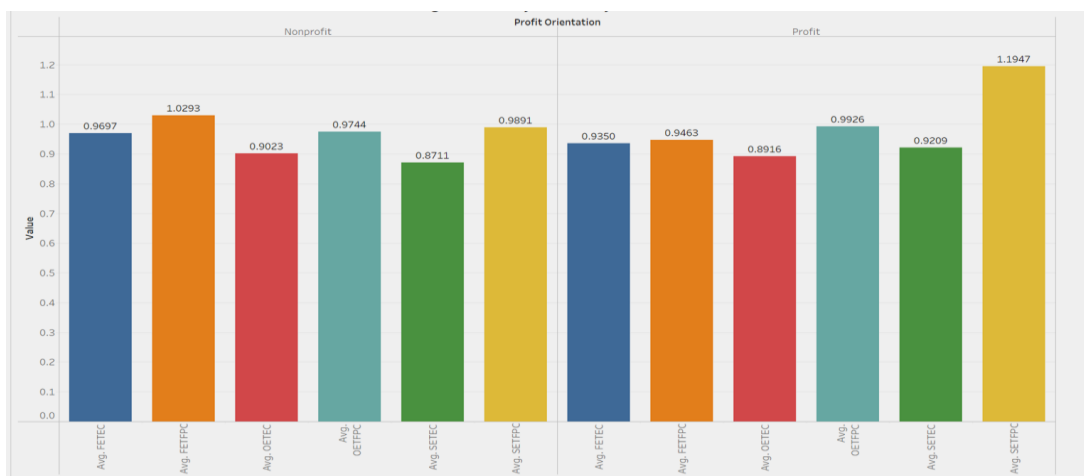


Figure 2: MFIs Average Efficiency Scores by Profit Orientation

Source: Author's Compilation through Tableau

Figure 2 indicates significant profit orientation-wise differences in efficiency dynamics among Indian MFIs. Profit Making MFIs consistently outperform their Non-Profit Making counterparts in terms of overall, financial, and social efficiency. This suggests that the pursuit of profit in the microfinance sector is associated with higher levels of efficiency. High-efficiency Profit Making MFIs typically have strong governance structures and effective leadership. This ensures that organizational goals are aligned with the mission of financial inclusion and poverty alleviation.

Policymakers and stakeholders can leverage these insights to tailor strategies and support mechanisms to enhance efficiency in both profit-making and non-profit-making MFIs, fostering a more sustainable microfinance sector.

Table 4 presents Malmquist index summary of annual means for Indian MFIs. The table includes data for the years 2011 to 2018, with a total of 77 firms (N=77). The table reports Overall firms efficiency scores. The results indicate variations in efficiency measures over the years for the Indian MFIs. Overall, the mean values for the efficiency components are reported at the bottom row of the table 4. The mean values for the entire period (2011 to 2018) reveal that the Indian MFIs, on average TFPC, have an Overall Efficiency (OE) of 1.026, Financial Efficiency (FE) of 1.007, and Social Efficiency (SE) of 1.056. These findings suggest that, on average, Indian MFIs have experienced fluctuations in their efficiency components over the studied period. The variations in Technical Efficiency Change and Total Factor Productivity Change contribute to the observed changes in Overall Efficiency, Financial Efficiency, and Social Efficiency.

Table 4: Indian MFIs Malmquist index summary of Annual Mean (N=77)

year	OE		FE		SE	
	TEC	TFPC	TEC	TFPC	TEC	TFPC
2011	0.978	0.905	1	0.95	1.051	0.975
2012	1.016	0.953	1.077	0.939	0.918	0.985
2013	0.981	0.961	1.023	0.923	0.861	1.044
2014	1.019	1.037	1.03	1.066	1.17	1.061
2015	0.947	1.099	0.931	1.017	0.807	1.115
2016	0.972	1.018	0.937	1.086	1.151	1.034
2017	1.057	1.052	1.093	1.062	0.928	0.978
2018	0.936	1.217	0.945	1.031	0.64	1.295
Mean	0.988	1.026	1.003	1.007	0.925	1.056

Note: OE= Overall Efficiency, FE= Financial Efficiency and SE= Social Efficiency, TEC= technical efficiency change, TFPC= total factor productivity change and N= no. of firms

Source: Authors own calculation based on the data from MIX Market

The below Figure examines the average Technical Efficiency Change (TEC) and Total Factor Productivity Change (TFPC) of Microfinance Institutions (MFIs) in India, taking into account their Legal Status, Profit Orientation, and Firm Size.

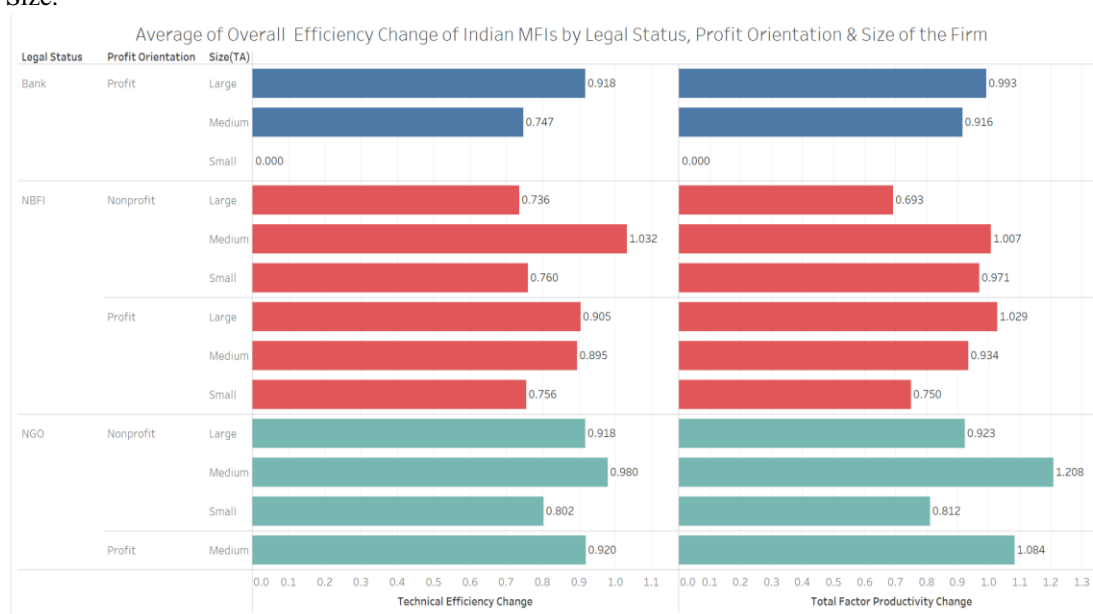


Figure 3: Average of Overall TEC and TFPC of Indian MFIs by Legal Status, Profit Orientation & Size of the Firms

Source: Author's Compilation through Tableau

Figure 3 reveals Large-sized banks exhibit the highest TEC (0.918) compared to profit-making firms classified as NGOs and Non-Banking Financial Institutions (NBFI). However, concerning TFPC, large-sized profit-making NBFI firms demonstrate the highest productivity efficiency (1.029) compared to other categories. The analysis indicates that medium-sized profit-making NGOs exhibit superior efficiency scores, with TEC at 0.920 and TFPC at 1.084. Additionally, it is noteworthy that small-sized profit-making NBFI firms are the only ones operating efficiently. Furthermore, non-profit-making medium-sized NBFI firms tend to outperform other MFIs in both TEC and TFPC. Irrespective of their size, successful MFIs may diversify their services to cater to a broader range of clients. This could involve offering various financial products, training programs, and support services tailored to the specific needs of their target communities.

5. FINDINGS

Based on the results of the MFIs efficiency analysis we got major findings that the banks are consistently exhibit higher financial, social and Overall technical efficiency compared to NBFI and NGO. It shows Legal status of a MFI has significant influence on the performance of the firm. And Profit Making MFIs consistently outperforming Non-Profit Making MFIs in financial, social and Overall technical efficiency. The study also highlights the notable influence of profit orientation on the performance of MFIs. Profit-making MFIs consistently exhibit superior financial, social, and overall technical efficiency compared to their non-profit-making counterparts. Furthermore, the study reveals that the size of financial institutions matters, with large-sized banks demonstrating the highest technical efficiency compared to profit-making firms classified as NGOs and NBFIs. The findings of this study contribute to the existing body of knowledge on the performance of Indian MFIs, offering insights for policymakers, practitioners, and researchers. By identifying best practices and areas for improvement. This research seeks to inform strategies that enhance the effectiveness of MFIs in achieving both financial sustainability and social impact in the context of India's dynamic economic landscape.

6. CONCLUSION

This study advances the literature on MFI efficiency by investigating the impacts of legal status, profit orientation and size on all financial, social and overall efficiency dimensions. Because the sample of MFIs in our study is from India, estimating a single frontier for the whole sample assuming that all MFIs use the same technology. We use the DEA method for the efficiency estimation. This underscores the importance of financial sustainability and profit motives in driving the overall effectiveness of microfinance institutions. The analysis of Indian MFIs indicates a commendable overall efficiency, financial efficiency, and social efficiency, suggesting a strong and consistent performance over the years. This positive trend reflects the effectiveness of the microfinance sector in India in achieving its financial and social objectives.

Furthermore, the study reveals that the size of financial institutions matters, with large-sized banks demonstrating the highest technical efficiency compared to profit-making firms classified as NGOs and NBFIs. Medium-sized profit-making NGOs also exhibit superior efficiency scores, particularly in total factor productivity change (TFPC). Interestingly, small-sized profit-making NBFIs are the only category operating efficiently among smaller entities.

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