Future Business Journal

REVIEW

Open Access

A systematic review of gender diversity and its impact on the performance of Microfinance Institutions

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Abstract

This study aims to consolidate the available knowledge on gender diversity and its impact on the dual performance (social and financial) of Microfinance Institutions (MFIs). We specifically focus on MFIs due to their distinctive nature compared to other industries, being traditionally women-centered and having a substantial representation of women employees across all levels of the corporate hierarchy. To conduct this comprehensive analysis, we employed a systematic review approach, meticulously selecting 24 relevant papers from the Scopus and Web of Science databases. Our findings revealed that research on gender diversity in MFIs primarily focuses on the board level. However, existing studies present conflicting results, suggesting that the impact of gender diversity on MFI performance is nuanced and complex. This complexity stems largely from the varying roles women play within the organizational structure. Furthermore, our analysis highlights the influence of additional factors, such as the database used, the study's context, and its geographical location, on the reported outcomes. Notably, research on gender diversity at the managerial and loan officer levels remains scarce, presenting a significant gap in the current body of knowledge. To further illuminate this field, this study identifies the most influential papers on the topic of gender diversity in microfinance. Additionally, we provide a co-authorship network analysis, visualizing the connections between existing research. This analysis provides valuable insights and inspiration for future research endeavors in this critical area.

Keywords Gender diversity, Financial performance, Social performance, Social outreach, Microfinance Institutions

Introduction

Microfinance has been hailed as one of the important tools for poverty alleviation, entrepreneurship promotion, and socioeconomic development in developing countries since the mid-1970s. Initially aimed at serving underprivileged rural populations without access to conventional banking, the tangible effects of microfinance programs on the poor and unbanked have led to their expansion across over 120 countries. This growth has been fueled by donations and subsidies from governments, donors, and multinational development banks, such as the African Development Bank and World Bank [32, 59, 65, 66, 83, 111].

Recognizing the unsustainability of relying on donations and subsidies for operational costs or expansion [99, 101], MFIs have embraced a secondary objective: achieving operational and financial self-sufficiency through improved financial performance. As such, most modern MFIs are faced with two (dual) objectives, namely social outreach and financial sustainability [6]. This translates to providing financial services to the unbanked and

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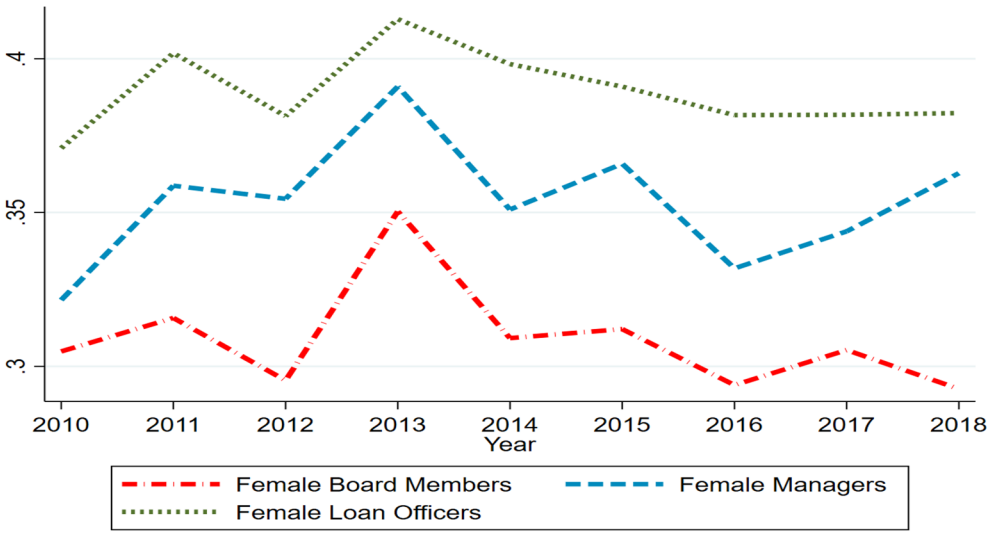

Fig. 1 Proportion of females in various organizational ladders of the microfinance industry, global, 2010–2018. Source: Authors based on the World Bank-MIX Market data. Note: There is no data on gender diversity before 2010, and information became accessible for most companies in 2010 after the financial crisis. Each gender diversity variable was winsorized at the 5% levels to address extreme outliers. The data is shown in both average and percentage forms

poorer members of society while generating sufficient revenue to cover operating costs [21, 93, 102]. Identifying factors that influence this dual performance has become a key focus for academics, practitioners, and policymakers [56].

Over the past few decades, a vast empirical literature has investigated the factors affecting either of the dual goals of MFIs, such as age [31, 113, 120], size [7, 45], ownership status [65, 66, 98], gender [44, 55], efficiency [5, 37], and governance [10, 15, 52, 104]. Additionally, research suggests that beyond internal factors and organizational characteristics, country-level and macroeconomic factors also play a role in MFI performance [10, 122]. However, as per our knowledge, research on the role of gender diversity in the performance of MFIs remains limited, although gradually increasing.

The increasing focus on gender equality, enshrined as the fifth United Nations' Sustainable Development Goals (SDGs), has motivated research into gender-related issues within the microfinance industry. While the presence of women in the microfinance sector exceeds that in other industries, with around 25–40% of the workforce in MFIs being female (see Fig. 1)[1] more than 60% of active borrowers are female, reaching as high as 80–90% in certain developing countries [72, 83]. Closing this gender representation gap in MFI leadership could benefit social outreach goals in several ways. Firstly, female employees may demonstrate a deeper understanding of female borrowers' needs, potentially facilitating communication and fostering trust [115]. Additionally, cultural sensitivities in certain regions might lead female borrowers to feel more comfortable seeking services from female loan officers [63], van den [19]. This aligns with research suggesting that women often play a central role in household financial management and religious practices [50], making them crucial players in the microfinance ecosystem.

However, concerns exist regarding the potential drawbacks of a predominantly female workforce in MFIs. For instance, female employees tend to be more risk-averse than their male counterparts [18, 73], potentially leading them to provide loans to borrowers with lower credit risk but, possibly, lower profitability according to efficiency frontier arguments. Furthermore, following risk aversion principles, female loan officers may optimize lending to the relatively wealthier segment of the population compared to the poorer individuals who may be more entitled to receive financial services. Such behavior might result in mission drift, where MFIs deviate from serving impoverished individuals.

Other studies posit that loan recovery rates may be affected by gender dynamics, suggesting that male loan officers may outperform their female counterparts in this area due to their ability to travel long distances and navigate potentially unsafe situations [19]. Additionally, incentive-based remuneration structures might incentivize female loan officers to prioritize loan volume over risk

[1] The data collection stopped in 2019 because that was the last year of data provided by the MIX Market. However, there were insufficient observations to draw the figure by including 2019 data. The World Bank does not have any plan to further update the database as per their claim in the database.

assessment, potentially leading to higher rates of nonperforming loans (see, for instance, the arguments in Aubert et al. [12]).

The empirical literature on the relationship between gender diversity and MFI performance paints a complex picture. Some studies report a positive association between a gender-diverse board of directors and MFIs' social performance, particularly in terms of outreach breadth [54, 89]. However, evidence for a similar impact on financial performance remains inconclusive, with some studies finding no significant effect [44] and others suggesting a positive correlation [112, 114, 117]. Further complicating the picture, the impact of gender diversity on MFI performance appears to vary depending on the level within the organization being investigated. For instance, Mia et al. [85] demonstrate that gender diversity at the management (top management team), managerial (mid-level), and loan officer (staff or field) levels can have diverse effects (both positive and negative) on MFI financial performance.

Motivated by the complex relationship between gender diversity and MFI performance, this study aims to fill a critical gap in the literature. While existing reviews have explored various aspects of microfinance, such as health related issues [75, 91, 95], governance and MFI performance [104], as well as microfinance and poverty [48], a systematic review explicitly examining gender diversity across different organizational levels and its impact on both social and financial goals is notably absent. Filling this gap is crucial not only to consolidate existing findings and understand gender's role in MFI performance but also to guide future research directions [110]. This study, therefore, seeks to investigate how gender diversity at various levels of the MFI workforce influences the organization's ability to balance its dual goals, drawing insights from research published in the Scopus and Web of Science databases.

This paper's contribution to the microfinance literature is multifaceted. First, it offers a comprehensive and focused analysis of gender diversity's impact on MFI performance, building upon previous reviews that have a broader scope. For instance, while existing reviews like Khatib et al. [70] have explored board gender diversity in financial institutions, their scope excludes the unique context and diverse organizational structures of the microfinance industry. This study, therefore, stands to be one of the earliest to comprehensively synthesize existing research from the microfinance perspective. Second, the study summarizes and discusses relevant theoretical frameworks that link gender diversity at various organizational layers of MFIs and their dual objectives, providing a valuable resource for academics and practitioners seeking to delve deeper into this crucial topic.

The rest of the paper is laid out as follows: In section "Literature review and theoretical framework", we elucidate the theoretical framework guiding our understanding of the relationship between gender diversity and MFI performance. Section "Methodology" outlines the technique used for the systematic review, including data collection and extraction procedures. Section "Analysis and Discussion" presents the analysis based on the selected studies, while section "Conclusion" provides the conclusions and discusses future research directions. Finally, section "Future Research Direction" addresses the limitations of our study.

Literature review and theoretical framework

Poor or marginal economic people not only need deposits and credit but also tailored financial and non-financial services like insurance, counseling regarding health, education, and assistance with utility bill payment, among others. MFIs fill this gap by providing diversified and customized small financial services specifically for underprivileged households. As Morduch [87] defines, MFIs are financial institutions dedicated to serving those excluded from the formal financial system.

Evaluating the performance of MFIs requires considering various factors, including gender diversity. This concept can be examined from two angles: institutional and client-based [85]. This review will focus solely on the institutional perspective, exploring how gender diversity within the MFI workforce influences both its financial and social performance. While the latter may indirectly impact the MFI's clientele, our focus remains on the internal dynamics of the organization. Examples of institutional gender diversity include diverse representation at the board of directors, management level, and among staff or credit officers [44].

Numerous hypotheses have been advanced to explain the complex link between gender diversity and firm performance, as no single theory or hypothesis fully captures the nuances at play [27]. Therefore, this paper draws on several relevant theories from the microfinance literature to explore the dynamics behind gender diversity and its impact on MFI performance (see Fig. 2).

First, according to upper echelons theory, the top level of management has the authority to make crucial decisions for the firm, and the characteristics of such a management team can determine firm outcomes. The theory posits that diverse boards can benefit firms through a wider range of perspectives influencing crucial decisions [40, 51]. This aligns with Adusei et al.'s [2] findings from 494 MFIs across 76 countries, suggesting that gender-diverse boards foster better relationships with female borrowers, potentially boosting financial performance. Similarly, Vishwakarma [117] found a positive association

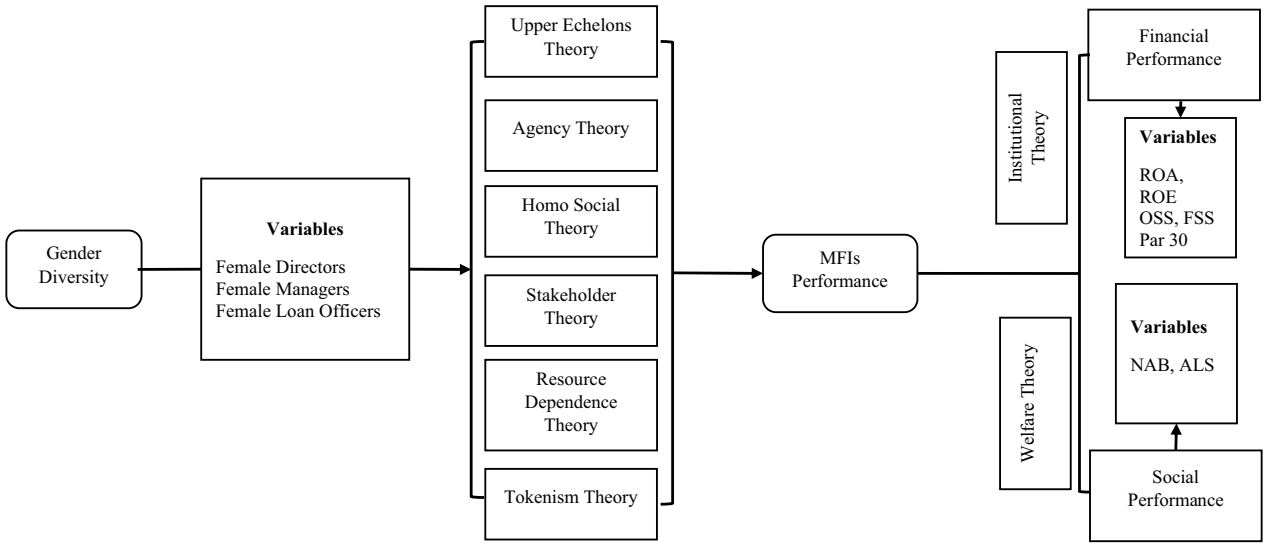

Fig. 2 Theoretical framework on gender diversity and the performance of MFIs. Source: Authors

between board diversity and the financial performance of MFIs in the Indian context. However, not all studies agree. Gohar and Batool [45] and Boeker [24] highlight the complexity of board influence, suggesting that diverse boards can sometimes harm performance due to demographic or psychological factors that affect strategic decision-making.

Second, researchers often use the agency theory [35, 60] to explain how gender diversity can influence firm performance. This view posits that board members, tasked with monitoring management and safeguarding shareholder interests, can improve the overall business performance through effective control and guidance. Several studies explore the link between board gender diversity and business performance, assuming that diverse boards, with their potentially greater independent and vigilance, lead to better economic outcomes for firms. Fall et al. [38, 39], Hasan et al. [55], and Mori et al. [89] found a positive relationship between female representation on boards and the social performance of MFIs. However, other studies like Adusei [1], Shettima and Dzolkarnaini [109], and Thrikawala et al. [114] reported a negative impact of board gender diversity on firm performance, while Mori's [88] research on 63 MFIs in sub-Saharan African countries found no correlation. Carter, Simkins, and Simpson [28] acknowledge the potential benefits of board diversity for decision-making but caution against oversimplifying its relationship with profitability. While agency theory provides valuable insights into board effectiveness, social and resource-based theories might be more suitable for investigating the specific nuances of gender diversity and performance in MFIs [27].

Third, the homosocial theory [61, 74] states that individuals with similar social choices gravitate toward one another, influencing a firm's selection of comparable demographic combinations. This indicates that female employees, being more comfortable working with female clients, could significantly influence the performance of MFIs, given that the majority of MFI clients are female. Proponents argue that women provide better services to other women and prefer working together [74]. This leads researchers to believe that having female employees in MFIs could enhance outreach to female borrowers and deliver superior financial services, ultimately improving MFIs' financial performance. The implication is that female loan officers could establish stronger connections with female clients, anticipating client needs earlier and advising the MFI on resource allocation. This theory establishes a link between gender diversity at the loan officer level and the performance of MFIs. Studies like Pedrini [96], Boehe and Cruz [23], Ghosh and Guha [44], and Gudjonsson et al. [46] corroborate this, finding a positive link between gender diverse loan officers and MFI financial performance. However, others like Mia et al. [85] reported the opposite, demonstrating a negative relationship in the context of Eastern Europe and the Central Asian microfinance industry. This may be due to smaller loan volumes attracted by female borrowers [2] or potential bias in loan extension practices due to close relationships between female loan officers and clients [12].

Fourth, according to the stakeholder theory [105], firms experience growth as long as they consistently meet the interests of their members or stakeholders. This implies that to bolster their financial success, MFIs should prioritize the interests of stakeholders, especially female borrowers, by increasing the number of female managers/loan officers to effectively engage a broader female client base. Research conducted by Boehe and Cruz [23] and [46] corroborate this, revealing a positive impact of having female managers on the financial performance of MFIs. However, as Friedman and Miles [42] noted, stakeholder influence on decision-making can vary, and an MFI's commitment to stakeholder inclusivity could impact the effectiveness of this approach. Memon et al.'s [77] findings of a negative relationship between MFI managerial diversity and financial performance exemplify this complexity.

Fifth, resource dependence theory emphasizes the importance of diverse resources for organizational success [97]. This suggests that a varied board of directors can contribute a variety of resources, including ideas, knowledge, and external connections for organizational improvement. For an MFI, having board members with diverse backgrounds, such as a female university professor from the microfinance sector, can bring fresh perspectives and insights, potentially leading to enhanced performance. Studies by Agrawal and Knoeber [3] and Hillman et al. [58] substantiate this notion of individual board members contributing unique resources. Similarly, female board members can offer unique insights and perspectives based on their experiences. While Strøm et al. [112] found a positive association between female leadership on the board and MFI financial performance, Mori et al. [89] found a link between female board presence and improved social performance, suggesting the impact may vary across different aspects of MFI success.

Sixth, there are instances where a firm's board of directors comprises a minority of female members who, despite meeting all the criteria for board membership, are marginalized and lack decision-making influence. This phenomenon, known as tokenism theory [62], describes situations where female members are treated as "tokens" on the board. According to this theory, if the percentage of female employees in a workplace is less than 15%, female coworkers may face underestimation from their male counterparts. In the context of MFIs, the contribution of female board members to success may be hindered if they are outnumbered and not treated with due respect by male board members. This perspective is supported by the findings of Adusei et al. [2] and Strøm et al. [112], which revealed a negative association between female board members and the performance of MFIs.

Beyond the intricate connection between gender diversity and MFI performance, researchers often turn to two key theories to glean valuable insights into the societal role of MFIs: the institutional theory [82] and the welfarism theory [49]. The institutional theory posits that firms are governed by rules, structures, and social norms, enabling them to thrive and endure over the long term. In the context of microfinance, financial sustainability remains crucial, necessitating MFIs to enhance their financial performance [7] to support their primary goal of serving the poor and unbanked, thereby improving the lives of the impoverished [20, 107]. Put differently, an improved financial position enables MFIs to expand their client base (breadth of outreach) and reach the poorest segments of society (depth of outreach), objectives that would be challenging to achieve otherwise [57].

On the other hand, welfare theory [20, 107] posits that the primary mission of MFIs is to enhance the welfare of the poor. This translates into two key objectives: expanding their client base and specifically targeting the poorest of the poor. The rationale behind this approach is that MFIs were created to provide financial services to marginalized populations excluded from traditional banking systems. Therefore, welfarism argues that MFIs should prioritize delivering high-quality, affordable financial services to the maximum number of unbanked individual. However, there is an ongoing debate among researchers regarding whether to prioritize financial performance based on an institutionalist approach or social outreach based on the welfarist approach [8, 81, 86].

Methodology

To conduct our literature review, we followed the "systematic review" procedure suggested by Tranfield et al. [116]. This approach, widely used in the microfinance literature [47, 56, 104], involves two distinct parts in the methodological section for a systematic approach: the data-gathering method and the characteristics of extracted data.

Method of data collection

Criteria for selecting papers

To identify relevant research papers, we established clear inclusion and exclusion criteria. Choosing the right database was crucial for gathering accurate data. We opted for two established sources with a strong reputation for quality and peer-reviewed journals: Scopus and Web of Science (WOS). Scopus boasts a vast collection of high-quality, peer-reviewed journals [36, 67, 76], while WOS is widely recognized for its stringent quality standards [36]. We deliberately avoided Google Scholar due to the proliferation of predatory journals, often characterized

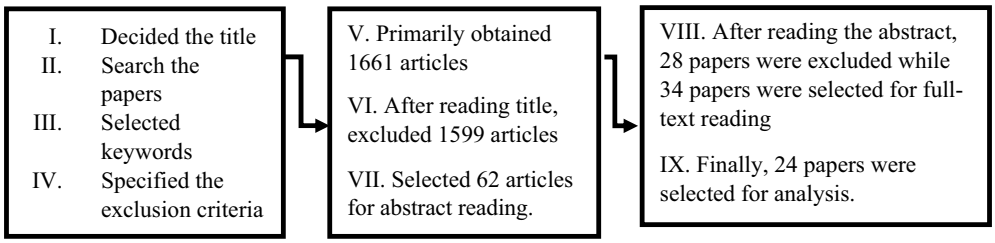

Fig. 3 Flowchart of the data collection procedure. Source: Authors

by questionable practices and low academic integrity [41, 71].

Our search yielded 11 papers present in both Scopus and WOS, demonstrating their widespread acceptance and potential. We also included 12 additional papers from either database, based on their high citation counts, indicating significant academic interest. However, during our analysis, we noticed the omission of a relevant paper by Thrikawala et al. [114]. Given its thematic alignment and methodological importance, we manually included it in our analysis.

In summary, the following criteria were established for a paper to be included in our research.

- It must provide information on gender diversity at any organizational ladders of MFIs.
- It must indicate the relationship between gender diversity and performance (financial/social).
- It must be an investigation in the context of the microfinance industry.
- It should not be any working paper or conference paper.
- It must be published in the English language.

Paper search and data collection

Our search for relevant research encompassed papers published between 1996 and 2022, the earliest possible based on Scopus and WOS database coverage. This suggests limited research activity on this topic before 1996. To ensure thorough coverage in our search, we employed various string combinations, including but not limited to: "Gender and Microfinance or Microcredit Institutions," "Gender Diversity and Microfinance or Microcredit Institutions," "Women and Microfinance or Microcredit Institutions," "Gender Diversity and Performance of Microfinance or Microcredit Institutions," "Female Employee and Performance of Microfinance or Microcredit Institutions," "Gender of the Board Member and Performance of MFI or Microcredit Institutions," "Women Moneylender and Performance of Microfinance or Microcredit Institutions," "Gender Relations and Microfinance or Microcredit Institutions," "Female Loan Officer and Microfinance or Microcredit Institutions," "Female Staff and Performance of Microfinance or Microcredit Institutions."

Throughout our search, we observed that not all papers explicitly mentioned gender diversity keywords. Some authors used terms such as "female staff," "female employees," or "female board of directors," while others preferred "women" instead of "female." To capture all the relevant papers in our review, we employed various combinations of keywords indicative of gender diversity in the workforce and its impact on the performance of MFIs. Considering these nuances, we ultimately settled on the following search strings: ("Microfinance" OR "Microcredit" AND "Institutions") AND ("gender diversity" OR "female staff" OR "female employee" OR "women loan officer" OR "gender of the board" OR "gender relations") AND ("performance"). The flowchart in Fig. 3 illustrates the selection process for the final papers based on the established inclusion/exclusion criteria.

Using the comprehensive set of keywords and strings, our exploration of the Scopus and WOS databases yielded a total of 1661 articles (see Appendix 2). Subsequently, we meticulously scrutinized the titles of these articles based on our exclusion criteria, resulting in the exclusion of 1599 papers that did not explicitly indicate a relationship between institutional gender diversity (at the board, managerial, or loan officer levels) and the performance of MFIs. This process left us with 62 articles that appeared relevant to our research. Further refinement involved an examination of the abstracts of the 62 articles, leading to the exclusion of an additional 28 papers. While these papers were initially included based on their titles and somewhat relevant abstracts, a thorough reading of the full articles revealed a lack of substantial linkage between gender diversity (at any level) and the performance (social or financial) of MFIs. After a meticulous review of the remaining 34 full articles, we identified 24 that met our predetermined inclusion criteria for the systematic review. It is noteworthy that the remaining 10 papers merely touched upon gender diversity in their abstracts, suggesting avenues for future research, without

Table 1 Summary of the Selected 24 Articles

Author/s	Year	Publisher	Geographical Region	Duration	Data Source	Gender Parameter			Performance Parameter		
						Board	Manager	Staff	Financial	Social	Others
Mersland and Strøm [80]*	2009	Elsevier	Global	2000–2007	Rating Agencies	✓			ROA, OSS, PY, OC	AL, Credit Clients	
Boehe and Cruz [23]	2013	Elsevier	African, Eastern European, Latin American, Asian	2003–2011	DID database	✓	✓	✓	FSS, PAR30		
Hartarska et al. [54]	2014	Wiley	Global	1998–2009	Rating Reports	✓				NOAB	
Mori [88]	2014	Taylor and Francis	Africa	2004–2009	Primary Data	✓			Monitoring and resource provision		Efficiency
Strøm et al. [112]	2014	Elsevier	Global	1998–2008	Rating Agencies	✓			ROA, ROE, OSS, FSS		
Mori et al. [89]	2015	Wiley	Africa	2004–2009	Primary Data	✓				AL, NOAB	
Wale [118]	2015	Virtus Interpress	Ethiopia	2003–2008	MIX Market	✓			ROA, OSS	AL, NOAB	
Gohar and Batool [45]	2015	Taylor and Francis	Pakistan	2005–2009	MIX Market	✓			ROA, OSS, PY	AL, NOAB	
Augustine et al. [13]	2016	Wiley	Africa	2005–2011	MIX Market	✓		✓	ROA, OpExp		
Vishwakarma [117]	2017	SAGE	India	2011–2014	Primary and MIX Market Data	✓	✓		ROA	NOAB	
Adusei et al. [2]	2017	Taylor and Francis	Global	2010–2014	MIX Market	✓			ROA, OSS		
Thrikawala et al. [114]	2017	Inder Science	Sri Lanka	2007–2012	MIX Market	✓			OSS, ROA, YGLP, OpExp, Par30		
Pedrini [96]	2018	Taylor and Francis	Global	2008–2010	MicroFinanza Rating			✓	ROE, OSS		
Bibi et al. [22]	2018	Elsevier	South Asian	2005–2012	MIX Market	✓		✓	GLP, FR	NOAB	
Shettima and Dzolkarnaini [109]	2018	Emerald	Nigeria	2010–2013	MIX Market	✓			ROA, ROE		
Ghosh and Guha [44]	2019	Emerald	India	2010–2014	MIX Market	✓	✓	✓	ROA, OSS, GLP, PM	AL, NOAB	
Boubacar [25]	2019	Emerald	Africa	2013–2017	MIX Market	✓	✓	✓	ROA, CPB	NOAB, NOFB	
Hasan et al. [55]	2019	Springer	Bangladesh	2008–2009	Primary and Annual Report of MFI	✓			OSS		
Adusei [1]	2019	Elsevier	Global	2010–2014	MIX Market			✓		AL, NOAB	
Memon et al. [77]	2020	Taylor and Francis	Global	1999–2017	MIX Market	✓	✓	✓	OSS	AL, NOAB	
Mia et al. [85]	2022	Wiley	Eastern Europe and Central Asia	1996–2014	MIX Market	✓	✓	✓	ROA, ROE, PM, YGL, Par30		
François Seck Fall et al. [36, 37]	2021	Elsevier	Global	2011	MIX Market	✓		✓		Female Borrowers	
Gudjonsson et al. [46]	2020	VGTU Press	Global		MIX Market	✓	✓	✓	ROA		
Olohunlana et al. [94]	2022	Wiley	Africa	2010–2018	MIX Market	✓			OSS		

ROA = Return on assets, ROE = return on equity, OSS = operational self-sufficiency, FSS = financial self-sufficiency, YGL = yield to gross loan, GLP = gross loan portfolio, PM = profit margin, Par30 = portfolio at risk > 30 days, OpExp: = operating expense, AL = average loan size, NOAB = number of active borrowers, NOFB = number of female borrowers, CPB = cost per borrower, FR = financial revenues, PY = portfolio yield, DID = Desjardins International Development. * Mersland and Strøm [80] specifically examined the effect of the CEO, a unique focus within the microfinance context. Generally, CEOs are also board members; therefore, we considered this study under the dimension of board gender diversity

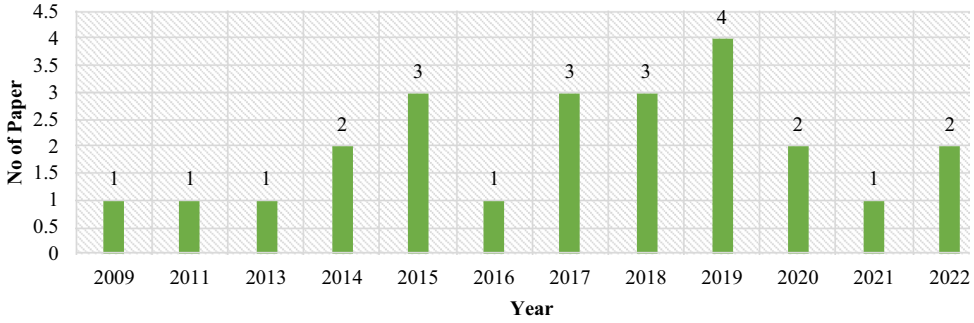

Fig. 4 Year-wise number of published papers. Source: Authors

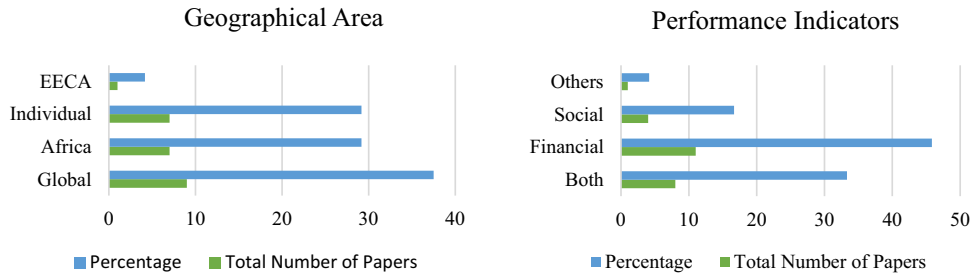

Fig. 5 Geographical data coverage and types of performance indicators used in existing literature. Source: Authors. Note: EECA = Eastern Europe and Central Asia

explicitly focusing on the relationship between gender diversity and MFI performance in their main content.

Characteristics of sampled papers

Table 1 shows a summary of the 24 selected papers, offering insights into their key features and characteristics. Although our search encompassed papers from 1996, the impact of gender on the performance of MFIs has only recently gained traction, with the first pioneering paper on gender diversity and MFIs' performance emerging in 2009. Notably, almost 60% of the papers were published between 2017 and 2022 (see Fig. 4). Another intriguing observation is that 83% of the studies utilized data up to 2014, with only 17% (three papers) incorporating data up to 2018 (see Table 1). This discrepancy suggests that conclusions drawn from earlier data may warrant reevaluation, especially considering the availability of more recent global-level data, such as from the MIX Market database at the World Bank.

The choice of performance metrics may contribute to the inconclusive outcomes observed in the literature. Specifically, 46% of the studies exclusively rely on financial performance indicators in evaluating the impact of gender diversity, while a mere 17% of studies incorporate social performance indicators as metrics (see Fig. 5). This emphasis on the relationship between gender diversity and financial performance may reflect a commercialization drive, a trend observed in several MFIs in recent years. However, there is a growing recognition among academics that the sustainability of the MFI industry necessitates prioritizing both financial (and operational) self-sufficiency and social outreach simultaneously. Consequently, an increasing number of studies (33%) now investigate both the social and financial dimensions of MFIs' performance. All the articles included in this study were applied research, with 37.5% featuring a worldwide database, 29% relying on individual country-specific data (see Fig. 5), 4% focusing on Eastern Europe and Central Asian countries, and the remaining 29% using African data exclusively. This suggests that other regions, such as Latin America, East Asia and the Pacific, and South Asia, are less independently investigated by the researchers and often being incorporated into global samples.

Most scholars use secondary sources/databases to gather firm-level data for analyzing the relationships between gender diversity and MFIs' performance. Our comprehensive analysis revealed that 62.5% of the papers employ data from the MIX Market database (see Fig. 6), a widely recognized source in the global microfinance industry. On the other hand, a relatively lesser percentage of studies (17%) leverage data from rating agencies and primary sources, including hand-collected information. Several factors contribute to the preference for MIX

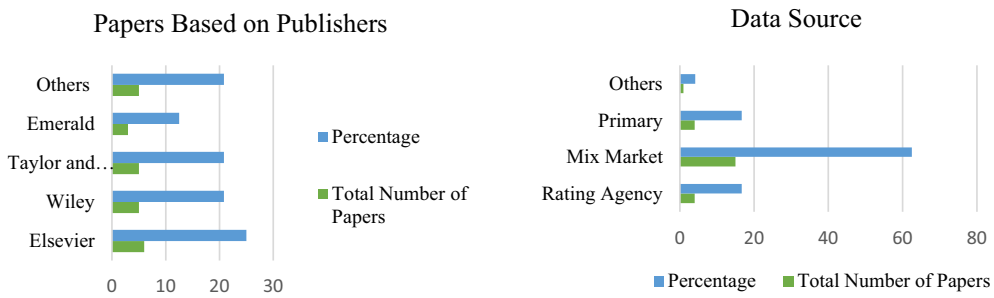

Fig. 6 No. of papers based on publishers and sources of data. Source: Authors

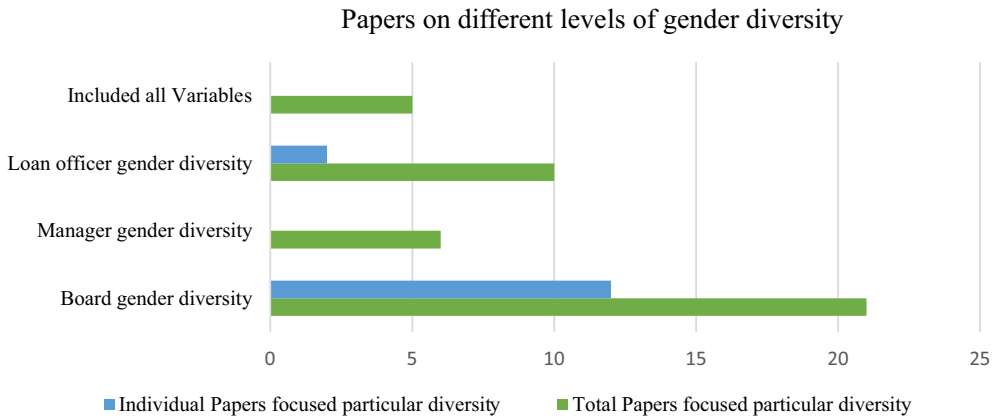

Fig. 7 Papers on different levels of gender diversity in the MFI. Source: Authors. Note: Individual paper = papers that exclusively focus on a single level of gender diversity, such as only loan officer level or only the board level; Total paper = papers that focus on multiple levels of gender diversity, e.g., a combination of two or three levels of gender diversity

Market data over other sources. Firstly, the data in the MIX database have been freely available since late 2019 and are easily accessible. The reliability of the data is well-documented, as noted by Ranjani and Kumar [103]. MIX maintains a data accountability framework featuring over 150 new mandatory rules that assist analysts in focusing on pertinent issues and enables them to follow up with MFIs as needed. These rules encompass aspects such as the balance or manipulation of financial data and the scrutiny of ratio levels for any unusually high or low values. Before public disclosure, the data in the MIX Market undergo a review by the authority to ensure compatibility with international standards, as highlighted by Bauchet and Morduch [16]. Furthermore, the collaboration between MIX and the World Bank since late 2019 adds to the overall acceptance and reliability of the data among researchers across countries.

However, the debate against the MIX database concerning self-reported data is also valid. Mersland, Randøy, and Strøm [79] argue that MIX Market's voluntary and self-reported information can be biased, as only larger MFIs seeking international exposure may be willing to submit their data. Smaller MFIs, especially those located in rural and remote areas with limited access to information and communication technology (ICT), may choose not to provide any information.

In terms of publishers, Elsevier dominates the publication of most papers related to gender diversity and microfinance performance (25%), followed by Taylor and Francis/Others (21%), Wiley (21%), and Emerald (13%). Moreover, the top three most cited papers among the 24 selected ones were published in "Elsevier," and include the widely cited works of Boehe and Cruz [23], Mersland and Strøm [80], and Strøm et al. [112] (see Appendix 1).

Analysis and discussion

In this section, we discuss gender diversity within MFIs across various organizational levels and its effect on MFI performance.

Our analysis of the selected papers reveals that gender diversity manifests primarily at three distinct levels within MFIs: the board, managerial, and staff or loan officer levels [85]. The evaluation of MFI performance typically focuses on either financial or social dimensions. Specifically, among the identified papers, 12 studies exclusively explore gender diversity at the board level,

while 10 papers examine it concurrently at the board level and either managerial or officer levels (see Fig. 7). Only two publications examine gender diversity at the loan officer level, and none explores managerial-level gender diversity independently (see Fig. 7). This indicates a prevailing emphasis on board gender diversity in existing research, with only six papers encompassing gender diversity across all three hierarchical levels concerning MFI performance.

Regarding performance metrics, 46% of the studies employed financial performance indicators such as operating self-sufficiency (OSS), financial self-sufficiency (FSS), return on asset (ROA), return on equity (ROE), and the yield on gross loan portfolio (YGLP). Some papers also integrate operating expenses and portfolio risk over 30- or 90-day periods, among other financial performance indicators. Conversely, only 17% of the studies incorporate social performance parameters to assess the impact of gender diversity in MFIs. This signifies a limited scope in evaluating the social performance of MFIs. The social performance of MFIs is measured from two perspectives: the "breadth" and "depth" of outreach [30, 108]. Most researchers use the number of active borrowers to indicate the breadth of outreach and either the average loan size or the percentage of women borrowers, or both, to gauge the depth of outreach.

Board gender diversity and performance of MFIs

Given the predominance of female borrowers in MFIs, surpassing male borrowers, the inclusion of female members on the board is thought to enhance the performance of MFIs. This stems from the belief that women are more attuned to the needs of female customers [84]. Over the past few decades, researchers have sought to substantiate this relationship. In the current literature, we have identified 22 studies that explore the impact of board gender diversity on MFI performance. This section examine the effects from two perspectives: financial and social performance.

Board gender diversity and financial performance of MFIs

According to Table 2, the predominant financial performance variables include return on assets (ROA), return on equity (ROE), operating self-sufficiency (OSS), and financial self-sufficiency (FSS). Vishwakarma [117] analyzed 50 Indian MFIs from 2011 to 2014, revealing a positive correlation between ROA and the presence of female board members. This correlation is attributed to the enhanced understanding of the firm's dynamics by female board members, leading to cost savings. Drawing on agency theory, it is suggested that female board members are more adept at minimizing agency costs and making profitable decisions compared to their male counterparts.

In a parallel study on 1053 African MFIs, Augustine et al. [13] found that each additional female board member corresponds to a 3.8% increase in ROA. Similarly, Strøm et al. [112], analyzing 329 MFIs from 73 countries, asserted a positive association not only with ROA but also with ROE concerning board gender diversity. They argue that female leadership enhances financial performance, especially in situations with less supervision, positing that constant scrutiny might impede the performance of female executives.

Contrastingly, using global data from 223 MFIs, Gudjonsson et al. [46] reported a negative association between ROA and board gender diversity. In a similar vein, Adusei et al. [2], considering 494 MFIs from 76 countries, indicated a negative relationship between the share of females on the board and ROA. They argue that unless female board participation exceeds the 50% threshold, it is unlikely to benefit MFI performance.

Shettima and Dzolkarnaini [109], studying 30 Nigeria MFIs, found no statistically significant association between board gender diversity and ROA or ROE. They attribute this to poor governance, asserting that increased female board members cannot mitigate higher agency costs. However, the study's single-country focus raises concerns about geographical bias. Mori [88], Gohar and Batool [45], and Bibi et al. [22] similarly found no significant relationship between board gender diversity and MFI financial performance.

As MFIs are not entirely commercialized entities, some scholars propose that OSS better measures an MFI's financial performance than ROA or ROE. Studies by Hasan et al. [55] and Memon et al. [77], focusing on 68 MFIs in Bangladesh and 2,217 MFIs from 114 countries, respectively, indicate that board gender diversity adversely affects the OSS of MFIs. They posit that female board members, being inherently risk-averse, prefer lending to risk-averse female borrowers, resulting in smaller loans and higher cost per borrower for MFIs. This notion is echoed by Boubacar [25], analyzing 266 West African MFIs, and Ghosh and Guha [44], examining 104 Indian MFIs, both highlighting the increased cost per borrower due to female board members, leading to decreased operational self-sufficiency.

Moreover, Thrikawala et al. [114], in a study on Sri Lankan MFIs, found a negative association between board gender diversity and OSS but a positive association with ROA. This underscores the importance of specific financial performance measures in understanding the nuanced link between board gender diversity and MFI performance. However, Thrikawala et al.'s [114] study may suffer from data limitations due to its focus on a single

Table 2 Summary of findings on the impact of gender diversity on the performance of MFIs

	Author/s	Gender Dimension	Estimator/ Tools Used	Financial Performance		Social Performance	
				Positive	Negative	Positive	Negative
1	Mersland and Strøm [80]	Board gender	Generalized least-squares method (GLS), random effect model, three-stage least-squares method	ROA, OSS, PY, OC		AL, Credit Client	
2	Shettima and Dzolkarnaini [109]		Pooled OLS (POLS) and Fixed Effect Model (FEM)		ROA, ROE (Insignificant)		
3	Mori [88]		Ordinary least squares (OLS)	Insignificant			
4	Adusei [1]		DEA, Probit, logit, and GLM (generalized linear model)		Technical Efficiency		
5	Gohar and Batool [45]		REM	Insignificant		AL	
6	Hasan et al. [55]		OLS model		OSS		
7	Thrikawala et al. [114]		OLS regression, FEM, and REM	ROA	OSS		
8	Hartarska et al. [54]		Stochastic Frontier, FEM, REM			NOAB	
9	Adusei, et al. [2]		FE test, Wald test, correlation test		ROA		
10	Mori [89]		Seemingly Unrelated Regression (SUR)			NOFB	AL
11	Strøm et al. [112]		Probit regression, pooled OLS, REM	ROE, ROA			
12	Olohunlana et al. [94]		Panel–spatial correlation consistent (PSCC) estimator technique	OSS			
13	Boubacar [25]		FEM and REM		Cost Per Borrower increases	NOFB	
		Manager		Insignificant		NOFB	
14	Vishwakarma [117]	Board gender	Pooled OLS, FEM, and REM	ROA			
		Manager				NOAB	
15	Augustine et al. [13]	Board Gender	Robust OLS regression model	ROA			
		Loan Officer			OpExp		
16	Fall et al. [38, 39]	Board Gender	Nonparametric conditional Free Disposal Hull (FDH) approach, robust version of order-α	Efficiency		NOAB	
		Loan Officer		Efficiency		NOAB	
17	Bibi et al. [22]	Loan Officer	Data Envelopment Analysis (DEA)	Efficiency			
18	Pedrini [96]	Loan Officer	OLS regression model	ROE, OSS			
19	Boehe and Cruz [23]	Board Gender	FEM	FSS			
		Manager		FSS			
		Loan Officer		FSS			
20	Gudjonsson et al. [46]	Board Gender	The logit–tobit regression model		ROA		
		Manager		ROA			
		Loan Officer		ROA			

Table 2 (continued)

	Author/s	Gender Dimension	Estimator/ Tools Used	Financial Performance		Social Performance	
				Positive	Negative	Positive	Negative
21	Ghosh and Guha [44]	Board Gender	REM		Cost Per Borrower increases	NOFB	
		Manager				NOAB	
		Loan Officer		OSS, YGLP			
22	Memon et al. [77]	Board Gender	OLS, FEM, REM, GMM, two-stage OLS		OSS	AL, NOAB	
		Manager		OSS Insignificant		AL, NOAB	
		Loan Officer			OSS		AL, NOAB
23	Mia et al. [85]	Board Gender	OLS, FEM, and REM	OSS			
		Manager			ROA, ROE, PM		
		Loan Officer			ROA, PM		
24	Wale [118]	Board Gender	Static regression model (REM/FEM)			NOAB	AL

ROA = Return on assets, ROE = return on equity, OSS = operational self-sufficiency, FSS = financial self-sufficiency, YGL = yield to gross loan, GLP = gross loan portfolio, PM = profit margin, Par30 = portfolio at risk > 30 days, OpExp: = operating expense, AL = average loan size, NOAB = number of active borrowers, NOFB = number of female borrowers, CPB = cost per borrower, FR = financial revenues, PY = portfolio yield, OC = Operational costs

country. Conversely, Mersland and Strøm [80], using data from various rating agencies, observed positive associations between female board membership and both ROA and OSS. Similar findings were reported by Olohunlana et al. [94] and Mia et al. [85], who identified a positive correlation between OSS and board gender diversity. These studies suggest that female board members excel in maintaining effective communication with stakeholders and overseeing firm operations, contributing to enhanced overall performance.

Boehe and Cruz [23] focus on financial self-sufficiency (FSS) as the financial performance measure, revealing a favorable association with board gender diversity. Their findings suggest that female board members contribute to an increase the number of female borrowers, particularly from poor rural backgrounds. These women, often the last resort for MFIs, exhibit timely loan repayments, resulting in an elevation of the MFI's FSS. This positive impact aligns with analogous observations in the banking and finance sector [9, 11, 26, 33], reinforcing the argument that women directors can significantly influence financial performance.

Examining the relationship between board gender diversity and financial performance from an efficiency standpoint, some authors draw on agency theory [60]. The efficiency of a firm is often contingent on governance practices and strategic decisions made by the board of directors. Diverse boards are posited to minimize agency costs, thereby positively impacting the overall efficiency of MFIs [38, 39, 53]. However, empirical findings present a mixed landscape. Analyzing 680 MFIs across six main regions globally Fall et al. [38, 39] argue that having females on boards enhances MFIs' efficiency, with potential positive effect on overall financial performance. In contrast, Adusei [1] found negative relationship after examining 18 MFIs from 64 countries, concluding that women on boards diminish technical efficiency by complicating decision-making processes and information transfer to the board members. This suggests that the inclusion of women in the decision-making process may introduce varying goals, leading to prolonged deliberations and potentially hindering efficient decision-making. Overall, research on board gender diversity and efficiency remains limited, particularly in microfinance, warranting additional investigation for more conclusive insights.

Board gender diversity and social performance of MFIs

According to the homosocial theory [62], organizational leaders tend to surround themselves with individuals of similar demographics at various organizational levels. This concept suggests that the presence of females on the board will lead to an increase in the female workforce and the female client base within the MFI.

Hartarska et al. [54] assert gender diversity in the top management of MFIs is intricately linked with social and financial performance. The authors argue that social outreach increases by 12–14% when the MFI is led by females. Moreover, female managers demonstrate a propensity to cater to a larger number of female clients [100]. Thus, female board members contribute to social performance in two significant ways. First, when the

board comprises females, management strategies align more closely with female subordinates, resulting in a higher number of female borrowers. Second, presuming that female leaders exhibit more risk aversion than their male counterparts [54], they are inclined to provide smaller loans to female borrowers, thereby enhancing the depth of outreach goal of MFIs. Consequently, the gender diversity of the board of directors expands the social performance of MFIs.

Social performance, as discussed earlier, is assessed from two dimensions: the "breadth," denoted by the number of active borrowers (NOAB), and the "depth," represented by both average loan size (ALS) [57] and the number of female borrowers (NOFB) [14]. However, the predominant focus in the literature has been on NOAB and ALS as measures of MFIs' social performance (see Table 2). According to Gohar and Batool [45], gender diversity on the board correlates positively with social performance measured by ALS, a finding echoed by Memon et al. [77]. This suggests that board gender diversity results in the disbursement of loans to relatively wealthier individuals in society. However, Mori et al. [89] and Wale [118] contradict this finding, revealing a negative association between board gender diversity and the depth of the outreach (ALS).

Regarding the breadth dimension of social performance, Memon et al. [77] found a positive association between the board gender diversity and the breadth of outreach. This implies that the presence of female board members likely increases the number of active borrowers, possibly due to a heightened sense of moral obligation among female clients to repay loan installments promptly. Similar outcomes were reported by Ghosh and Guha [44], Boubacar [25], and Mori et al. [89], highlighting that gender diversity is likely to enhance social outreach in terms of the number of female borrowers. This favorable association may be attributed to female board members' proclivity to providing loans to women [100], in line with homosocial views. Yet, Mersland and Strøm [80] observed that a female CEO increases the number of clients (breadth of outreach) while decreasing the average loan size (depth of outreach). Consequently, breadth in social outreach tends to improve with the increase in the share of female CEOs, while depth shrinks as the share of females on the board increases.

In summary, most studies underscore a favorable correlation between gender diversity on the board and the scope of social outreach (e.g., NOAB). Evidence from the formal banking industry also supports the notion that having more female board members contributes to supporting customers and communities, potentially leading to increased charity and donations for social development [64].

Managerial gender diversity and the performance of MFIs

Managerial gender diversity and financial performance of MFIs

While evidence from the banking industry suggests that gender diversity at the managerial level influences financial performance by fostering effective communication with lower-level employees [34, 43], limited academic focus has been directed specifically at women in management roles within MFIs and their impact on performance. Existing shreds of evidence on this aspect in the microfinance context are mixed and are based on academic publications focusing on women in management in conjunction with board or loan officer-level positions and their impact on MFI performance (see Table 2). One the one hand, Boehe and Cruz [23] and Gudjonsson et al. [46] argue that female workforce engagement can enhance MFIs' financial performance by increasing financial self-sufficiency (FSS), given that credit payback rates tend to be higher when the staff consists of women. They further highlights that this conclusion is particularly relevant in nations where the impoverished have limited access to other forms of financial assistance.

On the other hand, Memon et al. [77], and Boubacar [25] observed significant relationship exists between female managers and the financial performance of MFIs, suggesting that female managers do not impose an operating cost burden on MFIs. This observation may be attributed to the mid-level position of managers within the organization, marked by a lack of direct interaction opportunities with borrowers and limited involvement in decision-making processes. This outcome aligns with the findings of Mia et al. [85], who observe a negative association between gender diversity at the managerial level and the return on assets (ROA), return on equity (ROE), and profit margin (PM) of MFIs.

Managerial gender diversity and social performance of MFIs

Multiple studies, including Boubacar [25], Vishwakarma [117], and Ghosh and Guha [44], highlight the positive impact of female managers on the social outreach of MFIs. This likely stems from their ability to forge stronger connections with female borrowers, who often constitute a majority of MFI clients. However, research examining the link between managerial gender diversity and depth of outreach, measured by average loan size, is limited. Memon et al. [77] offer a valuable data point in this regard, finding a positive association between the two. Further insight can be gleaned from the banking industry, where Galletta et al. [43] demonstrate that gender diversity at the managerial level has a synergistic effect, boosting both the financial and social performance of banks. This suggests that promoting gender diversity

among MFI managers could yield similar benefits, contributing to overall sustainability.

Loan officer gender diversity and performance of MFIs

Loan officer gender diversity and financial performance of MFIs

Loan officers, given their direct contact with borrowers, play a crucial role in shaping an MFI's performance. Pedrini [96] highlights this by showing that the impact of gender diversity in the loan officer workforce on financial performance (OSS, ROE) depends on the MFI's type. Commercialized MFI, driven by profit, favor male borrowers, leading to a negative relationship with gender diversity. Conversely, non-commercial MFIs prioritize outreach to female borrowers, making them more receptive to diverse loan officer teams and experiencing a positive relationship. These outcomes align with those of Ghosh and Guha [44] and Gudjonsson et al. [46], who link female loan officers to improved financial performance in MFIs. This resonates with the banking industry as well, where Beck et al. [17] suggest that female loan officers' stronger communication with female borrowers fosters trust and ultimately boosts bank performance.

However, Memon et al. [77] offer a contrasting perspective, arguing that female loan officers can negatively impact MFI financial performance (OSS/YGLP). This could be due to their focus on meeting loan targets by prioritizing female borrowers. While this increases outreach, it can also lead to higher costs per borrower and lower financial performance. Augustine et al. [13] and Mia et al. [85] support this claim, finding that female loan officers can raise operating expenses and decrease ROA and PM in MFIs.

Loan officer gender diversity and social performance of MFIs

Supporting the theoretical proposition, Fall et al. [38, 39] demonstrated that a higher proportion of female loan officers correlates with increased breadth of social outreach, measured by the number of borrowers served (NOAB). However, Memon et al. [77] present a contrasting view, finding a negative relationship between female loan officers and both breadth and depth of social outreach, the latter measured by average loan size. Adding complexity, Fall et al. [38, 39] also uncover a nuanced effect of gender diversity at the loan officer level on social efficiency. While initially, increasing the number of female loan officers might raise inefficiency, the study suggests that beyond a 40% threshold, the trend reverses, and efficiency improves. This implies that a critical mass of female officers may be necessary for their positive impact on efficiency to fully materialize. Bibi et al. [22], however, offer a different perspective. They found a positive association between female loan officers and MFI efficiency, regardless of their number or proportion.

Network analysis of selected papers

Network analysis, also known as bibliometric analysis, stands as a crucial approach in understanding recent trends in academia within specific domains [121]. This analytical approach has evolved to address the ever-expanding landscape of knowledge and encompasses three key aspects: assessing specific scientific activities, gauging their impact through total article citations, and examining the connections between articles [92, 106]. In line with previous studies [4, 106], and [90], we employed network analysis to acquire the most recent insights into highly influential papers, authors, collaboration among authors, and commonly used keywords.

To generate the network map, we used the VOSviewer software, following a systematic approach. First, we opted to create a map based on bibliometric data, given the unavailability of network data or text data files. Second, we selected the Scopus data source, as all 24 papers were available in Scopus, despite 11 papers being concurrently found on the Web of Science and third, for the minimum number of documents by an author. Finally, we chose to display all papers the network map, even if some were not connected.

Influential papers and authors

Traditionally, a paper's significance in the current literature is often gauged by the number of citations it accumulates [78]. In the field of gender diversity and performance within the microfinance industry, the available papers in the Scopus and Web of Science databases are relatively limited, and only a select few have garnered substantial citations in the literature. To identify the most pertinent contributions within the existing body of literature, we leveraged the VOSviewer software, wherein the co-authorship network was segmented into 18 clusters, with each author contributing a minimum of 1 paper (see Fig. 8).[2] This approach allowed us to incorporate a total of 51 authors into the network, setting the lower limit at 1 (refer to Fig. 8).

Notably, the article titled "Performance and Governance in Microfinance Institutions" by Mersland and Strøm [80] stands out as the most cited in both in Scopus (304 citations) and Google Scholar (889 citations) databases (see Appendix 1). Moreover, these authors also emerge as the most influential figures in the network

[2] The number of papers is very limited, and only one cluster, with a minimum number of three papers per author, was found. Even when the minimum number of papers was set at 2, three clusters were discovered, preventing the development of any network among the authors.

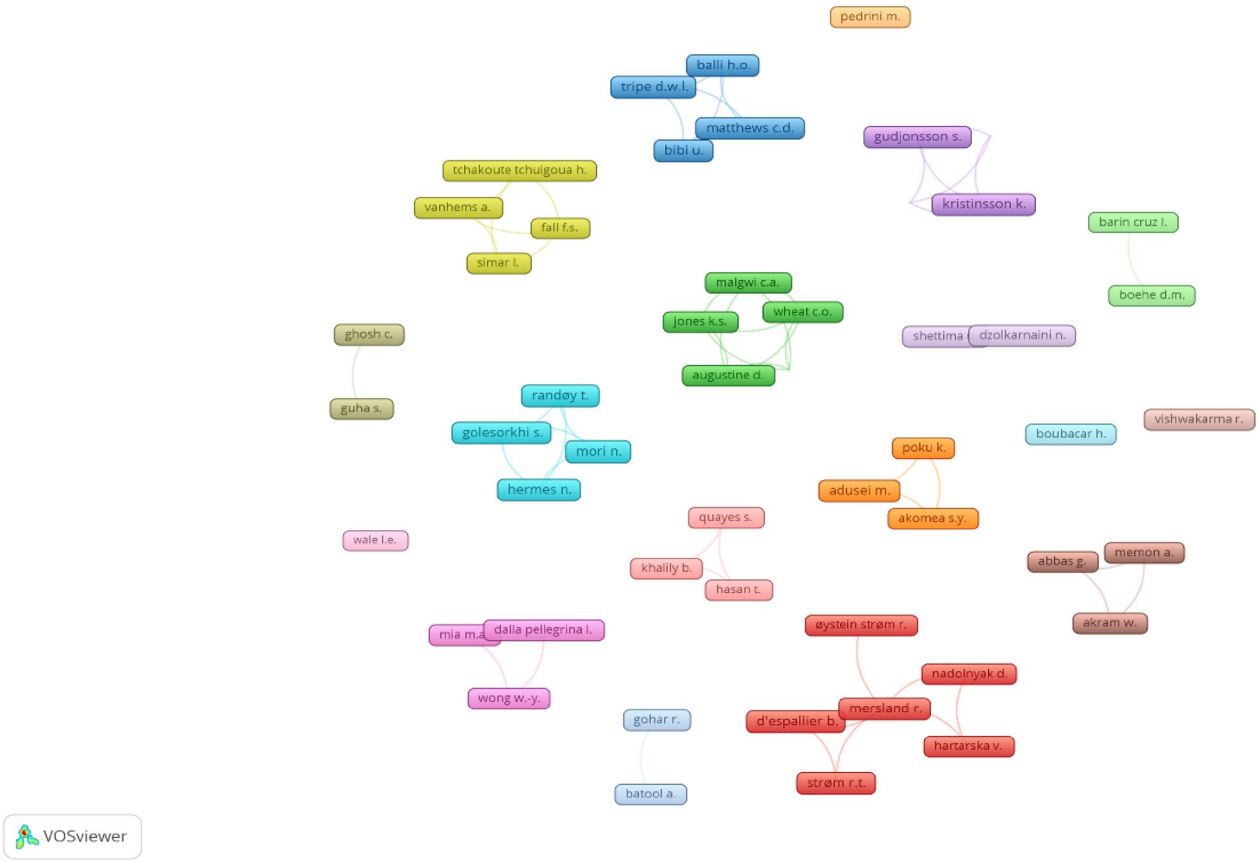

Fig. 8 Network visualization network of co-authorship based on citations. Source: Authors. Note: The threshold of the minimum number of documents per author was set at 1

visualization map (see Fig. 8). Following closely is the second most cited paper, "Female Leadership, Performance, and Governance in Microfinance Institutions" by Strøm et al. [112], boasting 132 and 283 citations in Scopus and Google Scholar, respectively (see Appendix 1). Interestingly, both papers share common authors, except for D'Espallier. As illustrated in Fig. 8, the visualization network of authorship based on citations reveals a strong co-authorship link between these influential authors, solidifying their prominence in the field. Cluster 1, housing the two most cited papers, also features four other influential authors (Hartarska, D'espallier, Strøm, and Nadolnyak. The third most influential paper is "Gender and Microfinance Performance: Why Does the Institutional Context Matter?" by Boehe and Cruz [23], cited 52 and 113 times in Scopus and Google Scholar, respectively (see Appendix 1). Authors of this paper belong to cluster 10 in network analysis, showcasing co-authorship connections in only two papers (see Fig. 8). Additionally, the paper titled "Board Composition and Outreach Performance of Microfinance Institutions: Evidence from East Africa" by Mori et al. [89] clinches the fourth spot as the most influential paper based on citations in both databases. The paper falls within cluster 5, exhibiting four co-authorships (see Fig. 8).

Co-authorship analysis based on country

The collaborative efforts among authors from diverse countries are often attributed to the geographical and demographic variations in scientific research. This collaboration serves as a catalyst for authors to establish a network that spans institutions and countries within their research domain [29]. Examining authors' collaboration networks is instrumental in comprehending their collective contribution to the structure of the literature in a specific field [69]. To comprehend the collaborative contributions of authors and their affiliations in the realm of gender diversity and performance in the microfinance industry, we employed VOSviewer. Given the limited scope of our database comprising 24 papers, we established the criterion of one document per country

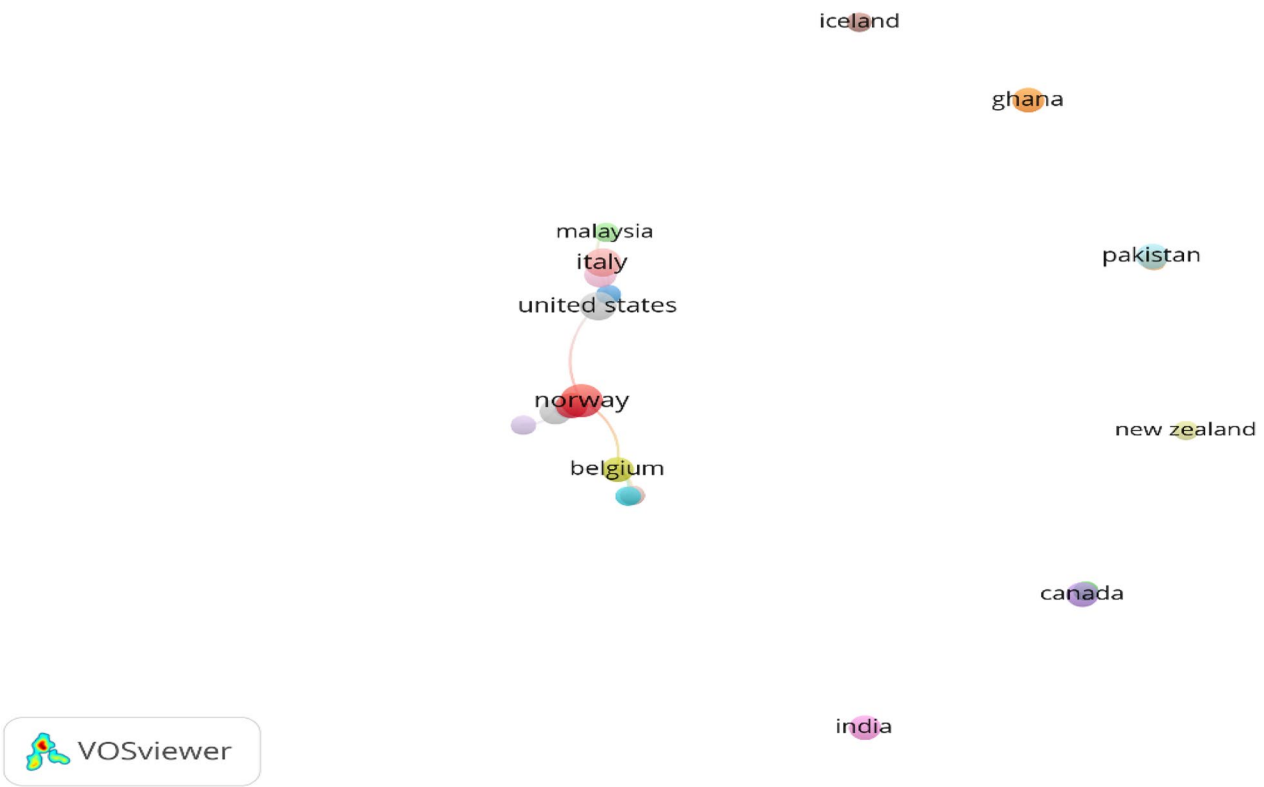

Fig. 9 Density visualization network of co-authorship across countries. Source: Authors. Note: The threshold of the minimum number of documents per country was set at 1

to construct the collaboration network.[3] Consequently, we identified and analyzed the collaborative networks among authors from 20 countries, each represented by at least one paper on gender diversity and the performance of Microfinance Institutions (MFIs). The resulting network, categorized into nine clusters based on citations, is visually presented in Fig. 9.

Upon analyzing the network map, we found that the highest number of documents emerges from Norway, forming cluster 1 in the network, and these papers also boast the highest citation counts. Three papers from the United States and two each from the UK, Pakistan, Tanzania, South Africa, Italy, Belgium, and Canada also reside in cluster 1. Interestingly, the second most cited papers originate from Belgium, belonging to cluster 3. Noteworthy individual clusters were observed for Ghana, New Zealand, India, and Iceland in the density visualization network depicted in Fig. 9. This suggests the potential for collaboration among authors from these countries.

Co-occurrence analysis of the keywords

Delving deeper into the literature, we analyzed the co-occurrence of keywords used by authors to gain insights into existing research areas and potential future directions. As Khanra et al. [68] point out, keyword co-occurrence reveals underlying themes and provides a roadmap for future research by highlighting relationships between emerging keywords [119]. Leveraging the VOSviewer application with the Scopus database. Among these terms, "microfinance" emerges as the most frequently used keyword, featuring in 10 records. In contrast, "Microfinance Institutions" and "performance" are comparatively less prevalent, appearing in 8 and 7 records, respectively. Notably, "gender," "outreach," and "sustainability" are infrequently highlighted, indicating potential avenues for future research exploration by examining the interplay between these keywords. Furthermore, the analysis in Fig. 10 underscores the relatively subdued prominence of "developing countries," suggesting an opportunity for intensified research focus on this aspect in future studies.

[3] When we selected a minimum of two documents per country, only 11 countries were found in the network, as opposed to 20 countries when considering one document per country.

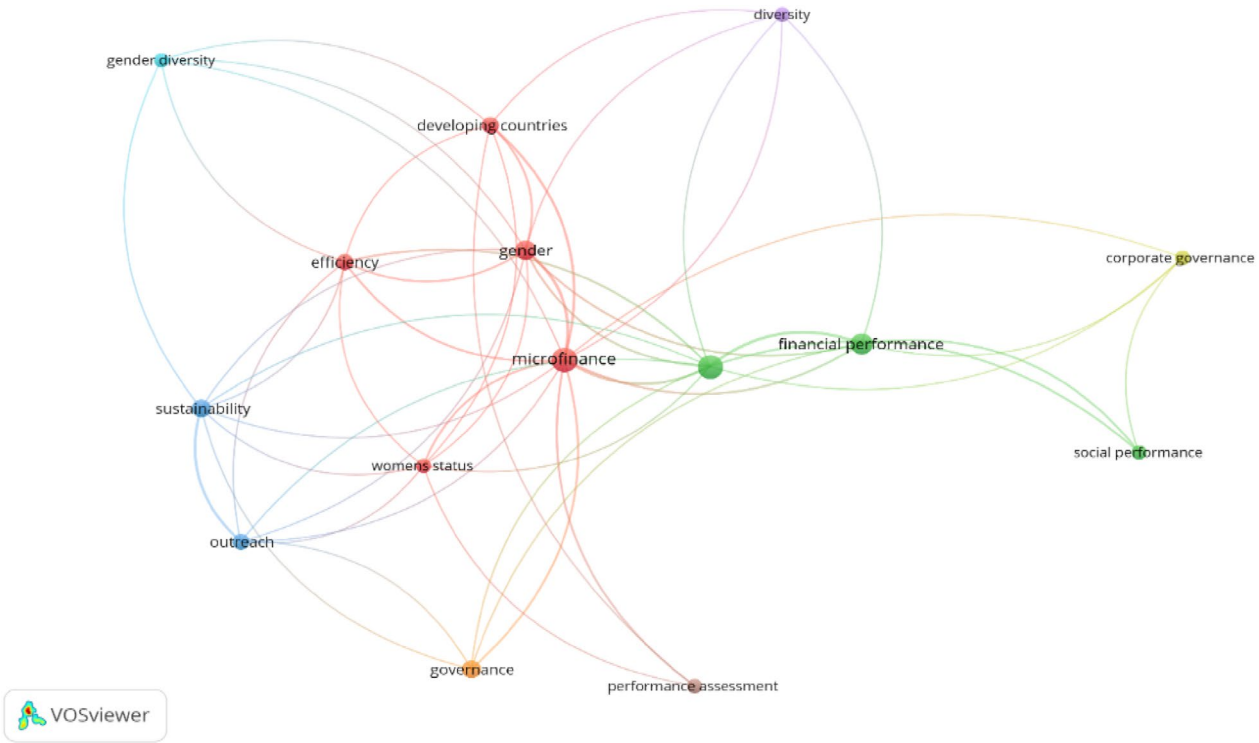

Fig. 10 Network visualization of co-occurrence of the keywords. Source: Authors. Note: We have selected the threshold of the minimum number of occurrences of the keyword as 2

Conclusion

Our systematic review aimed to unravel the underlying controversies surrounding the impact of gender diversity on MFI performance indicators, encompassing both financial and social dimensions. While analyzing the included studies, we encountered a striking inconsistency, whereby studies using the MIX Market database often reached different conclusions than those relying on rating reports or other data sources.

Specifically, studies based on the MIX Market database identified a negative association between board gender diversity and financial performance. Conversely, most studies utilizing agency rating reports or primary data observed a positive relationship. Noteworthy exceptions include the studies of Thrikawala et al. [114], Olohunlana et al. [94], and Mia et al. [85], which identified a positive relationship despite employing the MIX Market database. A potential explanation lies in the geographical specificity of these studies, focusing on Sri Lanka, sub-Saharan Africa, and Eastern Europe/Central Asia, respectively.

Moreover, our synthesis highlighted a prevalent positive association between board gender diversity and social performance across most studies, with a singular exception found in the study of Mersland and Strøm [80], grounded in a rating agency's report. While managers wield substantial influence in executing board decisions and shaping consumer engagement strategies, our review identified limited studies exploring the role of managerial gender diversity in MFI performance. These include the studies by Boubacar [25], Ghosh and Guha [44], Memon et al. [77], and Vishwakarma [117], revealing a positive association between managerial gender diversity and the social performance of MFIs. From the financial performance perspective, Boehe and Cruz [23] found a positive effect of gender diversity at the managerial level based on the female staff ratio, while Mia et al. [85] observed a negative relationship. This underscores the complex link between managerial-level gender diversity and MFI financial performance.

Shifting focus to female loan officers, our analysis suggests heightened efficiency in loan recovery, potentially attributed to their superior interaction with borrowers. Support for this hypothesis comes from studies by Boehe and Cruz [23], Ghosh and Guha [44], Gudjonsson et al. [46], and Pedrini [96]. In contrast, Mia et al. [85], Augustine et al. [13], and Memon et al. [77] counter this, positing concerns about leniency and

limitations in customer visits due to risk considerations and family duties, resulting in a lower loan recovery rate and a negative impact on overall MFI financial performance.

In a final layer of our exploration, we employed bibliometric network analysis to illuminate collaborative relationships among authors, citation patterns, and co-occurrence of keywords. This network analysis provides valuable insights for future research directions, fostering potential collaborations among researchers from diverse regions highlighted in Fig. 9. Additionally, it signifies an opportunity for researchers to collaborate with influential authors who have demonstrated excellence in scholarship within this field, offering prospects for deeper investigations into the dynamics of board gender diversity and its multifaceted impact on MFI performance.

Future research direction

While our research has contributed valuable insights, it is essential to acknowledge its limitations and identify avenues for future exploration. First, the selection of Scopus, verified by the Web of Science database, served as a robust foundation for our systematic review. However, future research could benefit from incorporating additional renowned search engines to ensure a more comprehensive and efficient review process. Second, the exclusion of papers in languages other than English due to language limitations may have led to the oversight of relevant contributions. Third, our focus on gender diversity within the organizational hierarchy overlooks its potential effects at the borrowers' level. Future research could delve into the nuanced impact of gender diversity on borrowers to provide a more holistic understanding. Finally, the reliance on online searches may have resulted in the omission of quality journals available only in printed versions. Future endeavors should consider these aspects, striving for a more comprehensive inclusion of diverse sources.

Given the limited exploration of the simultaneous effects of board, managerial, and loan officer-level gender diversity on both financial (e.g., OSS, FSS, ROA, and ROE) and social (e.g., ALS, NOAB, and % of Women Borrowers) performance indicators, we advocate for dedicated research in each dimension. The dearth of conclusive findings in studies utilizing efficiency measures underscores the need for future investigations into the impact of gender diversity on the efficiency and productivity measures of MFIs. Expanding the methodological toolkit, future research could leverage meta-analysis techniques to numerically summarize the existing literature, offering a quantitative perspective to complement theoretical discussions.

Moreover, the influence of board gender diversity may vary based on a country's "board gender quota" laws, which have not been integrated into the microfinance context. Incorporating these mechanisms can unveil their effectiveness across various dimensions of MFI performance.

Finally, the prevailing trend of estimating linear relationships in gender diversity research may oversimplify the dynamics. Future studies should explore potential nonlinear or quadratic relationships, identifying optimal thresholds for gender diversity's impact on MFI performance.

Appendix 1

See Table 3.

Table 3 Summary of authorship and citations of selected papers

Author/s	Title of the Paper	Journal Name	Citation	
			Scopus	Google
Mersland and Strøm [80]	Performance and governance in Microfinance Institutions	Journal of Banking and Finance	304	889
Boehe and Cruz [23]	Gender and Microfinance Performance: Why Does the Institutional Context Matter?	World Development	52	113
Hartarska et al. [54]	Are women better bankers to the poor? Evidence from rural Microfinance Institutions	American Journal of Agricultural Economics	26	48
Mori [88]	Directors' Diversity and Board Performance: Evidence from East African Microfinance Institutions	Journal of African Business	14	33
Strøm et al. [112]	Female leadership, performance, and governance in Microfinance Institutions	Journal of Banking and Finance	132	283
Mori et al. [89]	Board Composition and Outreach Performance of Microfinance Institutions: Evidence from East Africa	Strategic Change	30	73
Wale [118]	Board diversity, external governance, Ownership structure and performance in Ethiopian Microfinance Institutions	Corporate Ownership and Control	0	2
Gohar and Batool [45]	Effect of Corporate Governance on Performance of Microfinance Institutions: A Case from Pakistan	Emerging Markets Finance and Trade	10	34
Augustine et al. [13]	Gender diversity within the workforce in the microfinance industry in Africa: Economic performance and sustainability	Canadian Journal of Administrative Sciences	17	31
Vishwakarma [117]	Women on Board and its Impact on Performance: Evidence from Microfinance Sector	Indian Journal of Corporate Governance	10	23
Adusei et al. [2]	Board and management gender diversity and financial performance of Microfinance Institutions	Cogent Business and Management	10	32
Thrikawala et al. [114]	Financial performance of Microfinance Institutions: does gender diversity matters?	Int. J. Gender Studies in Developing Societies	0	4
Pedrini [96]	Exploring the effect of gender diversity in MFIs during turbulent periods	International Journal of Human Resource Management	4	7
Bibi et al. [22]	Impact of gender and governance on microfinance efficiency	Journal of International Financial Markets, Institutions and Money	18	31
Shettima and Dzolkarnaini [109]	Board characteristics and Microfinance Institutions' performance: Panel data evidence from Nigeria	Journal of Accounting in Emerging Economies	14	16
Ghosh and Guha [44]	Role of gender on the performance of Indian Microfinance Institutions	Gender in Management	8	8
Boubacar [25]	Women's presence in top management and the performance of Microfinance Institutions in West Africa	International Journal of Social Economics	0	1
Hasan et al. [55]	Role of governance on performance of Microfinance Institutions in Bangladesh	Eurasian Economic Review	7	19
Adusei [1]	Board gender diversity and the technical efficiency of Microfinance Institutions: Does size matter?	International Review of Economics and Finance	13	20
Memon et al. [77]	Women participation in achieving sustainability of Microfinance Institutions (MFIs)	Journal of Sustainable Finance and Investment	2	6
Mia et al. [85]	Female participation and financial performance of Microfinance Institutions: Evidence from transition economies	Development Policy Review	0	1
Fall et al. [38]	Gender effect on microfinance social efficiency: A robust nonparametric approach	European Journal of Operational Research	0	2
Gudjonsson et al. [46]	Female advantage? Management and financial Performance in microfinance	Business: Theory and Practice	5	9
Olohunlana et al. [94]	Gender heterogeneity and microfinance sustainability in sub-Saharan Africa	African Development Review	0	0

Source: Authors

Appendix 2

See Table 4.

Table 4 Summary table of paper search in Scopus and Web of Science

Search string	Scopus	Web of Science
Gender and Microfinance Institutions or Microcredit institutions	491	697
Gender Diversity and Microfinance Institutions or Microcredit Institutions	40	58
Women and Microfinance Institutions or Microcredit Institutions	1013	1046
Gender Diversity and Performance of Microfinance Institutions or Microcredit Institutions	7	8
Female Employee and Performance of Microfinance Institutions or Microcredit Institutions	0	1
Gender of the Board Member and Performance of Microfinance Institutions or Microcredit Institutions	4	7
Women Moneylender and Performance of Microfinance Institutions or Microcredit Institutions	0	0
Gender Relations and Microfinance Institutions or Microcredit Institutions	85	66
Female Loan Officers and Microfinance Institutions or Microcredit Institutions	18	18
Female Staff and Performance of Microfinance Institutions or Microcredit Institutions	3	0
Total	1661	1901

Due to differences in algorithms between the two search engines, the preliminary search results show a higher number for the Web of Science database. However, the Scopus search results produced a higher number of relevant papers related to our exact string search

Abbreviations

SDGs	Sustainable development goals
MFIs	Microfinance Institutions
WOS	Web of science
ROA	Return on assets
OSS	Operational self-sufficiency
PY	Portfolio yield
DID	Desjardins international development
ROE	Return on equity
FSS	Financial self-sufficiency
YGL	Yield to gross loan
GLP	Gross loan portfolio
PM	Profit margin
Par30	Portfolio at risk > 30 days,
OpExp	Operating expense
AL	Average loan size
NOAB	Number of active borrowers
NOFB	Number of female borrowers
CPB	Cost per borrower
FR	Financial revenues
OC	Operating cost

Acknowledgements
The authors would like to thank the Executive Editor (Professor Dr. Ghada Refaat el Said), Associate Editor (Dr. Hui Ling Chong) and two anonymous reviewers for their very helpful comments and suggestions in improving the manuscript.

Author contributions
All the authors equally contributed to write the paper.

Funding
The study is not funded by any organization.

Availability of data and materials
The data can be requested from the corresponding author.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

Competing interests
No competing interest reported by the authors.

Received: 9 August 2023 Accepted: 24 December 2023
Published online: 12 January 2024

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