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Internal audit in microfinance institutions- evidence from transitional and developing economies

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Abstract

Microfinance institutions (MFIs) are hybrid organisations that strive to balance business and social goals. This paper examines the determinants of the internal audit (IA) function in MFIs, with particular emphasis on the business goals, specifically efficiency, productivity, regulation and the gross portfolio yield. We also investigate whether the establishment of an IA function is associated with MFI's focus on their social objectives relating to outreach, and women director appointments. Multivariate regression results from 1025 MFIs across 63 countries show that MFIs' focus on their social objectives is related to their propensity to establish an IA function. Thus, outreach and women director appointments are positively related to the establishment of an IA function. Similarly, in terms of the performance emphasis, the gross portfolio yield (inefficiency) increases (decreases) the likelihood of establishing an IA, but productivity and regulation have no effect. The findings suggest that MFIs' dual focus on social and business objectives impacts the establishment of internal audits. The results are robust to various measurements and estimations.

KEYWORDS
internal audit, microfinance, outreach, transitional economies, women directors

JEL CLASSIFICATION
G21, G23, M42

1 | INTRODUCTION

Microfinance institutions (MFIs) have the dual objective of helping to alleviate poverty through social outreach to localities where traditional banks have a minimal presence (Barry & Tacneng, 2014) while maintaining financial sustainability. Microfinance institutions specialise in providing financial services to the poor, especially in rural communities of developing and transitional economies (Kebede et al., 2022). Microfinance institutions have varied ownership structures and so is their governance set-up. Generally, they are classified into non-governmental organisations MFIs, cooperatives and credit unions, non-bank financial intermediaries, microfinance banks, and rural banks (Microbanking Bulletin, 2009). Over the last 3 decades, MFIs have expanded in scope and size. Having grown from a little above 600 to above 3700 institutions (Lassoued, 2017), they are estimated to have provided loan facilities above US$125 billion to more than 200 million borrowers (Convergences, 2018; Hermes & Hudon, 2018). Microfinance institutions have also aided the access of poor households to savings and investment services earlier associated with traditional banks (Banerjee et al., 2023). Despite their growth and socio-economic importance to low-income clients especially in developing economies, their critical internal governance structure is observed to be non-existent or weak (Bassem, 2013; CSFI, 2008; Mersland & Strøm, 2009).

Internal audit (IA) which is a tool for internal governance and control is perceived as a detective mechanism for identifying internal control (IC) weaknesses in MFI processes, procedures, and policies (Goodwin-Stewart &; Kent, 2006; Isern et al., 2008; Mbeba, 2007; Okello et al., 2019). Some studies contend that IA activities can strengthen IC policies and procedures through systematised monitoring and mitigation of the likelihood of the occurrence of various risks (Ayayi, 2012). There are also claims that the presence of IA should improve management oversight of operations, assure the effectiveness of established ICs, and deter fraud and mismanagement in MFIs (Raiborn et al., 2017). However, despite the highlighted internal governance benefits that MFIs may gain from having an IA function, only a small proportion are found to establish it (Beisland et al., 2015; Steinwand, 2000). For instance, Beisland et al.'s (2015) study use hand-collected data from 379 MFIs in 70 developing countries over the period 2001–2009 to reveal that just 45% of the firms in the sample had an IA function. This study's sample sourced from the MIX Market database showed that only about 28% of MFIs had an IA function. The objective of this study is to answer the question of why some MFIs have an IA function and others do not.

This research is motivated by the fact that existing literature is replete with studies on the IA function in mainstream financial institutions, but there is a dearth of empirical studies on the drivers of the IA function's existence in MFIs (BIS, 2012; Cahill, 2006; Gras-Gil et al., 2012).

Prior empirical studies explored the determinants and effectiveness of the use of IA in sectors other than microfinance (Arena & Azzone, 2007; Goodwin-Stewart &; Kent, 2006; Rönkkö et al., 2018). However, despite the usefulness of the findings of these prior studies, the empirical investigations

focus on traditional banks. There is a dearth of empirical studies on the drivers of the IA function's existence in MFIs (BIS, 2012; Cahill, 2006; Gras-Gil et al., 2012). Microfinance institutions operate in transitional and emerging economies (Afrifa and Gyapong, 2021) with weak institutional and regulatory environments (La Porta et al., 2000). Consequently, the unique institutional and regulatory idiosyncrasies associated with MFIs such as having a hybrid focus, and being located in developing countries among others, may affect their corporate governance architecture (Lenz & Hahn, 2015; Tunyi et al., 2020) such that a mechanical extrapolation of prior studies in banks and other traditional institutions may not be viable.

Our findings suggest that the depth of MFI outreach is positively related to the existence of IA. This may be linked to IA's role in mitigating asymmetric information that is characteristic of poor borrowers' and lenders' relationships (Agier, 2012). We also find female directorship in MFIs to be associated with IA existence. One key reason is that board female directors are better in monitoring roles (Gyapong & Afrifa, 2021), and so are keen on collaborating with other monitoring mechanisms to oversee organisational performance. Interestingly, the average cost to serve an MFI borrower per year (inefficiency) is found to have a negative relationship with IA existence, while MFI financial performance exhibits a positive and significant effect on the existence of the IA function. This suggests that inefficiency in MFIs may be an agency problem, hence managers of inefficient MFIs are reluctant to establish an IA function to check and reduce their inefficiencies.

Our study makes the following contributions. First, existing literature provides findings regarding the factors that determine the IA function in profit-oriented organisations located in developed financial markets where codes of corporate governance are stringent (Arena & Azzone, 2007; Goodwin-Stewart & Kent, 2006; Jiang et al., 2014; Rönkkö et al., 2018). We extend the literature by examining the factors which influence IA existence in MFIs: organisations that are mainly located in emerging and transitional economies and have both social and financial goals. This is important because, in these transitional economies, MFIs typify the banking prototype that people seek.

Second, this paper contributes to the IA literature and agency theory (AT) by documenting that inefficient MFIs may not want to establish IA. This is in contrast to existing governance literature that suggests that managers and boards tend to rely on the IA reports for assurance when the institutional control and governance structures are weak (Holt & DeZoort, 2009). However, our findings suggest that for MFIs that mostly operate in weak institutional settings in developing countries, there seems to be a reluctance to improve internal governance through IA. This may signify severe agency problems in MFIs so that self-interested managers are reluctant to establish IAs to curb their inefficiencies. Third, some MFIs pursue social objectives, like gender equality and higher access to microfinance for women (Islam & Islam, 2018; Osei-Tutu & Weill, 2021Osei-Tutu & Weill, 2021). This study suggests that appointing women in MFI leadership may not only serve a social objective but also facilitate the development of IA in MFIs. This serves as a stimulus for promoting female participation in MFI management because female directors are associated with better corporate governance structures, and the facilitation of better performance outcomes (Gyapong et al., 2021).

The subsequent sections of this paper are structured as follows: Section 2 presents a review of existing literature, provides the theoretical framework and develops the hypotheses for the study. Section 3 explores the research methodology and econometric model of the study and Section 4 discusses the study's empirical results and findings. Section 5 concludes the paper and summarises the implications, contributions, and limitations of the study.

2 | LITERATURE REVIEW, THEORETICAL FRAMEWORK, AND HYPOTHESES

The extant literature is rich in IA research in many sectors like education, manufacturing, commercial banking and insurance, consumer goods, Information and Communications Technology, and utilities (Arena & Azzone, 2009; DeSimone & Rich, 2020; Goodwin-Stewart & Kent, 2006). However, IA research in the microfinance industry is scarce. The unique services like micro-credit, savings, term deposits, financial literacy, and agriculture and housing loans, provided by MFIs to poor clients, have earned them a reputation for improving the socio-economic well-being of the unbanked in developing countries (Meyer, 2019). However, the argument favouring MFIs socio-economic impact may have been weakened by some scandals that led to customer suicides and institutional collapse, particularly in India and Latin America (Tchuigoua, 2015). Robust risk management and IC structures are arguably inadequate or absent in many MFIs (Blanco-Oliver & Irimia-Diéguez, 2019; Gyapong & Afrifa, 2021; Mader, 2013; Yimga, 2016). This may explain why stakeholders argued for stronger internal governance and risk controls for the growing microfinance industry (Galema et al., 2011). In pro-strong internal governance organisations, boards favour the input of the IA function to provide assurance functions, strengthen IC systems, and ensure compliance with governance and risk management procedures (Eulerich & Eulerich, 2020; Spira & Page, 2003). Hence, in the extant literature, IA is linked with positive outcomes through higher participation in risk management (Carcello et al., 2020), IC structures (Arena & Azzone, 2007), reduction in earnings management (Prawitt et al., 2009), fraud prevention and transparent financial reporting (Coram et al., 2006; Gras-Gil et al., 2012) in organisations. Rönkkö et al. (2018) find a positive correlation between the existence of IA in a firm, and ownership. Also, firm size, regulation, competition, higher profitability, and liquidity, are linked to IA existence (Wallace & Kreutzfeldt, 1991). Other factors found to influence the existence and effectiveness of the IA function are management support, the intensity of board monitoring roles, firms' operating complexity, growth opportunity, and the need for firm-specific knowledge (Arena & Azzone, 2009; Jiang et al., 2014; Mihret & Yismaw, 2007). Beisland et al. (2015) demonstrate that external audit and IA are complementary, that both indicate audit quality, and that the existence of IA is associated with other indicators of stricter governance in MFIs.

The role of IA activity in institutional governance is located within the AT which postulates that agency problems arise when the principals (owners) of an enterprise cannot directly observe if the agents' (managers') actions or decisions are beneficial to them (Jensen, 1993). The AT hinges on the existence of the IA function on rectifying the information asymmetry and unobservability of agents' actions (Kim & Mahoney, 2005) within an organisation. Hence, the AT proposition is that IA is a consequence of the principal's decision to establish a monitoring mechanism that limits the extent of divergences from the principal's interests. Agency theory also sees the agents' decision to establish an IA unit as a bond of commitment to their principals' interests (Adams, 1994; Jensen & Meckling, 1976; Kim & Mahoney, 2005). For MFIs, they may not only have to deal with principal/agent problems but also the principal/principal agency conflict because of their dual mission. The different expectations of several stakeholders like donors, governments, investors, etc., in terms of profitability or social outreach, create a multi-principal agency problem (Bassem, 2012; Beisland et al., 2015; Laher & Proffitt, 2020; Tchuigoua, 2015). Therefore, MFIs are faced with the prospect of managing the contractual relationships that exist in multi-principal entities due to disagreement about goals, and the complexity surrounding the accomplishment of such goals (Bolli & Vo Thi, 2014; Voorn et al., 2019; Ward & Filatotchev, 2010). Therefore, the AT provides a basis of support for the establishment of IA to mitigate the risks of information asymmetry,

inadequate internal monitoring and control, and effective governance (Rönkkö et al., 2018; Safdar et al., 2019). The Transaction Cost Economic (TCE) theory which uses a contractual approach to explore the concept of organisational economics, highlights how firms select appropriate and relevant cost-economizing mechanisms for better governance and IC. These mechanisms are to prevent incomplete contracting from causing transactions to slip out of alignment (Kim & Mahoney, 2005; Spraakman, 1997). In this regard, *principals and agents*[1] are more inclined to employ IA as a governance mechanism for providing cost-economizing information and monitoring compliance with contractual requirements (Kim & Mahoney, 2005). This cost-economizing information is seen to be more relevant to managers than the financial accounting information provided by external auditors to owners and creditors (Spraakman, 1997; Williamson, 1975, 1985). This is because firms are assumed to exhibit the fundamental behavioural characteristics of bounded rationality and opportunism (Archer et al., 1998). Bounded rationality places a limit on optimal contracting, while opportunism (self-interest) creates additional contractual hazards (Archer et al., 1998). These theoretical foundations, therefore, form the basis for the following hypotheses development regarding the existence of IA function in MFIs.

2.1 | Client outreach and internal audit

The depth of outreach of MFIs to many unbanked poor borrowers through financial services provision (Bassem, 2009; Hartarska & Nadolnyak, 2007) is equated with MFIs' social objective and performance (Lopatta et al., 2017). As MFIs' services target more poor clients including women, rural dwellers, and the illiterate, so does their outreach depth (Paxton, 2002; Quayes, 2012). The adoption of stronger controls in MFIs is linked to the need for transparent reporting, moral hazard deterrence, and assurance provision on the reliability of financial and social performance reports (Adams, 1994; Lopatta et al., 2017; Schreiner, 2001). The attainment of social objectives by MFIs now appears to be a priority for stakeholders, over the scale of services which has grown significantly (Convergences, 2019; Kar, 2012; Quayes, 2012).

Prior studies like Quayes (2012) provide empirical evidence of a positive relationship between MFI outreach and financial sustainability, while Hermes et al. (2011) show a negative relationship between MFI outreach and efficiency. Lopatta et al. (2017) demonstrate that a rapid increase in outreach through excessive women-based lending without proper risk controls may heighten credit risk associated with poor borrowers' vulnerability to economic shocks (Quayes, 2012). Also, massive loan disbursement to female and poor clients in an imperfect market characterised by information asymmetry and moral hazards could distort an MFI's portfolio quality (Ledgerwood et al., 2013; Lopatta et al., 2017; Schreiner, 2001), and cause higher operating expenses (Meyer, 2019). Thus, effective risk controls are required to reduce information asymmetry problems, high operating expenses, and credit risk emanating from an increase in outreach (Meyer, 2019). In fact, Beisland et al. (2015) strongly claim that MFIs striving to achieve both outreach and sustainability goals are more likely to adopt the use of an IA function. Hence, the need to establish proper control measures that mitigate poor loan portfolio performance that may be exacerbated by increased outreach (D'Espallier et al., 2011) should influence MFIs to establish IA.

[1]Agency theory and TCE theory may overlap as they are both concerned with minimising contractual problems. While TCE theory calls those involved in the contract "parties or partners", the agency theory calls them "principals and agents" (Kim & Mahoney, 2005).

H1. Depth of outreach is positively associated with IA existence in MFIs.

2.2 | Regulation and internal audit

In microfinance, regulation is used to describe when MFIs are supervised by a central bank, established banking laws, or registered by an apex institution or under an Act (Christen & Rosenberg, 2000; Haq et al., 2008). Microfinance institutions, whether subject to banking laws or its apex institution's operational standards, do comply with some form of regulation guiding governance and risk management systems, minimum/ongoing capital and liquidity requirements, customer protection, accounting policies, stability in the banking and financial system, etc (Christen & Rosenberg, 2000; Ledgerwood & White, 2006). Deposit-taking MFIs are subjected to more stringent prudential regulations because of the risk to depositors' funds (Ledgerwood & White, 2006), while credit-only MFIs face less stringent regulations. An increasing number of MFIs are transforming from credit-only to deposit-taking institutions to expand their outreach and clientele (Hartarska & Nadolnyak, 2007). But one of the regulatory conditions that come with deposit-taking services is the establishment of the IA function. Regulators may require it to ensure that the entity's operations comply with both the rules of institutional risk management and IC (CBN, 2019; Jansson et al., 2004). But several other credit-only MFIs that are not transforming into deposit-taking institutions are not immune to microfinance credit risks. Thus, having a strong IC and risk mechanism for achieving sustainability, is perceived as a strong motivator for MFIs to establish IA function (Bassem, 2009; Haq et al., 2008; Ledgerwood & White, 2006). The BIS observes that many countries are considering regulatory mandates for deposit-taking MFIs to establish the IA function (BIS, 2010). Rubambey (2005) even reports that frameworks like the *2005 IA and Control Regulations* in Tanzania, have been provided to promote the quality and independence of internal audits in MFIs. Therefore, regulation can affect the establishment of the IA function in MFIs.

H2. Regulation has a positive effect on the establishment of the IA function in MFIs.

2.3 | Female directorship and internal audit

The participation of women in organisational leadership is considered to promote organisational performance and creativity (Nielsen & Börjeson, 2019; Opstrup & Villadsen, 2015). Adams and Ferreira (2009) state that women have a higher likelihood of being appointed as members of the audit and corporate governance committee of an entity's board. In MFIs, Mersland and Strøm's (2009) indicate that female CEOs deal with client-based information asymmetries better than male CEOs, considering that more MFI clients are women.

Female directors and internal auditors are seen as two key components of a monitoring mechanism because, female directors appear to be tougher monitors compared to male counterparts and so combine with board-reporting internal auditors to improve an MFI's financial and social performance (Adams & Ferreira, 2009; Strøm et al., 2014). While female directors are often connected with the compliance aspect of risk monitoring, IA provides independent assurance on institutional risk management and the IC framework (IIA, 2013). Therefore, the collaborative effort of both female directors and IA can be an effective governance mechanism for reducing agency and asymmetric information problems in organisations (Adams, 1994; Adams & Ferreira, 2009; Gyapong et al., 2021). Therefore, the inclination of female directors to take on monitoring roles is likely to favour the establishment of such internal governance and monitoring mechanisms like the IA in MFIs.

H3. Female board directors are positively associated with IA existence in MFIs.

2.4 | Operating cost efficiency and internal audit

The provision of microfinance services is associated with high labour input and operating costs (von Stauffenberg et al., 2014). This makes operating cost a vital measure of MFI performance. Therefore, the operating cost efficiency (OCE) in MFIs can be measured using the operating cost incurred by MFIs, per active borrower (MIX Market, Gutiérrez-Nieto and Serrano-Cinca, 2007). Thus, MFIs with higher cost of lending per borrower are operationally inefficient (Gutiérrez-Nieto et al., 2009). So, to achieve OCE, minimising the operating cost of lending (Lafourcade et al., 2005) becomes a priority for MFIs because their operating cost outlay could be as high as 10 times that of commercial banks in developing markets (Beisland et al., 2014; Gonzalez, 2007). Microfinance institution operational expenses like personnel and administrative costs represent about 62% of the interest rate charged to borrowers (Gonzalez, 2007). Characteristically, MFIs must incur personnel costs for client information-gathering, follow-up, monitoring, and loan repayment duties. Hence, institutional OCE should result from efficiently striking a balance between incurring unavoidable operational costs and achieving outreach and financial sustainability (Gutiérrez-Nieto & Serrano-Cinca, 2007; Quayes, 2012).

Operationally inefficient MFIs may be interested in the IA function to reduce their cost inefficiency (Botica Redmayne et al., 2021), particularly if the managers' interests are aligned with that of the owners. In this case, IA will facilitate the reduction of agency conflicts (Adams, 1994). On the other hand, operationally inefficient MFIs may not be interested in establishing an IA function where there is an agency problem because the managers' interests are misaligned with the interests of owners. This is because of managerial perquisite consumption (Andrews et al., 2017; Gyapong et al., 2021a), where the managers may have recruited their cronies in the institution and would not want the IA to expose these issues. Therefore, this paper hypothesises the following:

H4a. Operating cost inefficiency is positively associated with the existence of IA function in MFIs.
H4b. Operating cost inefficiency is negatively associated with the existence of IA function in MFIs.

2.5 | Staff productivity and internal audit

In microfinance, staff productivity is assessed by outreach to a targeted number of clients, while efficiently keeping operational costs in check (Kinde, 2012; MIX Market, 2019, Gutiérrez-Nieto & Serrano-Cinca, 2007; Chaudhary & Rai, 2009). This study measures staff productivity using total staff numbers and not loan officers only. This approach provides a wider institutional perspective on staff productivity (von Stauffenberg et al., 2014). Drawing from Chaudhary and Rai (2009), the staff productivity and operational cost nexus approach assumes that as the ratio of loan accounts to staff member increases, the percentage of transaction cost to total outstanding loans, will reduce. Thus, a highly productive workforce can compensate for MFIs' high labour costs by leveraging their operational economies of scale to maximise loans disbursed to clients (von Stauffenberg et al., 2014; Pal & Mitra, 2017). Extant literature suggests that IA can enhance staff productivity because it has evolved into a performance auditing practice, that reports on the effectiveness of IC systems business systems and processes (Dittenhofer, 2001; IIA, 2018). The review of the effectiveness of IC systems over management accountabilities and organisational structure, are within the purview of the IA function

(Dittenhofer, 2001; Mbeba, 2007). Therefore, we further examine whether when MFIs increase staff strength to reach their client outreach and loan portfolio goals, it becomes imperative to implement an IA function, to monitor the effectiveness of the IC systems over staff productivity.

H5. The level of staff productivity is positively associated with internal audit existence in MFIs.

2.6 | Financial performance and internal audit

According to Holt and DeZoort (2009), when IA reports accompany financial performance reports, investors' confidence is boosted. Prior studies also suggest that the quality of financial reporting, and the financial performance goals of the financial responsibility centres (e.g., cost, revenue, and investment centres) within an organisation, can impact the design of the IA function (Gras-Gil et al., 2012; San Miguel & Govindarajan, 1984). Therefore, management's decision to establish the IA function may be in a bid to improve the quality of financial reporting, and to provide investors with assurance of the existence of effective oversight over financial report reliability (Haq et al., 2008; Holt & DeZoort, 2009). Some studies note that internal auditors that carry out independent checks on reporting procedures and report to the board, provide assurance on the reliability and integrity of the financial reporting processes (Al-Akra et al., 2016; IIA, 2013; Strøm et al., 2014). Therefore, MFIs focused on financial performance improvement and the quality of financial reporting, are expected to establish the IA function.

H6. Financial performance has a positive relationship with the existence of an IA function in MFIs.

3 | DATA AND METHODOLOGY

3.1 | Data source and sample selection

MFIs' data were sourced from the MIX Market database of the World Bank, while country-specific data were collected from the world development indicators of the World Bank.[2] The MIX Market database has been used in several recent microfinance studies (Afrifa et al., 2019; Gudjonsson et al., 2020; Iqbal et al., 2019; Tchuigoua, 2016; Thrikawala et al., 2017; Yimga, 2016), as it contains the most comprehensive publicly available metadata of MFIs' financial information.

Internal audit observations were first captured in the MIX Market database in 2010, and the last update being in 2018. Our sample initially included all MFIs in the MIX Market Database from 2010 to 2018. Following prior MFI literature, we filtered MFIs whose data were not annual, then excluded MFIs without assets from the sample (Ahlin et al., 2011). Then, MFIs without at least 5 years of data were dropped and MFIs whose firm-year observations were less than six were also excluded to ascertain the consistency of operations of the MFIs (Gul et al., 2017). These filters produced a final unbalanced panel sample data of 1025 unique MFIs across 63 developing countries over nine years (2010–2018). The choice of unbalanced panel captures the heterogeneity of MFIs and represents the entire population better (Gyapong et al., 2021a). Compared to previous studies that have used MIX Market data (Afrifa et al., 2019; Iqbal et al., 2019; Kar & Swain, 2014; Quayes, 2012;

[2]https://databank.worldbank.org/source/world-development-indicators

Tchakoute-Tchuigoua, 2010; Yimga, 2016), our sampling approach yielded the largest number of observations, making them highly suitable for the analysis.

3.2 | Regression estimation model

This study uses the probit model (Dorfleitner et al., 2017; Nadeem, 2020) to examine the existence or non-existence of IA function, as a function of the hypothesised variables. In probit regressions, the coefficients of the predictor variables cannot be described as having marginal effects on the dependent variable, and their signs show whether the corresponding variable positively or negatively influences the likelihood for the dependent variable to equal 1 (Mersland & Urgeghe, 2013). Coefficients are estimated using the maximum likelihood procedure. The measure of fit is based on the pseudo-R^2, which compares the maximum likelihood function values of all regressors with the value of the likelihood without regressors. Year fixed effects were used in this study for two purposes. First, to capture unit-invariant heterogeneity due to time, by capturing various events that affected all MFI units of analysis in the same year in a similar way, and second, to control for heteroscedastic issues which may be inherent in this study's large range of observed data values.

The estimation model employed is presented by the following equation:

$$\begin{aligned} \mathrm{IA} = {} & \alpha 0 + \alpha_1 \mathrm{OUTREACH} + \alpha_2 \mathrm{REG} + \mathrm{A}_3 \mathrm{FEM\_DIR} + \alpha_4 \mathrm{CPB} + \alpha_5 \mathrm{PROD} + \alpha_6 \mathrm{FIN\_PERF} \\ & + \alpha_7 \mathrm{LN\_SIZE} + \alpha_8 \mathrm{GNI} + \alpha_9 \mathrm{INFLATION} + \alpha_{10} \mathrm{CAR} + \alpha_{11} \mathrm{FIRM} + \alpha_{12} \mathrm{YEAR} + \varepsilon. \end{aligned} \tag{1}$$

3.3 | Dependent variable

The dependent variable indicates the existence of an IA function in an MFI, in the MIX Market database. This dependent variable takes the value of 1 for IA presence that provides assurance of compliance with IC and risk policies particularly for curbing credit risks, and the value of 0 represents the absence of an IA function.

3.4 | Independent variables

The key microfinance operational indicators[3] used as predictors of the IA function, are based on the hypotheses developed in Section 2. They are as follows:

Outreach *(OUTREACH)* that is, depth of outreach is measured using the percentage of female borrowers in the total loan portfolio of the MFI (Ferro-Luzzi & Weber, 2006; Hermes et al., 2011; Quayes, 2012). Regulation *(REG)* is a binary variable which takes one if an MFI is regulated and 0 if it is not. The regulatory status is time-invariant, although it can change from unregulated to regulated, but for some time it is fixed (Hartarska & Nadolnyak, 2007). Female directorship *(FEM_DIR)* signifies the proportion of women board members to the total number of MFI board members. Cost per borrower *(CPB)* inefficiency and measured as total operating cost distributed among average number of borrowers and scaled by 100 (von Stauffenberg et al., 2014) and borrowers per staff member *(PROD)* (S.E.E.P

[3]Except for percentages and number of quantities, the MIX Market financial information in the database is presented in US dollars.

Network, 2010; Mbeba, 2008), indicate operational efficiency respectively. So, MFIs which incur higher CPB and record lower borrowers per staff member signify inefficiency (Nadiya et al., 2012). Financial performance *(FIN_PERF)* is measured by the yield on gross portfolio (Iqbal et al., 2019).

3.5 | Control variables

Several studies seem to conclude that companies with IA function are larger in size (Arena et al., 2004; Wallace & Kreutzfeldt, 1991). This study controls for MFI size *(LN_SIZE)* using the natural log of assets in US dollars.

For country-specific variables, this study controls for the economic growth and performance of the country using Gross National Income (GNI) current US$ (Yimga, 2016), being the total value-addition of resident producers and net income from abroad. In addition, this study controls for the country's purchasing power by including inflation *(INFLATION)* as a percentage of Gross Domestic Product (Gonzalez, 2008; Yimga, 2016). To control for the strength of a country's financial system and resilience to unexpected losses by financial institutions, this study includes bank capital to assets ratio percent *(CAR)* (Di Bella, 2011). Table 1 provides a comprehensive description of the study variables.

TABLE 1 Description of variables.

Variable name	Definition	Source
IA	Internal audit function—Internal audit presence proxy. Binary variable: 1 if MFI internal audit verifies compliance with policies and systems used to prevent over-indebtedness risk, and 0 otherwise.	MIX Market
OUTREACH	Percentage of female borrowers—An MFI depth of outreach proxy that is, number of active women borrowers as a percentage of total borrowers at period end.	MIX Market
REG	An MFI regulation proxy. Dummy variable is 1 if MFI is subject to prudential guidelines and 0 if otherwise.	MIX Market
FEM_DIR	Percent of female board members—A female leadership proxy that is, number of women board members as a percentage of total board members at period end.	MIX Market
CPB	Cost per borrower—An MFI cost (in)efficiency proxy that is, total operating cost distributed among average number of borrowers and scaled by 100, thus representing the average cost of maintaining an active borrower.	MIX Market
PROD	Borrowers per staff member—A proxy for overall productivity of MFI's employees in terms of serving borrowers that is, total number of active borrowers divided by total personnel.	MIX Market
FIN_PERF	Yield on gross portfolio (nominal)—An MFI financial performance proxy that is, financial revenue from loans compared to average gross loan portfolio.	MIX Market
LN_SIZE	Natural log of assets—Control variable for size of MFI.	MIX Market
GNI	GNI (current US$)—A country variable that is, the sum of value addition by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. Data are in current US dollars.	WDI
INFLATION	Inflation, GDP deflator (annual %)—A country variable. The percentage change in the rate of prices in the economy as a whole.	WDI
CAR	Bank capital to assets ratio (%)—A country variable that is, the ratio of bank capital and reserves to total assets.	WDI

Abbreviations: GDP, Gross Domestic Product; GNI, Gross National Income; IA, Internal Audit.

4 | EMPIRICAL RESULTS AND DISCUSSION

4.1 | Descriptive statistics

Table 2 presents the results of the descriptive statistics computed using 1025 MFIs from 2010 to 2018. The dependent variable *IA*, ranges from 0.00 to 1.00, with a mean (median) value of 0.28 (0.00). This suggests that about 28% of MFIs have an IA function. This indicates the low level of IA use by the MFIs examined. This is consistent with Beisland et al. (2015), who found that less than 45% of MFIs have an IA presence. *OUTREACH* has a mean (median) value of 0.57 (0.56) implying that more than half of the number of MFIs in the sample, focus on client outreach and social performance. *REG* shows a mean (median) value of 0.67 (1.00) putting the proportion of MFIs that are under some form of regulation at 67%. For *FEM_DIR*, the mean (median) value of 0.21 (0.14) indicates that about 21% of the sampled MFIs have female board members. *Cost per borrower* and *PROD* have mean (median) values of 2.92 (1.62) and 132 (102) respectively. These indicate that sampled MFIs incur an average cost of US$292 per client and have an average of 132 borrowers per staff member. We note that *FIN_PERF* shows a mean (median) value of 0.30 (0.25), indicating that about 30% of the sampled MFIs record a yield on their gross portfolio, which is indicative of how well the examined MFIs are generating financial revenue from loans.

For the control variables, the mean (median) value of *LN_SIZE* is 16.53 (16.50). The *GNI* and *INFLATION* macroeconomic indicators show mean (median) values of US$580b (US$100b) and 5.6% (4.4%) respectively. The *CAR* shows a mean (median) value of 10.5% (10.4%) suggesting that most MFIs comply with the Basel-III rules of the Basel Committee (2012), which require all banks to have a capital adequacy ratio of at least 8% (BIS, 2010).

Table 3 presents the Pearson (pairwise) correlation matrix of the independent variables used in the analysis with statistical significance shown at the 5% level. The magnitude of the Pearson correlation coefficient determines the strength of the correlation between the variables in this sample data. The calculated variance inflation factors for the variables (not tabulated) are all less than 10[4] and have a mean value of 1.21. This indicates that multicollinearity is not a problem in the data.

Table 4 reports the results of a paired *t*-test (mean-comparison) conducted to determine the conditions of MFIs with an IA function, and those without. From the results of this statistical test, this study observes in the *Mean Difference* column that MFIs that have an IA presence, are statistically and significantly different from MFIs that do not have an IA presence on different dimensions, including *OUTREACH*, *FEM_DIR*, *FIN_PERF*, *LN_SIZE, INFLATION*, and *CAR*. This suggests that MFIs with IA and those without IA are significantly different in terms of outreach, female directorship, financial performance, and size. While the two groups are only moderately different in terms of regulation, efficiency, and productivity. This result, therefore, prompts further investigation into this phenomenon.

4.2 | Main results and discussion

The multivariate regression results of the probit estimation model are presented in Table 5. In support of hypothesis 1, the analysis in column 1 shows that outreach is positively and significantly related to IA existence (co-efficient = 0.759, $p < 0.01$). A post estimation test of the marginal effects of *OUTREACH*, holding all other regressors constant at some values, indicates the conditional probability

[4]Generally, the literature considers VIF values less 10 as acceptable (O'brien, 2007).

TABLE 2 Descriptive statistics.

Variable	Mean	Std. Dev.	25th	50th	75th
IA	>0.276	>0.447	>0.000	>0.000	>1.000
OUTREACH	>0.569	>0.334	>0.351	>0.564	>0.900
REG	>0.670	>0.470	>0.000	>1.000	>1.000
FEM_DIR	>0.205	>0.250	>0.000	>0.143	>0.333
CPB	>2.925	>8.203	>0.440	>1.620	>3.090
PROD	>132.637	>135.946	>61.000	>102.000	>164.000
FIN_PERF	>0.299	>0.196	>0.189	>0.252	>0.379
LN_SIZE	>16.535	>2.108	>15.086	>16.497	>17.943
GNI	>580,000,000,000	>1,230,000,000,000	>19,400,000,000	>100,000,000,000	>379,000,000,000
INFLATION	>5.576	>5.229	>2.549	>4.423	>7.412
CAR	>10.544	>3.169	>7.535	>10.358	>12.245

Abbreviations: GNI, Gross National Income; IA, Internal Audit.

TABLE 3 Pearson (pairwise) correlations matrix for the variables included in the analysis.

No	Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
[1]	*OUTREACH*	1									
[2]	*REG*	−0.13*	1								
[3]	*FEM_DIR*	0.30*	−0.02	1							
[4]	*CPB*	−0.17*	−0.03	0.02	1						
[5]	*PROD*	0.26*	0.05*	−0.03	−0.19*	1					
[6]	*FIN_PERF*	0.18*	−0.18*	−0.01	−0.04*	−0.07*	1				
[7]	*LN_SIZE*	−0.13*	0.31*	−0.09*	0.03*	0.03*	−0.11*	1			
[8]	*GNI*	0.11*	−0.22*	−0.06*	0.00	0.00	−0.04*	−0.03	1		
[9]	*INFLATION*	0.03*	−0.05*	−0.02*	−0.06*	−0.01	0.10*	−0.15*	−0.02	1	
[10]	*CAR*	−0.24*	0.09*	0.00	−0.06*	−0.02	0.07*	0.03	−0.32*	0.07*	1.00

Note: * shows significance at the 5% level.

Abbreviation: GNI, Gross National Income.

TABLE 4 Paired *T*-test full sample results.

	IA = 0		IA = 1		
Variables	**Obs**	**Mean**	**Obs**	**Mean**	**Test of mean difference**
OUTREACH	4786	0.49	1825	0.60	−0.11***
REG	4797	0.66	1830	0.69	−0.03
FEM_DIR	4786	0.19	1825	0.25	−0.06***
CPB	1616	2.67	539	2.38	0.29
PROD	1814	128.03	603	127.32	0.71
FIN_PERF	4797	0.28	1830	0.30	−0.02***
LN_SIZE	4797	16.50	1830	16.78	−0.28***
GNI	4747	585,000,000,000	1799	565,000,000,000	20,000,000,000
INFLATION	4747	5.66	1799	5.36	0.30*
CAR	3502	10.70	1376	10.14	0.56***

Note: This panel provides the results when the sample is divided into two subsamples based on MFIs with and without IA.

Abbreviations: GNI, Gross National Income; IA, Internal Audit.

*, **, and *** indicate significance at $p < 0.10$, 0.05, and 0.01, respectively in tests of mean differences between the two subsamples.

of *IA* changes, based on a change in the value of *OUTREACH*. The result in column 8 of Table 5 shows that a one standard deviation change in *OUTREACH*, produces a 14-percentage point change in *IA* existence at the 1% significance level. This suggests that MFIs with deeper outreach or more gender-based lending, are faced with client information asymmetry (Lopatta et al., 2017), and so are associated with the establishment of the IA function. This serves as a monitoring mechanism that helps to reduce the information chasm (Eulerich & Eulerich, 2020) that exist between MFIs, and poorer clients which tend to have limited credit information (Blanco-Oliver et al., 2021; Kim & Mahoney, 2005; Quayes, 2012). Following the TCE theory, this suggests that IA may be established as part of the governance mechanisms of MFIs for performing cost economising function that enhances operational cost control and reduces information opacity. This is consistent with D'Espallier et al.'s (2011) argument that MFIs focusing on serving marginalised clients such as women borrowers, may require closer on-site (business) monitoring, because of their low financial and business literacy

TABLE 5 Determinants of internal audit (IA) function in Microfinance institutions (MFIs).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) Marginal effects
OUTREACH	0.759***						0.590***	0.141***
	(0.089)						(0.168)	(−0.394)
REG		0.040					−0.053	−0.013
		(0.075)					(0.130)	(−0.031)
FEM_DIR			0.757***				0.911***	0.217***
			(0.112)				(0.198)	(−0.045)
CPB				−0.027**			−0.026*	−0.006*
				(0.013)			(0.014)	(−0.003)
PROD					0.000		−0.000	−9.60e−05
					(0.000)		(0.000)	(−0.000)
FIN_PERF						0.497***	0.730***	0.174***
						(0.138)	(0.278)	(−0.065)
LN_SIZE	0.056***	0.028	0.047***	−0.017	0.003	0.037**	0.043	0.010
	(0.017)	(0.018)	(0.017)	(0.028)	(0.027)	(0.017)	(0.031)	(−0.008)
GNI	−0.000	−0.000	0.000	−0.000**	−0.000*	−0.000	−0.000**	−0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INFLATION	−0.023***	−0.023***	−0.023***	−0.017	−0.023*	−0.024***	−0.021	−0.005
	(0.008)	(0.007)	(0.007)	(0.013)	(0.012)	(0.007)	(0.014)	(−0.003)
CAR	−0.022*	−0.040***	−0.041***	−0.046**	−0.034*	−0.043***	−0.024	−0.006
	(0.012)	(0.012)	(0.012)	(0.019)	(0.018)	(0.012)	(0.020)	(−0.005)
Constant	−3.232***	−2.207***	−2.666***	−1.697***	−2.204***	−2.460***	−3.769***	
	(0.395)	(0.361)	(0.369)	(0.638)	(0.617)	(0.364)	(0.709)	
Year fixed-effects	YES	YES	YES	YES	YES	YES	YES	YES
Clustered—Firm level	YES	YES	YES	YES	YES	YES	YES	

TABLE 5 (Continued)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) Marginal effects
Pseudo R-squared	0.202	0.178	0.192	0.211	0.198	0.182	0.260	
Observations	4871	4883	4871	1592	1766	4883	1542	1542

Note: Robust standard errors shown in parentheses and clustered on MFIs.

Abbreviations: GNI, Gross National Income; IA, Internal Audit.

*, **, and *** represent significance at 10, 5, and 1 percent, respectively. This table reports the results from a probit specification of a determinants model of IA existence based on equation (1). The dependent variable is an indicator variable equal to 1 for MFIs that adopt the use of IA, and 0 otherwise. In columns 1–6, IA is regressed on each explanatory variable and the control variables. Column 7 shows results when IA is regressed simultaneously on all variables. All the results are qualitatively similar between each variable in columns 1–6 and compositely in column 7. Column 8 shows the post-estimation marginal effects results.

level. D'Espallier et al. (2011) further add that having more women clients is associated with higher operational expenses and administrative costs. Therefore, MFIs probably implement strict monitoring mechanisms like IA to address their client information needs. Dunn (2002) states that knowledge of clients' use of financial services reduces business risks, and simultaneously improves the financial stability of MFIs.

For hypothesis 2 in column 2 of Table 5, the coefficient on *REG* is positive but insignificant, and weakly supports this study's hypothesis. Unlike previous studies that provide evidence of a significant positive relationship between banking regulation and the use of IA in financial institutions (Bailey et al., 2012; Bassem, 2009; Eulerich & Eulerich, 2020), this study does not find such relationship in MFIs. Yimga (2016) and Haq et al. (2008) doubt the feasibility of implementing effective regulatory oversight and supervision over traditionally small, and remotely located MFIs by banking regulators, because it is highly capital intensive. Therefore, there would be few or no obligationary requirements for MFIs to establish an IA function in the absence of compelling regulations. From Hartarska and Nadolnyak's (2007) view, regulation plays a limited role in improving the performance of MFIs. In fact, the predominant argument for regulation of MFIs is directly related to ensuring financial system stability and client protection (Arun & Murinde, 2010). Perhaps, our result is more likely supporting of the view that IA existence in MFIs is based on a voluntary decision to set it up (Rönkkö et al., 2018).

The third hypothesis in column 3 of Table 5 is supported by the positive and significant relationship between female directorship and IA (co-efficient = 0.757, $p < 0.01$). In column 8 of Table 5, the post-estimation test of marginal effects of *FEM_DIR*, while holding all other regressors constant, indicates that a one standard deviation change in *FEM_DIR*, is associated with a 22-percentage point change in IA existence at the 1% significance level. Female directors appear to favour the use of board-reporting internal auditors in tackling the information asymmetry problems of both clientele and staff (Mersland & Strøm, 2009; Steinwand, 2000). This equally demonstrates that the quality of IA function and board monitoring intensity are positively related (Jiang et al., 2014), as Adams and Ferreira (2009) found that gender-diverse boards apply more effort to monitoring. Cooperation and collaboration are key components of the leadership approach employed by females to transform and manage organisations (Gudjonsson et al., 2020; Jogulu & Wood, 2006). Perhaps, female directors use IA reports to boost their knowledge of goings-on and their competence in financial and operational monitoring. This is because the internal auditor's reports help them to monitor management's activities better, and to display higher sensitivity to turnover and performance indicators (Adams & Ferreira, 2009). From the AT perspective, this hints that the female board member/IA affiliation may assist principals/owners in protecting their investment through improved monitoring, thus reducing monitoring costs (Jensen & Meckling, 1976). While from the policy standpoint, MFI owners and other stakeholders can encourage the female board member/IA alliance to play a more significant role in reducing the of risk making poor governance decisions due to asymmetrical information (Adams, 1994; Ramamoorti, 2003).

For hypothesis 4 in column 4 of Table 5, CPB is significant and negatively related to IA (co-efficient = −0.027, $p < 0.05$), and this is consistent with hypothesis H4b. In column 8, the marginal effects of *CPB*, holding all other regressors constant indicates that a one standard deviation change in *CPB*, reduces the probability of the existence of *IA* by about 0.6-percentage point, at the 10% significance level. This suggests that MFIs with a higher CPB, are less likely to implement the IA function. Lafourcade et al. (2005) state that operationally efficient institutions achieve better cost-efficiency levels by keeping their CPB as low as possible. Therefore, our results could imply that cost-inefficient MFIs may not be keen on investing in IA for various reasons. First, MFI managers may trade off investing in IA, because it is a personnel expense that increases operational costs, for other intra-organisational pseudo-monitoring/control mechanisms (Jensen & Payne, 2003).

Second, the finding may also be due to the existence of agency problems in MFIs. Managers who are averse to being monitored by IA, perhaps for self-seeking motives, may avoid incurring the cost of IA (Adams, 1994; Jensen & Meckling, 1976). Third, in MFIs where IA is present but ineffective, self-interested managers may have diverted the attention of internal auditors away from operational functions if their managerial inefficiencies and ineptitude are likely to be detected (Adams, 1994).

In column 5 of Table 5, the coefficient on staff productivity (*PROD*) is positive but insignificant at conventional levels, thus, Hypothesis 5 is not supported. This result indicates that a growth in the number of borrowers to staff members ratio is associated with MFIs being more keen to establish better internal governance and risk controls. However, the impetus to set up an IA function as part of a stronger IC system, will be from a risk management and human resource outcomes perspective (Hyland & Verreault, 2003). Also, IA can be perceived as expensive or of low importance, until there is a crisis that warrants a significant increase in IA budgets (Bekiaris et al., 2013). Furthermore, unless IA is seen by MFIs as being able to create value-adding high performance and competitive advantage in combination with the organisation's human resource management, there may be little support from top management for it (Hyland & Verreault, 2003).

Regarding financial performance in column 6 of Table 5, the coefficient on *FIN_PERF* is positive and significant (co-efficient = 0.497, $p < 0.01$). The marginal effects test result in column 8 shows that a change in *FIN_PERF*, with other regressors held constant, increases the conditional probability of change in IA. Specifically, a one standard deviation change in *FIN_PERF*, causes a 17-percentage point change in IA existence also at the 1% significance level. With this result, this study's sixth hypothesis is supported. This suggests that financial performance has a significant impact on the existence of the IA function in MFIs. This maybe because IA is a mechanism for providing reliable and timely information on an organisation's financial performance (San Miguel & Govindarajan, 1984). Therefore, MFIs with elements of good financial performance would likely make IA effective, notably for their increase in economic value and development (Mbeba, 2007). Microfinance institutions appear to establish IA function to ensure reliability of financial statements through accurately presenting financial performance and by strengthening controls over the top MFI risks (CSFI, 2014). Wallace and Kreutzfeldt (1991) suggest that the better the financial performance of MFIs, the more money and resources are available for establishing IA. Our results also suggest that the focus on compliance testing of the effectiveness of ICs over financial reporting necessitates the establishment and use of IA (Anderson et al., 2012). In addition, commercial fund providers' and investors' confidence is boosted by good financial performance reports supported by the IA assurance, thus portraying a professionally controlled MFI (Mersland & Urgeghe, 2013). Moreover, MFIs with more resources should be able to bear the cost of setting up and maintaining an IA function (Carcello et al., 2005; Wallace & Kreutzfeldt, 1991).

Finally, column 7 of Table 5 reports the results when all the variables are simultaneously run using the same model. Reported results provide strong support for Hypotheses 1, 3, 4 and 5. The results in column 7 are therefore qualitatively similar to the results in columns 1–6.

Turning to control variables, we find that MFI size may influence IA presence. To test for consistency, the log of assets (proxy for MFI size) (Kar, 2012), was substituted with log of the gross loan portfolio (Mersland & Beisland, 2011; MIX Market, 2019). The untabulated result indicates that larger MFIs may be more inclined to establishing IA. The results also suggest that country-specific macroeconomic indicators like inflation and bank capital to asset ratio, which are beyond the control of the microfinance industry, have some predictive power on IA function establishment. These factors depict the availability of capital at the disposal of MFIs and the economic purchasing value of money. Unfavourable movements in either of them would require belt-tightening by MFIs which may likely prompt them to introduce cost-cutting measures to protect deposits and ultimately record a positive bottom-line.

4.3 | Robustness tests

To further confirm the validity and robustness of the results, some sensitivity tests were conducted.

4.3.1 | Probit regression with only independent variables

Based on Rönkkö et al.'s (2018) approach, we exempted the control variables of *LN_SIZE*, *GNI*, *INFLATION*, and *CAR*, from the regression. This helped to analyse the effects of the hypothesized correlates without the influence of institutional size, and other macro-economic variables, which exist in developing economies where the MFIs in our sample are located. Consistent with hypotheses 1, 3, and 5, the results reported in Table 6 are robust. While the results reported for *INEFF* in Table 6 is similar to the main regression. The model has a pseudo R^2 of 0.199 compared to 0.260 for the full model. A pseudo R^2 rule of thumb puts a very good model fit range at between 0.2 and 0.4 (McFadden, 1974).

4.3.2 | Controlling for country-specific effects

We controlled for the effects of the countries in which the MFIs are located. In the main regression, only the firm-specific effects were controlled for. Controlling for the country-by-country effects confirms if the effects of location, have any impact on the underlying regression. Microfinance

TABLE 6 Probit regression with only independent variables.

Variables	(1)	(2) Marginal effects
OUTREACH	0.465***	0.118***
	(0.141)	(0.035)
REG	0.105	0.026
	(0.105)	(0.027)
FEM_DIR	0.664***	0.168***
	(0.166)	(0.041)
CPB	−0.026**	−0.006**
	(0.013)	(0.003)
PROD	−0.001	−0.000
	(0.000)	(0.000)
FIN_PERF	0.516**	0.131**
	(0.237)	(0.060)
Constant	−2.418***	
	(0.203)	
Year fixed-effects	YES	YES
Clustered—Firm level	YES	
Pseudo R-squared	0.199	
Observations	2091	2091

institution interaction with local authorities, and specific legal and banking rules could have an impact on their activities (Mersland, 2011). The results in Table 7 are robust and qualitatively similar to Table 5, regardless of the country in which the MFIs are situated.

4.3.3 | Logistic regression model—Alternative estimation technique

Following Goodwin-Stewart and Kent (2006), we employed the logistic regression model as an alternative estimation technique to the probit model. When the dependent variable is dichotomous, the choice of model to use between the probit and logit models is indistinctive in practice. The logit differs slightly from the probit model in the link function. In this alternate model, the errors are assumed to follow the cumulative distribution function of the logistic distribution, while the errors are assumed to follow a normal distribution for the probit model.

So, using the same regressors in the probit model to estimate their impact on IA, the results in Table 8 show that very similar inferences can be drawn from the signs and level of significance, as compared to Table 5. Like the marginal effects post-estimation test carried out after the probit regression in Section 4.2, column 8 of Table 8 reports post estimation marginal effects of a logit regression. In general, the marginal effects from the probit and logit estimations are similar, to further confirm that the results in the baseline regression are therefore not driven by the estimation technique initially used.

4.3.4 | Regional fixed effects analysis

To account for unobserved time-invariant supranational characteristics, this study uses region dummies (Fischer, 2010). The sample data includes MFIs from 63 countries and six regions. This can potentially create unobserved region cross-country variations that may be attributed to differences in policy variable, variety of microfinance service providers (Haq et al., 2008), and vulnerability to global financial crisis (Microbanking Bulletin, 2009). Table 9 reports the result of the region fixed effects analysis based on equation (1). Similar results to Table 5 are observed which indicates that the results are robust to unobserved country/regional heterogeneity.

5 | CONCLUSION

Internal audit is an important corporate governance and control mechanism (Isern et al., 2008; Mbeba, 2007; Okello et al., 2019). Prior studies suggest that IA improves risk management (Spira & Page, 2003); reduces corruption (Asiedu & Deffor, 2017); and improves financial reporting quality by reducing earnings management (Abott et al., 2016). Despite these benefits only few MFIs have an IA function. The objective of this study is to examine the drivers of the IA function in MFIs which operate mainly in developing and transitional economies. We utilise a panel data of 1025 MFIs across 63 developing and transitional economies over the period 2010–2018. Findings obtained after controlling for extraneous factors suggest that depth of outreach, female directors on the boards, and financial performance due to positive yield on loan portfolio, increase the likelihood of having an IA function in MFIs. Surprisingly, less-efficient MFIs' (with higher CPB) are less likely to have an IA function whilst regulation and staff productivity have no effect.

Our study is not without caveats. First, our study relied on secondary data from the MIX-Markets database. Although this is a credible database that has been used extensively in prior research, it would have been insightful to complement this with primary data. Future studies could consider the use of

TABLE 7 Robustness test: internal audit (IA) and Determinants—Clustered by Country.

DV= IA	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OUTREACH	0.759***						0.590***	0.141***
	(0.143)						(0.177)	(0.043)
REG		0.040					−0.053	−0.013
		(0.105)					(0.157)	(0.037)
FEM_DIR			0.757***				0.911***	0.217***
			(0.182)				(0.235)	(0.051)
CPB				−0.027**			−0.026**	−0.006*
				(0.013)			(0.013)	(0.003)
PROD					0.000		−0.000	−0.000
					(0.000)		(0.000)	(0.000)
FIN_PERF						0.497***	0.730**	0.174***
						(0.189)	(0.290)	(0.067)
LN_SIZE	0.056***	0.028	0.047**	−0.017	0.003	0.037*	0.043	0.010
	(0.021)	(0.022)	(0.021)	(0.035)	(0.033)	(0.022)	(0.033)	(0.008)
GNI	−0.000	−0.000	0.000	−0.000*	−0.000	−0.000	−0.000*	−3.35e–14*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(1.76e–14)
INFLATION	−0.023**	−0.023**	−0.023**	−0.017	−0.023*	−0.024**	−0.021	−0.005
	(0.010)	(0.010)	(0.010)	(0.012)	(0.013)	(0.010)	(0.013)	(0.003)
CAR	−0.022	−0.040*	−0.041*	−0.046*	−0.034	−0.043*	−0.024	−0.006
	(0.023)	(0.023)	(0.024)	(0.027)	(0.025)	(0.024)	(0.032)	(0.007)
Constant	−3.232***	−2.207***	−2.666***	−1.697**	−2.204***	−2.460***	−3.769***	
	(0.505)	(0.441)	(0.468)	(0.698)	(0.663)	(0.458)	(0.763)	
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Clustered—Country level	YES	YES	YES	YES	YES	YES	YES	

TABLE 7 (Continued)

DV= IA	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pseudo R-squared	0.202	0.178	0.192	0.211	0.198	0.182	0.260	
Observations	4871	4883	4871	1592	1766	4883	1542	1542

Note: Robust standard errors shown in parentheses.

Abbreviation: GNI, Gross National Income.

*, **, and *** represent significance at 10, 5, and 1 percent, respectively. The variables are robust-clustered by country. The baseline regression model is re-estimated by switching from the firm level clustering to country-level clustering, thus enabling the adjustment of the standard errors for the effects of geographical clustering.

TABLE 8 Robustness using Logit regression: Determinants of internal audit (IA).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) Marginal effects
OUTREACH	1.292***						0.950***	0.133***
	(0.242)						(0.308)	(−0.040)
REG		0.070					−0.100	−0.014
		(0.180)					(0.272)	(−0.032)
FEM_DIR			1.296***				1.564***	0.219***
			(0.313)				(0.406)	(−0.046)
CPB				−0.044**			−0.043*	−0.005*
				(0.022)			(0.024)	(0.003)
PROD					0.000		−0.001	−8.37e−05
					(0.001)		(0.001)	(−0.000)
FIN_PERF						0.847***	1.318***	0.185***
						(0.313)	(0.500)	(−0.066)
LN_SIZE	0.099***	0.050	0.082**	−0.027	0.006	0.065*	0.073	0.010
	(0.036)	(0.037)	(0.035)	(0.060)	(0.057)	(0.037)	(0.058)	(−0.008)
GNI	−0.000	−0.000	0.000	−0.000*	−0.000*	−0.000	−0.000*	−0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INFLATION	−0.042**	−0.040**	−0.041**	−0.030	−0.039*	−0.042**	−0.040*	−0.006*
	(0.020)	(0.020)	(0.019)	(0.021)	(0.024)	(0.020)	(0.023)	(−0.004)
CAR	−0.035	−0.066*	−0.067	−0.076*	−0.055	−0.072*	−0.041	−0.006
	(0.040)	(0.040)	(0.042)	(0.046)	(0.042)	(0.042)	(0.055)	(−0.005)
Constant	−6.237***	−4.435***	−5.220***	−3.941***	−4.850***	−4.857***	−7.239***	
	(0.969)	(0.854)	(0.875)	(1.392)	(1.357)	(0.888)	(1.539)	
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Clustered - firm level	YES	YES	YES	YES	YES	YES	YES	

TABLE 8 (Continued)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) Marginal effects
Pseudo R-squared	0.202	0.178	0.193	0.211	0.198	0.182	0.261	
Observations	4871	4883	4871	1592	1766	4883	1542	1542

Note: Robust standard errors shown in parentheses.

Abbreviation: GNI, Gross National Income.

*, **, and *** represent significance at 10, 5, and 1 percent, respectively. Column 8 shows post estimation marginal effects of covariates.

TABLE 9 Robustness - Analysis by region fixed effects.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) Marginal effects
OUTREACH	0.766***						0.590***	0.141***
	(0.090)						(0.157)	(0.329)
REG		0.037					−0.053	−0.013
		(0.099)					(0.084)	(0.019)
FEM_DIR			0.756***				0.911***	0.217***
			(0.191)				(0.306)	(0.063)
CPB				−0.027***			−0.026***	−0.006***
				(0.009)			(0.004)	(0.001)
PROD					0.000		−0.000	−0.001
					(0.000)		(0.001)	(0.000)
FIN_PERF						0.503***	0.730**	0.174***
						(0.145)	(0.292)	(0.072)
LN_SIZE	0.057***	0.029**	0.047***	−0.017	0.003	0.037***	0.043**	0.010*
	(0.015)	(0.014)	(0.015)	(0.044)	(0.039)	(0.014)	(0.021)	(0.006)
GNI	−0.000	−0.000	0.000	−0.000	−0.000	−0.000	−0.000	−3.35e+14
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(2.54e+14)
INFLATION	−0.023*	−0.023**	−0.023**	−0.017	−0.023	−0.024**	−0.021	−0.005
	(0.012)	(0.011)	(0.011)	(0.017)	(0.015)	(0.012)	(0.017)	(0.004)
CAR	−0.023	−0.041	−0.042	−0.046*	−0.034	−0.044	−0.024	−0.006
	(0.028)	(0.029)	(0.028)	(0.024)	(0.023)	(0.032)	(0.032)	(0.007)
Constant	−3.240***	−2.209***	−2.665***	−1.697**	−2.204***	−2.462***	−3.769***	
	(0.580)	(0.529)	(0.558)	(0.744)	(0.722)	(0.550)	(0.473)	
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Region fixed effects	YES	YES	YES	YES	YES	YES	YES	

TABLE 9 (Continued)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) Marginal effects
Pseudo R-squared	0.203	0.178	0.192	0.211	0.198	0.182	0.260	
Observations	4866	4878	4866	1592	1766	4878	1542	

Note: Robust standard errors shown in parentheses and clustered on MFIs.

Abbreviation: GNI, Gross National Income.

*, **, and *** represent significance at 10, 5, and 1 percent, respectively.

primary data collected through interviews, questionnaires etc. Second, Lin et al. (2011) document how several qualities of an IA function may benefit organizations. Contrary to this our study uses a dummy variable that indicates the presence or otherwise of an IA function. Thus, due to data unavailability we are unable to exploit specific characteristics of the IA function like size, skills and qualifications of IA personnel. Future studies can investigate factors that drive these IA components. Also, future research can investigate the effectiveness of IA in MFIs from specific perspectives such as regulatory, legal status/ownership structure, and national or regional governance systems.

Notwithstanding these, the findings of this study have implications for donors, regulators, governments, and other important stakeholders who commit substantial resources to the MFI industry to sustain their operations. The results will also be useful to boards and managers of MFIs given the agency problems that may arise from having dual goals and the possibility of having to provide social and financial reporting to two or more sets of principals. Thus, given that IA is associated with mechanisms employed by organisations in curbing corruption and improving their overall corporate governance architecture (Asiedu & Deffor, 2017; Spira & Page, 2003), stakeholders interested in the sustainability of MFIs can focus on the suggested factors that determine the existence of IA in MFIs based on this study. For instance, MFI boards may increase women director appointments and outreach to increase the likelihood of an IA function being established to improve corporate governance and their operations.

Additionally, our study makes some valuable contribution to the knowledge of the practice of IA in organisations with dual goals and are in emerging economies where corporate governance codes (Jiang et al., 2014) are not as stringent as in developed economies. Furthermore, this paper contributes to the argument that female directors are more akin to supporting the use of stronger monitoring mechanisms in firms (Adams & Ferreira, 2009).

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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