Melting pot vs. Salad bowl: Exploring the Effect of Composition Diversity on Saving Groups' Performance

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Abstract

Saving Groups (SGs) are an important driver for saving mobilization and credit, and thus effective vehicles of social and economic change for vulnerable groups. Hence understanding which factors help them perform successfully is crucial, especially regarding their peculiarities as informal organizations. This study focuses on one essential factor, group composition diversity. By identifying which group are homogeneous (melting pot) or heterogeneous (salad bowl), the paper examines how compositional diversity in groups affects the performance of SGs. The study uses lens of faultline theory and data from 688 Savings Groups belonging to the largest disability inclusive savings group program (iSAVE) in Uganda. Econometric results show that demographic and functional faultlines and their combination have statistically significant positive effect on profit generating capacity of SGs (Return on Savings). This may imply that strong subgroup attachments or alignments along multiple demographic and functional attributes are a melting pot in informal institutions and thus a potential source of efficiency. Therefore, in promoting group composition in informal institutions, homogeneity should prevail over heterogeneity.

Key words: *Compositional Diversity, Faultline strength, Financial Performance, and Savings Groups*

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Introduction

Saving Groups (SGs) are an important driver for saving mobilization and credit, and thus effective vehicles of social and economic change for vulnerable groups. Hence understanding which factors help them perform successfully is crucial, especially regarding their peculiarities as informal organizations. This study focuses on one essential factor, group composition diversity. By identifying which group are homogeneous (melting pot) vs heterogeneous (salad bowl), the paper contributes empirical evidence to the ongoing debate on how compositional diversity in groups influences organizational performance. To accomplish this, the paper analyzes the iSAVE program, a large disability-inclusive Savings Group initiative implemented in Uganda. This program primarily serves persons with disabilities (PwDs), who make up 60 percent of the SG's membership. Given the diverse nature of PwDs both in type and severity, it is interesting to examine how such diversity impacts the financial performance of SGs .

Overall, for many years, diversity within a groups has received considerable attention from scholars across various disciplines such as sociologists, psychologists, management, and economics. Both sociologists and psychologists have acknowledged the potential benefits associated with both homogeneity and heterogeneity within groups. The concept of "birds of a feather flock together," or homophily, exemplifies the importance of personal similarities, such as socio-demographic factors, in fostering connections. This principle serves as a fundamental organizing principle in various social interaction contexts, including friendship, social relations, and business alliances (Venturelli et al., 2020). Conversely, the notion of "opposites attract" suggests that individuals are often drawn to those who possess complementary qualities or characteristics (Dryer & Horowitz, 1997). As a result, diversity within a group can still provide opportunities for personal growth and mutual enrichment.

In many business and management literature, composition diversity has been thought of as a double-edged sword, with both positive and negative capabilities in organization's groups (Carter & Phillips, 2017). However, considerable amount of research devoted to the influence of diversity has focused on formal institutions or organizations (Williams and O'Reilly 1998; Shore et al.,2009; Knippenberg et al,2011; Hofhuis et al,2018; Rupert et al, 2019). Therefore, based on our knowledge there is a gap in our understanding of the effect of compositional diversity in the context of informal institutions. Nonetheless, there remains a

lack of comprehensive understanding regarding the impact of composition diversity on group outcomes when considering multiple dimensions simultaneously (Liu et al., 2019; Burmann & Semrau, 2022). This gap persists largely due to the predominant focus of existing research on diversity composition effects at the small-group level, relying primarily on unidimensional index-based measures of diversity (Leicht- Deobald et al., 2021; Rupert et al., 2019). Given that informal organizations are inherently multidimensional and thus subject to influences emanating from their composition, this is a significant shortcoming. In management literature, the rationale to study informal institutions in their own right is well articulated (Dau et al,2022). We contribute to closing this gap in the literature by investigating how compositional diversity in the informal savings group context affects group level performance.

Diversity composition effects are expected to be particularly pronounced within Savings Groups (SGs) due to their inherently diverse structure. SGs bring together individuals with varied attributes and social relations, offering a valuable opportunity to examine the dynamics of group diversity and its impact on performance. This empirical setting is crucial because no savings group can achieve perfect or imperfect diversity. For example, Burlando et al. (2021) present several studies on performance SGs indicating that factors such as coordination failures and membership composition can undermine their performance. Given that academic research on savings-led microfinance institutions has predominantly focused on their establishment and impact, with limited empirical attention on performance, this study holds significant implications for efforts to enhance the performance of such institutions. Embracing the benefits of diversity is widely recognized in the organization and management literature as essential for organizations to remain competitive (Salomon & Schork, 2003).

The contributions arising from the study are three folds. Firstly, informal savings mechanisms play a prominent role in promoting financial inclusion and serve as invisible threads that connect social groupings (Helms, 2006; Demirgüç-Kunt et al, 2022). Recent study by Gonzales, D'Espallier & Mersland (2022) consistent with global findex database 2021 indicate that Savings groups are major provider of informal financial services to the poor in rural and peri-urban areas. SGs are becoming increasingly important in the savings-led microfinance industry as drivers of socio-economic inclusion for the poorest people in developing countries (Gonzales et al, 2022). Therefore, understanding how their composition diversity affects performance is important from an empirical and programme perspective.

For example, understanding the impact and potential challenges associated with diverse SGs, program managers can develop deliberate strategies that promote homogeneity or heterogeneity in group formation.

Secondly, we adopted the faultline theory to investigate the effects of composition diversity Group level performance of SGs. Theoretically, this study is the first of its kind to extends the application Faultline theory to study effects of composition diversity in an informal group setting. This will extend what we know about composition diversity effects beyond formal institutions or organizations that has monopolized the extant diversity research. Finally, the study adopts widely known statistical techniques, cluster Analysis and Average Silhouette Width (ASW) to measure composition diversity. Previous research has used the Average Silhouette Width developed by Meyer and Glenz's (2013) based on ASW algorithm, typically implemented in R. The algorithm is appropriate for individual level group level and therefore explains why most studies on group or team diversity effects have focused on small-group level settings (Leicht- Deobald et al, 2021). However, this study employs the same statistical approaches (cluster analysis and ASW) in Stata to calculate fautline strength using group level data of 688 savings groups in Uganda. This expands the toolkit available to Stata users for exploring Faultline theory in diversity research from an organizational perspective.

The paper is structured as follows. Section 2 presents the empirical literature composition diversity and the expected effects on performance outcomes, the theoretical framework adopted and research hypothesis. Section 3 describes the methodology including composition diversity and performance variable measurement, econometric strategy, and data sources. Section 4 presents the results including the descriptive and econometric analysis. Section 5 presents the conclusion and study implications.

2.0 Literature review and theoretical framework

Traditional research efforts have examined diversity in terms of heterogeneity and relied on uni-dimensional index-based approaches, which neglected interaction between attributes (Rupert et al, 2019). Indeed, evidence from such studies over the past 60 years demonstrate that differences in surface-level social categories such as race/ethnicity, gender, or age affect groups' ability to function effectively. Conversely, other studies focusing on underlying group differences, such as functional background, educational background, or personality show that diversity is positively linked to performance (Hansen et al, 2006). Overall, extensive research

indicates that having diverse functional and demographic compositions within a group can have both negative and positive impact on group performance (Williams and O'Reilly 1998; Meyer et al, 2015; Tekleab et al, 2016; Hofhuis et al,2018; Rupert et al,2019).

In microfinance literature, available evidence shows that attempts to study the effects of diversity or heterogeneity /homogeneity of groups has relied on conventional uni-dimensional diversity measures focusing on ethnic or religious fractionalization (Awaworyi Churchill, 2017; Kolstad et al,2017); socially disadvantaged groups (Baland & Vandewalle (2019) and various socio demographic characteristics (Solomon & Ohen, 2017). A main argument for studying group diversity in microfinance is that groups tend to be more successful when members share one or several socio-economic conditions. Consequently, group homogeneity is a desirable characteristic when it comes to group composition in microfinance literature. Theoretical and empirical literature demonstrating how group homogeneity reduces the problem of adverse selection and moral hazards, increase social ties, ease enforcement of social norms, reduce default rates and eventually reduce default rates and increase performance is plenty (Parmeter & Sarangi, 2020). However, empirical support come from studies that rely on one-dimensional measures to proxy group homogeneity, yet these measures are intrinsically elusive and hard to encapsulate (Parmeter & Sarangi, 2020).

Overall however, single-dimension diversity research has been criticized for its inconclusive results, as it overlooks the combined and interactive effects of multifaceted characteristics of groups (Rupert et al, 2019). This motivated researchers to turn their attention to examining the effects of several group diversity attributes on group level outcomes simultaneously (Meyer et al, 2015; van Knippenberg and Schippers, 2007). Lau and Murnighan (1998) were the first to criticize composition diversity literature. Their novel approach to understanding teams or groups sparked interest in understanding group diversity. Lau and Murnighan's conceptualization challenged the conventional measurement of diversity, which merely focused on heterogeneity in single attribute such as gender or education and neglected the potential interactions between various attributes within the group (Jehn & Rupert 2007; Rupert et al., 2019).

Lau and Murnighan based their diversity conceptualization on Faultline theory, which proposes that the adverse effects of group diversity can be better comprehended by examining the combined influence of different diversity dimensions rather than considering each

dimension in isolation (Knippenberg et al., 2011; Thatcher & Patel, 2012, Meyer et al, 2015). In the original definition, faultlines were described as "hypothetical dividing lines that may divide a group into subgroups based on one or more attributes" (Lau & Murnighan, 1998, p.328). The existence of faultlines affects the structure of a group leading to social divisions, reduced cohesion, and difficulties in interpersonal communication, ultimately resulting in social disintegration and a decline in group performance (Williams and O'Reilly 1998; Meyer et al.,2015; Hofhuis et al., 2018; Rupert et al., 2019). For instance, whenever multiple characteristics of group members align, diversity-related faultlines occur (Lau & Murnighan, 1998). As a result of faultlines, group members divide into homogeneous subgroups, which can increase conflict between the subgroups and impede performance (Atewologun, 2018).

Although Faultline theory has contributed to the understanding of diversity in formal organizations, its application in informal organizations settings is limited. The inclusive nature of Savings groups composition, with moderately diverse membership, faultlines are expected to exist. Nonetheless, the empirical results on effects of demographic and functional faultlines on group performance are still not consistent. Some studies have found positive effects while many other studies have found negative effects of diversity on group level outcomes (Meyer et al, 2015). This necessitates further research particularly in neglected organizational contexts such as informal savings groups. Furthermore, Leicht-Deobald & colleagues (2021), assert that organizational faultline research is relatively new and lacks comprehensive theoretical exploration, with limited understanding of how it impacts organizational outcomes. Most available evidence comes from small group level contexts (Leicht-Deobald et al, 2021).

The study draws on Faultline theory to study compositional diversity effects on performance in SGs. The faultlines theory emphasizes the importance of bundling of demographic and/or psychological attributes and thus conceptually emphasizes that members with multiple shared attributes form within-group boundaries (Liu et al., 2019). Faultline theory contends that demographic and functional attributes of group members create potential divides within groups. The Faultline theory originates from social identity theory, Self-categorization theory and Similarity attraction paradigm. According to these theories, people tend to classify and interact with others who share similar traits so that individuals within groups with faultlines are more likely to identify with their subgroup than with the entire group (Liu et al., 2019). The Faultline theory suggests that the influence of different dimensions of diversity should be

considered together rather than individually in trying to understand effects of diversity (Van Knippenberg et.,2011). According to Meyer & Glenz (2013), the theory assumes that alignment within the group, not diversity per se, affects group processes and outcomes.

To gain a better understanding of how faultline theory contributes to our comprehension of diversity effects, we illustrate the distinctions between the conventional perspective on diversity and the faultline theoretical perspective, as demonstrated by Burmann & Semrau (2022). Let's consider two groups from the perspective of member-based informal groups such as SGs, each consisting of 28 members.

Group A is comprised of 14 men aged 50 and 14 women aged 20. On the other hand, Group B consists of 7 men and 7 women aged 50, along with 7 men and 7 women aged 20. From the conventional perspective on diversity, both teams are identical. Each team has the same level of gender diversity, with 14 men and 14 women. Similarly, both teams exhibit the same level of age diversity, since both have 14 members aged 50 and 14 members aged 20.

However, when viewed through the lens of faultline theory, group A and group B differ significantly in both age and gender diversity. In group A, gender differences among members align with age differences; all the 50-year-olds are male, while the 20-year-olds are all female. Conversely, such alignment is absent in group B. Consequently, while the traditional diversity perspective would consider both groups as nearly identical, the faultline perspective suggests that due to processes of social categorization centered on visible and accessible attributes, group A members are more likely to self-categorize into homogenous subgroups compared to those in group B (Burmann and Semrau, 2022).

The theory predicts that strong Faultline are dysfunctional in nature; impede effective group functioning, group satisfaction, cohesion, and performance. Many studies have empirically supported the negative consequence of faultlines on group performance (see for examples, Burmann & Semrau, 2022; Meyer et al, 2014). However, there have been exceptions where studies have found positive effects of faultlines (for example, see Meyer et al, 2014). Burmann & Semrau (2022) citing Cooper et al. (2014) and Wu et al. (2021) argues that environment in which teams and their organizations operate such as societal culture in which teams are embedded may drive the direction of faultline effects. This implies that in context of informal organizations such as SGs the effects of Faultline can take different forms;

negative or positive. Based on the above empirical and theoretical literature review, we formulate two testable hypotheses:

Research Hypotheses 1: In savings groups (SGs), the strength of faultlines (demographic and functional faultlines) negatively affects financial performance. This hypothesis is based on the assumption that when faultlines are strong, subgroup divisions within the group become more pronounced, leading to reduced cohesion, communication difficulties, and ultimately decreased group performance (Williams and O'Reilly, 1998; Meyer et al., 2015; Hofhuis et al., 2018; Rupert et al., 2019).

Research Hypothesis 2: The combined effect of demographic and functional faultlines in SGs moderates the relationship between diversity and financial performance. Specifically, it we hypothesize that when both demographic and functional faultlines are strong, the negative impact on group performance is exacerbated due to increased subgroup divisions and difficulties in achieving common goals within the group (Knippenberg et al., 2011; Meyer et al., 2015; Thatcher & Patel, 2012). Conversely, when faultlines are weak or non-existent, the negative effects of diversity on performance are mitigated, as group members are more likely to identify with the entire group rather than with subgroup divisions (Liu et al., 2019).

3.0 Methodology

In studying composition diversity effects on various group outcomes, the concern mainly is how to measure diversity strength. The faultline theory adopted in this study proposes that diversity is measured by faultline strength, a measure of how well bundles of attributes align across groups based on various characteristics of each group such as demographics (Liu et al, 2019; Lau & Murnighan, 1998). A strong faultline captures the strength of members' attachment to the group based on potential homogeneity of the subgroup regarding all attributes under study (Straube & Kauffeld, 2021). Therefore, higher homogeneity within the subgroups occurs when more attributes align within the group, resulting in stronger faultlines.

Most studies have relied on Fau (Thatcher et al.,2003), faultline strength (Shaw, 2004) and Faultline distance (Bezrukova et al. 2009) approaches to measure group faultlines. However, these measures are limited to two or at most three attributes, and do not easily integrate nominal, categorical, and continuous variables (Liu et al, 2019). The average silhouette width

measure (ASW) developed by Meyer and Glenz (2013) is a highly recommended approach. For example, according to Meyer et al, (2014) and Vandebeek et al, (2021), unlike the several measures of Faultline strength, ASW is a highly recommended measure because it does not require the attributes to be categorical and therefore its appropriate for our group level continuous measures of compositional diversity in SGs.

Following Meyer & Glenz (2013) approach, we employ Halpin (2016) silhouette Stata command combined with cluster analysis to generate the demographic and functional faultlines for SGs. To quantify faultline strength in SGs, we follow the two-step followed by Meyer and Glenz (2013): First, hierarchical cluster analysis following the agglomerative method by ward linkage is used to find the initial set of subgroups. By using the given attributes, cluster analysis assigns SGs to different clusters (i.e., subgroups) based on their similarity, yielding clusters that are homogenous within and heterogeneous between each other (Leicht- Deobald et al, 2021). Since the numbers of clusters are not pre-specified, we reach the optimum clustering solution using the statistical stopping rules proposed by Calinski-Harabasz (1974) and Duda-Hart rule (Duda et al,2000). The rule of thumb is to choose the cluster solution with the highest value for Calinski-Harabasz pseudo-F statistic and at the same time it has a combination of higher Duda-Hart index value and lower pseudo-T-squared value. Based on 688 savings groups, the results from the first step are groups that are similar in terms of the demographic and functional attributes presented in Table 1.

Table 1: List of indicators of used to measure Faultline strength

No	Name of attribute	Attribute description
Demographic attributes		
1	Gender	Number of female members in the group
2	Visual disability	Number of members with seeing difficulties in the group
3	Hearing disability	Number of members with hearing difficulties in the group
4	Phyical disability	Number of members with walking difficulties in the group
5	Congtive disability	Number of members with cognition difficulties in the group
6	Selfcare disability	Number of members with self-care difficulties in the group
7	Communication disability	Number of members with communication difficulties in the group
8	Multiple disabilities	Number of members with multiple difficulties in the group
9	Females with disability	Number of female members with difficulties in the group
10	Disability _below18yrs	Number of members with difficulties aged below 18 years in the group
11	Disability _above 50yrs	Number of members with difficulties aged above 50 years in the group.

Functional attributes or identities		
1	Functional_diff_BDS	Number of members with difficulties to train in business development support in the group
2	Financial literacy education	Number of members with difficulties to train in financial literacy in the group
3	Vocational training education	Number of members with difficulties finish vocational training in the group
4	Competence to run an enterprise	Number of members with difficulties running enterprises in the group
5	Difficulty payloans	Number of members with difficulties to pay loans in the group
6	Difficulties to get start support	Number of members with difficulties to get start-up support in the group

Using demographic and functional attributes data presented in Table 1, we were able to generate subgroups/clusters of savings groups that are similar. However, these subgroups/clusters are more similar to each other but different from the rest of the groups/clusters.

Second, the silhouette method was adopted to measure the Strength of Subgroups based on (i) demographic attributes; (ii) functional attributes; and (iii) the combination of both demographic and functional attributes. Thus, the silhouette statistic provides a quantitative measure to assess the separation and distinctiveness of generated subgroups/clusters. A higher silhouette score indicates stronger and more well-defined faultlines, while a lower score suggests weaker or less clear faultlines. The average silhouette width (Rousseeuw, 1987) for each subgroup/cluster is computed based on the following formula:

$$S_i = \frac{b_{i-}a_i}{Max(a_i, b_i)}$$

where a_i is mean distance to group members of the same cluster, b_i is the mean distance to the next nearest cluster.

In the context of our study, ASW values indicate how all groups fit into their subgroup on average, ranging from -1 to 1, one being the strongest possible association. ASW is equal to zero if there are no homogeneous subgroups. The existing subgroups are homogenous if ASW equals 1. Consequently, if ASW equals -1, the formed subgroups are not adequate, and members of a single subgroup differ more from one another than members of different

subgroups (Vandebeek et al, 2021). In simple terms, ASW value measured how strong and clear are the subgroups generated based on demographic and functional attributes.

To implement the two steps above, we draw data on various compositional variables that capture both demographic and functional attributes of SGs. When computing demographic and functional Faultline strength, we included all demographic and functional attributes, in accordance with Faultline theory's assertion that subgroup formation is more likely with aligned multiple attributes. The demographic attributes include, the degree of disability, gender, gender and disability, age and disability; while functional attributes are based on attributes that captures the competence of members based on the proportion of members in groups facing difficulties in managing enterprises, completing financial literacy and vocational education, and business development trainings, and repaying loans (Table 1).

Before cluster analysis, all demographic and functional attribute variables presented in Table 1 were expressed as percentages at the group level (e.g., "percentage of members with visual impairments in the group"). To ensure fairness, we standardized these proportions to have a mean of 0 and a standard deviation of 1. We standardized the variables in order to prevent variables with larger prevalence from having a disproportionate influence on the cluster results.

Performance Outcome variables

Informal savings groups are member-based entities whose primary goal is to mobilize savings that can later be utilized as loans for their members. Therefore, evaluating group-level performance in savings groups requires evaluating their savings and profit generation capacity (Nakato, 2021; van Swinderen et al., 2020). We determined the saving capacity by computing savings per member, which is derived from the total value of members' savings divided by the number of group members. In terms of profit generation capacity assessment of SG, we have employed two variables derived from recent studies focusing on savings group performance, including works by Burlando and Canidio (2017), van Swinderen et al. (2020), Nakato (2021), and Gonzales et al. (2021). Specifically, we have considered two key metrics: the funds utilization rate and the return on savings. The funds utilization rate serves as a valuable indicator, offering insights into how effectively a group transforms its members' savings into loans. To calculate this rate, one divides the outstanding loan amount by the total value of members' savings (Nakato, 2021). Nakato (2021) highlights the significance of

return on savings as a measure of efficiency in utilizing members' savings to generate profits for the group.

Econometric model and estimation

For each group level performance outcome, we run the following regression at the group g:

$$y_g = \beta_0 + \beta_1 Fautline_{strength} + \delta X_g + \varphi_d + \varepsilon_g \dots\dots\dots\dots\dots\dots\dots\dots (1)$$

The independent variables of interest are Fautline strength (demographic and functional fautlines as well as the combined). All the specifications include X_g, a vector of group level covariates which included dummy whether the group has an account with formal financial institution (financial linkage), amount of social fund of the group, the number of people that have received financial education in group, the number of people who run enterprises in the group, age of the group in months, savings cycle, attendance rate and average outstanding loan size per member. φ_d denotes a district-level dummy variable that controls for unobserved district-level fixed effects, and $\varepsilon_g$is group level error term.

For equation (1), we estimate three separate equations, separating the effects of demographic faultlines and functional faultlines and examining the effects of group demographic and functional faultlines from an integrated perspective. This is done by computing faultline strength when both demographic and functional attributes are combined. Conducting separate estimations was done to assess whether the effects of demographic and functional faultlines are consistent. In order to capture a more holistic understanding of group dynamics, a combined effects model was estimated.

In estimating the group level performance outcomes, all the ratio variables were transformed in logs to eliminate highly skewed variables. As a result, log-log linear models were estimated using Ordinary Least Squares (OLS). Therefore, the estimated coefficients are interpreted as elasticities.

In estimating equation 1, we acknowledge that compositional diversity variable (faultline strength) is potentially endogenous because the estimated model omits several factors that impact both diversity composition and financial performance of SGs. In a study conducted by Gonzales et al (2021) using Bayesian data mining, it was found that group level micro

variables were not the most relevant variables for SG performance. Therefore, to circumvent the endogeneity associated with the use of compositional diversity (faultline strength) as the main regressor in the analysis, we adopted an Instrumental Variable (IV) estimation approach. The number of disabled persons at the district is used as an instrument to improve our results.

Choice of instrument

Since the SG program under investigation mainly targets persons with disabilities and the compositional attributes measured are directly related with disability, the number of disabled persons in the district where the savings group operate is expected to strongly influence the compositional structure of the savings groups. SG's performance is not expected to be directly correlated with the number of disabled persons in the district; therefore, the number of disabled persons in the district is unlikely to be correlated with other unobserved variables potentially impacting on SG's performance.

To establish whether our choice of instrument is relevant, we estimated first-stage regression for the impact of number of disabled persons in district on compositional diversity measures (faultline strength) controlling for other variables in equation one. The first-stage regression results presented in **Appendix A** show that the coefficient of the instrument is positive and statistically significant. The first stage F statistics results are commonly used as a test for instrument relevance-based on Stock & Yogo (2005) critical values. The rule of thumb is that F-statistic above the threshold of 10[4] indicates that our instrument is not weak (Belaounia et al, 2020). Thus, the number of disabled persons in the district satisfied the relevance and exogeneity conditions. The predicted values of faultline strength (demographic, functional and combined) from the first stage are then used in the second stage to estimate the effect of fautline strength on group level performance of SGs.

Data source and description

The data we utilize come from a disability-inclusive savings groups program (iSAVE) implemented in Uganda. iSAVE, operating in 12 districts across eastern, central, and northern Uganda, has implemented a Management Information System (MIS) tool to establish a well-organized and dependable database for the program. This MIS tool captures various data,

[4] Our F statistics are consistently higher in all the three regression model estimations: 30.6; 16.6; and 26.0.

including individual group details, membership and financial information, and an imputed Balance Sheet covering aspects like program efficiency, financial performance, member satisfaction, disability inclusion, entrepreneurship levels, and the groups' interactions with formal financial institutions. Data collection occurs towards the end of each quarter, specifically in March, June, September, and December. We obtained data from 11 districts covering 688 savings groups. The disability population statistics numbers were obtained from the Uganda Population and Housing Census Report, 2002.

Results

Table 2 provides the descriptive statistics of the outcome variables, compositional diversity variables and the key control variables used in this analysis. The table indicates that the average savings per member amount to around 274,250 Ugandan Shillings (equivalent to 73 US Dollars). On average, approximately 67 percent of these funds are used. Consequently, a substantial portion of the members' savings is allocated as loans to those in need; specifically, only 23 percent of the members' savings remain in the loan fund. The average return on savings was modest at 17 percent. Although the average return on savings was low, 81 percent of savings groups were able to generate positive returns. Most savings groups generated profits, so their share-outs would likely be a cause for celebration.

According to the table, demographic faultlines indicate the strength of faultlines within a group based on demographic characteristics, while functional faultlines indicate faultlines within a group based on functional attributes. The combined Faultline strength is a composite measure based on demographic and functional attributes. Results show that Functional faultlines have a higher mean of 0.47, suggesting a somewhat stronger Faultline than Demographic faultlines. Based on these results, it appears that both demographics and functional compositional attributes produce moderate to relatively strong faultlines in the savings groups.

Table 2: Descriptives results

Variable	N	Mean	Median	Std. dev	Min	Max
Performance outcome variables						
Savings per member	688	274,249.7	147,397.0	1,841,404.0	0	4.75E+07
Funds utilization rate (%)	688	0.67	0.74	0.28	0	1
Return on Savings (%)	688	0.17	0.13	0.22	-0.626	2.196
Compositional diversity variables						
Demographic faultline strength	688	0.29	0.27	0.30	-0.04	0.69
Functional faultline strength	688	0.47	0.34	0.37	-0.01	0.89
Combined faultline strength	688	0.37	0.11	0.37	0.02	0.92
Control variables						
Group size	688	29.23	30	2.72	10	50
Member's attendance rate (%)	688	0.64	0.63	0.20	0.13	1

Financial linkage (dummy)	688	0.19	0.00	0.40	0	1
Number of members who have received financial education	688	16.83	23.00	13.31	0	36
Group age in months	688	20.17	14.00	15.25	1	72
Social fund balance (social capital)	688	183835.6	132500.0	188692.9	0	1,926,000.0
saving cycle 1	688	0.55	1.00	0.50	0	1
Saving cycle 2	688	0.23	0.00	0.42	0	1
Saving cycle 3	688	0.11	0.00	0.32	0	1
Saving cycle 4	688	0.06	0.00	0.24	0	1
Saving cycle 5	688	0.04	0.00	0.20	0	1
Saving cycle 6	688	0.01	0.00	0.08	0	1
Number of members running enterprises	688	13.84	15.00	8.87	0	30
Average loan outstanding size per member	688	116899.6	99286.00	89702.85	0	1,059,516
Instrument						
District Disability population (number)	688	48885.46	46583	18620.11	15117	76,371

Faultline strength and savings group performance

Table 3 presents the baseline Ordinary Least Squares (OLS) results from the relationship between SG performance and Faultline strength (compositional diversity). Table 3 does not present the main estimation results; however, the OLS results are presented here to demonstrated relevance of controlling for endogeneity problem in study. The results are used in comparison to the instrumental regression (2SLS-IV) results presented in Tables 4. For simplicity, results in both Table 3 and 4, control variables and district dummies included in estimation are excluded. For all model specifications, the Table 3 results reveals that demographic faultlines, functional Faultline and their combination had statistically significant positive effect on funds utilization. Their effect on Saving per member and return on saving are not statistically significant.

The results from Ordinary Least Squares (OLS) regression analysis show that faultline strength had a significant impact on fund utilization, whereas variables such as savings per member and return on savings did not demonstrate statistical significance. However, upon addressing endogeneity through instrumental regression techniques, the findings underwent a notable change. Specifically, faultline strength emerged as statistically significant for return on savings (refer to Table 4 for details). This shift in the significance of faultline strength, moving from its impact on fund utilization to its influence on return on savings, underscores the importance of accounting for endogeneity in model estimation. Failure to address endogeneity would have resulted in an erroneous conclusion that compositional diversity primarily affects fund utilization, when in fact its significant effect is more pronounced on return on savings. This therefore, highlights the crucial necessity of addressing endogeneity concerns and also underscores the enhanced validity and reliability of the obtained results through rigorous control for endogeneity.

Table 3: SG performance and Faultline strength (OLS)

	Demographic faultlines			Functional faultlines			Combined faultlines		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Variables	InSPM	InFUR	InROS	InSPM	InFUR	InROS	InSPM	InFUR	InROS
Infaultline strength	0.0337	0.375***	0.0407	-0.108	0.182*	-0.0176	0.124	0.280***	-0.0245
	-0.182	-0.115	-0.0416	-0.149	-0.0968	-0.0305	-0.15	-0.107	-0.0365
Constant	11.81***	-1.139***	0.0123	11.91***	-1.056***	0.0488	11.75***	-1.102***	0.0516
	-0.289	-0.178	-0.054	-0.343	-0.193	-0.0545	-0.284	-0.179	-0.0564
Observations	**687**	**687**	**688**	**687**	**687**	**688**	**687**	**687**	**688**
R-squared	**0.199**	**0.531**	**0.222**	**0.200**	**0.526**	**0.221**	**0.200**	**0.529**	**0.222**

Notes: All regressions control for whether the group has an account with formal financial institution (financial linkage), amount of social fund of the group, the number of people that have received financial education in group, the number of people who run enterprises in the group, age of the group in months, savings cycle, attendance rate, average outstanding loan size per member, and district dummies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Instrumental variable regression results

Table 4 displays the outcomes of the Two-Stage Least Squares (2SLS) estimation approach, utilizing the number of disabled persons in the district as the instrument. Table 4's model coefficients offer valuable insights into the associations between faultline strength variables and SG's group financial performance variables (InSPM, InFUR, InROS). The findings indicate that both demographic and functional faultlines, as well as their combination, exert a statistically significant positive influence on the profit-generating capacity of SGs (Return on Savings). Conversely, no statistically significant effects were observed concerning saving per member and fund utilization.

Given that the estimated models are log-log models, the coefficients can be interpreted as elasticities. These elasticities represent the estimated percentage change in the dependent variable corresponding to a one percent change in Faultline strength. For example, model 3 for demographic faultline highlights a positive correlation between demographic faultline strength and return on savings, revealing a 0.441% increase for every 1% rise in faultline strength. Functional Faultline strength and combined Faultline strength reveal 0.571% and 0.445% increase for every 1% rise respectively. Although several studies on Faultline strength to the large extent find negative group outcomes associated with faultlines, our findings reveal positive effects of faultlines on profit-generating capacity of SGs. This may imply that strong subgroup attachments or alignments along multiple demographic and functional attributes are a melting pot in informal institutions and thus a potential source of efficiency. As a result, groups with strong faultlines perform better from informal institution's perspective. Therefore, in promoting group composition in informal institutions, homogeneity should prevail over heterogeneity.

Table 4: Instrumental variable regressions results

	Demographic faultlines			Functional faultlines			Combined faultlines		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Variables	InSPM	InFUR	InROS	InSPM	InFUR	InROS	InSPM	InFUR	InROS
Infaultline strength	2.493	-0.858	0.441**	3.222	-1.109	0.571**	2.513	-0.865	0.445**
	-1.591	-0.635	-0.178	-2.057	-0.821	-0.23	-1.604	-0.64	-0.179
Constant	10.39***	-0.426	-0.220**	9.457***	-0.105	-0.385**	10.21***	-0.365	-0.251**
	-0.946	-0.363	-0.104	-1.523	-0.583	-0.166	-1.054	-0.403	-0.115
Observations	**687**	**687**	**688**	**687**	**687**	**688**	**687**	**687**	**688**
R-squared	**0.199**	**0.524**	**0.221**	**0.199**	**0.524**	**0.221**	**0.199**	**0.524**	**0.221**

Notes: All regressions control for whether the group has an account with formal financial institution (financial linkage), amount of social fund of the group, the number of people that have received financial education in group, the number of people who run enterprises in the group, age of the group in months, savings cycle, attendance rate, average outstanding loan size per member, and district dummies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Conclusions and implications

We set out to contribute to a better understanding of how compositional diversity in groups affects Group level financial performance of savings groups. In this study, we present and extend the use of cluster analysis and ASW to measure and quantify compositional diversity. The approach presents an opportunity to study compositional diversity using several attributes in real life in large groups in number and size, something that has been lacking in diversity research. We further enrich the study of compositional diversity by applying the Faultline theory into the analyses. This allows a more fine-grained approach to analyzing and understanding compositional diversity between subgroups and their effects on group performance. Prior scholarly evidence on Faultline strength depict largely negative effects. Our study reveals how demographic and functional faultlines positively affect SG profit generation capacity.

Previous scholarly endeavors have firmly established that compositional diversity, in the form of group faultlines, can lead to conflicts and consequently harm group or organizational performance (Thatcher and Patel, 2012; Bezrukova et al, 2009). The positive implications of group faultline strength on performance within the context of informal saving groups align with a growing body of research suggesting that the outcomes of group faultlines may vary based on the environmental context in which teams operate (Bezrukova et al., 2012; Cooper et al., 2014).

Studies by Bezrukova et al. (2012) and Cooper et al. (2014) exemplify that cultural alignment between a team and its embedding department, along with the characteristics of an organization's task environment, can influence the effects stemming from group faultlines. Our study results resonates directly to the concept of "birds of a feather flock together," or homophily, which emphasizes the tendency for individuals with similar characteristics to associate and form groups. In the context of saving groups, it suggests that demographic and functional faultlines, which represent differences in sociodemographic factors and functional backgrounds among group members, have a significant impact on the profit-generating capacity of these groups. By highlighting the importance of homogeneity over heterogeneity within informal and inclusive settings, the results underscores the notion that group efficiency is enhanced when members share common traits or characteristics. In other words, the results implies that saving groups function more effectively when there is a high degree of similarity

among their members, supporting the idea that personal similarities, such as sociodemographic factors, play a crucial role in shaping group dynamics and outcomes.

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Appendix A: First stage regression results

	Demographic faultline	Functional faultline	Combined faultline
	Model 1	Model 2	Model
VARIABLES	lnASW_d	lnASW_fun	lnASW_combined
lndisability_popn	0.356***	0.275**	0.353***
	-0.0975	-0.124	-0.113
Fin_linkages2	-0.00577	-0.00588	0.012
	-0.021	-0.0266	-0.0243
lnfinEduc	-0.00227	-0.0224***	-0.00122
	-0.00622	-0.00788	-0.00719
lnLoan	0.00336	-0.00229	0.00395
	-0.00215	-0.00273	-0.00249
lnsocial_capital	-0.00188	0.000656	-0.00499*
	-0.00248	-0.00314	-0.00287
lnGroup_age	-0.0199	-0.0198	-0.0172
	-0.014	-0.0177	-0.0162
Lnattend	0.0478**	0.0705***	0.0457*
	-0.0214	-0.0271	-0.0248
lnEnterprises	-0.0655***	-0.0681***	-0.0746***
	-0.00807	-0.0102	-0.00933
2.Saving_cycle	0.00661	0.0303	0.0471**
	-0.0204	-0.0259	-0.0236
3.Saving_cycle	0.042	0.0119	0.0602*
	-0.0308	-0.039	-0.0356
4.Saving_cycle	0.0231	0.0661	0.0674
	-0.0395	-0.05	-0.0456
5.Saving_cycle	-0.0491	0.0256	-0.00826
	-0.0464	-0.0588	-0.0536
6.Saving_cycle	-0.00976	-0.138	-0.00671
	-0.0889	-0.113	-0.103
2.DISTRICT	0.0193	0.375***	0.0365
	-0.102	-0.13	-0.118
3.DISTRICT	-0.0452	0.140***	-0.111**
	-0.0376	-0.0477	-0.0435
4.DISTRICT	-0.252***	-0.183***	-0.219***
	-0.0318	-0.0403	-0.0368
5.DISTRICT	-0.156***	-0.260***	-0.180***
	-0.0344	-0.0436	-0.0398
6.DISTRICT	0.366***	0.216*	0.411***
	-0.0882	-0.112	-0.102
7.DISTRICT	-0.0367	-0.000231	-0.0119
	-0.0485	-0.0615	-0.0561
8.DISTRICT	0.181	0.189	0.0748
	-0.142	-0.179	-0.164

9.DISTRICT	0.0175	-0.0592	0.00932
	-0.108	-0.137	-0.125
10.DISTRICT	0.105***	-0.0917**	0.0718*
	-0.0347	-0.044	-0.0402
Constant	-3.353***	-2.305*	-3.256***
	-1.071	-1.358	-1.239
Observations	688	688	688
R-squared	0.503	0.354	0.463
F statistic, F(22, 665)	30.62	16.55	26.01
Prob > F	0.000	0.000	0.000