(RESEARCH ARTICLE)

The influence of digital processes on the performance of microfinance institutions in Cameroon

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Abstract

Purpose: This study was carried out to investigate the influence of digital processes on the performance of microfinance institutions in Cameroon. Four digital processes of microfinance institutions were involved in the analysis. These are process automation, mobile banking, online banking and loan tracking. The performance of microfinance institutions included the financial performance and the social performance of the institutions. Specifically, the study investigated how process automation, mobile banking, online banking and loan tracking influence the performance of microfinance institutions in Cameroon.

Materials and Methods: The study adopted the survey research design and used primary data collected from 201 microfinance institutions in Cameroon through the administration of questionnaires. Data was analysed using both descriptive and inferential statistics with the help of SPSS Version 20, STATA Version 14 and AMOS Version 23.

Findings: The results of the study revealed that process automation and mobile banking have significant positive influence on the performance of microfinance institutions in Cameroon while online banking and loan tracking have positive influence on the performance of microfinance institutions in Cameroon, though the positive influence was found to be insignificant.

Conclusion and Recommendations: The study concludes that digital processes significantly influence the performance of microfinance institutions in Cameroon, with a 1 unit increase in the digital processes of microfinance institutions in Cameroon increasing the performance of the institutions by 3.317 units. To the microfinance institutions operating in Cameroon, the study recommends that more investment should be made on process automation and mobile banking technology in order to improve the performance of the institutions.

Keywords: Digital Processes; Online Banking; Mobile Banking; Performance; Microfinance Institutions

1. Introduction

In the recent decades, the microfinance industry has been growing rapidly. This is based on the fact that microfinance institutions play a vital role in the economic development of many developing countries by offering a variety of financial services to their customers, including micro loans, savings and other deposit products, remittances and transfer payment services, as well as other financial products and services to low - income earners, especially those excluded by other financial institutions. (Abebe and Kegne, 2023; Osamah et al. 2022; Adnan and Kumar, 2021). This rapid growth has attracted the recognition of international actors, donor organisations and governments and has necessitated increasing inflows of investment from diverse stakeholders on the premise that the microfinance institutions have an institutional foundation that fosters local economic development, create jobs and empowers women (Wondirad, 2020).

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This has led to an increase in the assets of the institutions as reported by the European Microfinance network that the total assets of microfinance institutions in Europe increased from 2 billion euros in 2021 to 2.2 billion euros in 2022, enabling the microfinance institutions to grant 100,323 micro credits for an amount of 1.02 billion euros (European Microfinance Network, 2023).

Since their emergence in 1976 with the establishment of the Grameen Bank by Muhammad Yunus, microfinance institutions have been striving to meet their performance objective. The performance of microfinance institutions is a multi - dimensional construct that consist of four elements; customer focus performance which includes customer satisfaction and product performance, financial and market performance which includes profitability and market positioning, human resource performance which includes employee satisfaction, and organizational effectiveness which includes production and supply chain effectiveness. The performance of microfinance institutions can therefore be seen in terms of financial performance measures such revenue increase, cost minimization, market share increase, and improvement in the competitive advantage of the institutions, as well as non - financial performance which includes social performance (Mwawasaa and Ali, 2020).

The financial performance of microfinance institutions is proxied by many variables in the existing literature. It can be measured using the return on asset (ROA) and return on equity (ROE) of the institutions (El Kharti, 2014) as well as the revenue and cost of the institutions (Otieno and Olouch, 2021). According to Duramany – Lakkoh (2021) the financial performance of microfinance institutions is measured using the return on capital employed (ROCE), return on asset (ROA), net operating profit margin (NOPM) and the operational self - sufficiency (OSS) of the institutions, while Mwawassa and Ali (2020) measured financial performance using revenue, cost reduction, market share and competitiveness of the institutions. Given the many variables used to measure the financial performance of microfinance institutions, this study adopted four variables of financial performance which are revenue, cost reduction, competitiveness and market share (Mwawassa and Ali, 2020; Oteno and Olouch, 2021).

In the current microfinance market, financial based performance measures alone will not be adequate to provide important information to the institutions since financial performance indicators tell only part of the performance story in microfinance. Though microfinance institutions according to the institutionalists have to improve their financial performance by reducing operational cost and recovering costs from revenue in order to remain sustainable (Fadikpe, 2022), microfinance institutions should not only focus on financial sustainability but should be able to meet their social mission. The social performance of microfinance institutions is the impact of the institutions in providing financial services to the low - income people. This is measured in terms of time duration taken to serve the customers (length of outreach), the average outstanding loans granted by the microfinance institutions (depth of outreach) and the number of active borrowers (breadth of outreach).

Recognizing that innovation remains a key imperative for enterprises to attain their performance objective, microfinance institutions have continued to mobilize resources to enhance the level of innovation. The extent of innovation in the financial service sector is higher than in other sectors of the economy because the sector is built on components of change such as high technology, high competition and unstable customers' preferences. Microfinance institutions in Cameroon have continued to invest huge resources in digital processes, though the investment is still low as Cameroon is 20th out of 27 economies in Sub Saharan Africa, 31st among 34 low - income group economies and 123rd among 132 economies that featured in the Global Innovation Index of 2021. The performance of microfinance institutions in Cameroon therefore arouses the curiosity of many researchers as many of such institutions do not sustain their performance (Yougang and Kengni, 2022). Notwithstanding, the institutions have been making efforts to enhance their performance, one of such efforts is the investment in digital processes.

1.1. Statement of the Problem

Improving the performance of microfinance institutions in Cameroon is crucial for the sustainability of the institutions. The performance of microfinance institutions can be seen in terms of the financial performance and the social performance, given the dual objectives and double bottom line of microfinance institutions. The financial performance of microfinance institutions in Cameroon is not constant as witnessed by the low and fluctuating level of banking revenue over the years. The operational cost of most of the institutions has been on an increase. As the number of microfinance institutions in Cameroon continue to increase, the market share of most of the institutions has been reducing, thereby reducing the competitive advantage of the institutions. Many microfinance institutions in Cameroon are unable to sustain their performance, leading to their collapse as noted between 2020 and 2021 where thirteen microfinance institutions collapsed in Cameroon (BEAC Report, 2022).

The low and inconsistent financial performance of the institutions can be revealed by the return on assets of the institutions that is below the threshold of 5%. In 2020, the return on assets for category one microfinance institutions in Cameroon was -0.56%, that for category two was 1.11% and that for category three was 0.26%. Despite the slight increase in 2021, the values were till judged to be very low as they were -0.5% for category one, 1.92% for category two and 1.45% for category three. This low financial performance can also be justified by the low return on equity of the institutions. In 2020, category one microfinance institutions had a return on equity of -7.72%, category two 6.09% and 2.1% for category three. In 2021, the return on equity for category one institutions was -6.09%, that for category two was 15.62% and that for category three was 3.08% (MINFI report, 2022).

In addition to the financial performance problems of microfinance institutions in Cameroon, these institutions also face problems in meeting their social goals. The inability of microfinance institutions in Cameroon to provide collateral free loans, coupled with the high cost of loans and the high cost of membership in these institutions have reduced the number of low – income earners demanding for loans from these institutions. In most of the institutions, the loan processing duration is long and the loan procedures are not easy, which has contributed in reducing the number of active borrowers (Fombutu et al., 2019). The increasing complexity in the demand for microfinance services by customers has made it difficult for the microfinance institutions to meet their objective of social performance.

Objectives of Study

The main objective of this study is to investigate the influence of digital processes on the performance of microfinance institutions in Cameroon. To achieve this main objective, the following specific objectives are addressed in the work. They include:

- To examine the influence of process automation on the performance of microfinance institutions in Cameroon.
- To investigate the extent to which online banking influences the performance of microfinance institutions in Cameroon.
- To analyse the influence of mobile banking on the performance of microfinance institutions in Cameroon.
- To examine the influence of loan tracking on the performance of microfinance institutions in Cameroon.

Research Hypotheses

In order to achieve the objectives of this study, the following hypotheses have been formulated to be tested on observed data. They are:

- H1: Process automation significantly influence the performance of microfinance institutions in Cameroon.
- H1: Online banking significantly influences the performance of microfinance institutions in Cameroon.
- H1: Mobile banking significantly influences the performance of microfinance institutions in Cameroon.
- H1: Loan tracking significantly influences the performance of microfinance institutions in Cameroon.

2. Conceptual Framework

Digital processes refer to the introduction of new technologies related to the processes of microfinance institutions in order to increase transaction speed, reduce transaction cost and enhance organizational performance. Mabrouk et al. (2016) noted that digital processes are basically the introduction of information technology (IT) and telematics in the management of payment systems. Batiz – Lazo and Wolderenbent (2006) made a distinction between digital products and digital processes. According to them, while digital products focused on the market, establishing new products to meet the demands of the market, digital processes have an internal focus with the objective of improving the skills and competencies of bank staff for them to be more efficient in the execution of their duties. This study incorporates four digital processes of microfinance institutions. These are process automation, online banking, mobile banking and loan tracking.

Process automation within the microfinance sector is the system of operating banking activities with the use of highly automated means so that human intervention is reduced to a minimal level. It involves the use of information and communication technology (ICT) to carry out tasks within the microfinance institution such as the preparation of reports and correspondents, file management and the duplication and distribution of written materials. According to Uwannah et al (2020), the management of business organisations should provide adequate funds for the automation of office procedures to facilitate office transactions, increase transaction speed and increase the efficiency of office staff. The automation of office processes will facilitate the digital collection, storage, manipulation and transmission of information within an office and between the offices and branches of the microfinance institution.

Online banking is a digital process that permits customers of microfinance institutions to conduct banking transactions through the internet. This could be facilitated with the use of a computer or a modern mobile phone. Online banking could also be referred to as internet banking. Online banking provides customers with almost every service that tradition banking will provide through the normal branches of microfinance institutions. Online banking or internet banking services will range from account creation, deposits, transfers, online payment of bills, checking of account statements online and more. Typically, microfinance institutions that offer online or internet banking services will allow their customers have access to their accounts and carry out transactions from their accounts online, at any time and from the comfort of their houses or offices. The provision of online banking services by microfinance institutions has facilitated international payments.

Mobile banking is a digital process that makes it possible for customers of microfinance institutions to carry out financial transactions on a mobile device such as a mobile phone or a tablet. Kumar et al (2020) defined mobile banking simply as the act of making financial transactions using a mobile phone. Before the recent development in technology related to mobile banking, microfinance institutions send SMS to their customers mostly in cases of deposits into and withdrawals from their accounts. This method known as SMS banking is a component of mobile banking. Presently, with the advancement in digital financial innovations, customers of microfinance institutions can perform banking transactions with the use of their mobile phones such as the transfer of funds from their bank account to their mobile money account and from their mobile money account to their bank account. Such transactions that are gradually becoming popular in the microfinance industry are known as mobile banking transactions.

Loan tracking refers to the process of monitoring the events leading up to the repayment of a loan by the management of a financial institution such as a microfinance institution. This will involve monitoring information about the loan amount, the loan duration, the interest rate and the personal information and financial details of the borrower. Branzoli and Fringuelletti (2020) noted that loan tracking is within the context of the loan management policy of microfinance institutions. The objective of loan tracking is to ensure that the amount granted as loan plus interest should be repaid by the borrower within the agreed time. In most microfinance institutions, loan tracking is facilitated with the use of a loan tracker application which could be provided by Microsoft cloud for financial services. Loan tracking will ease communication between the financial institution and the borrower, thereby facilitating the repayment of loans and will enable the microfinance institution to meet its security objective.
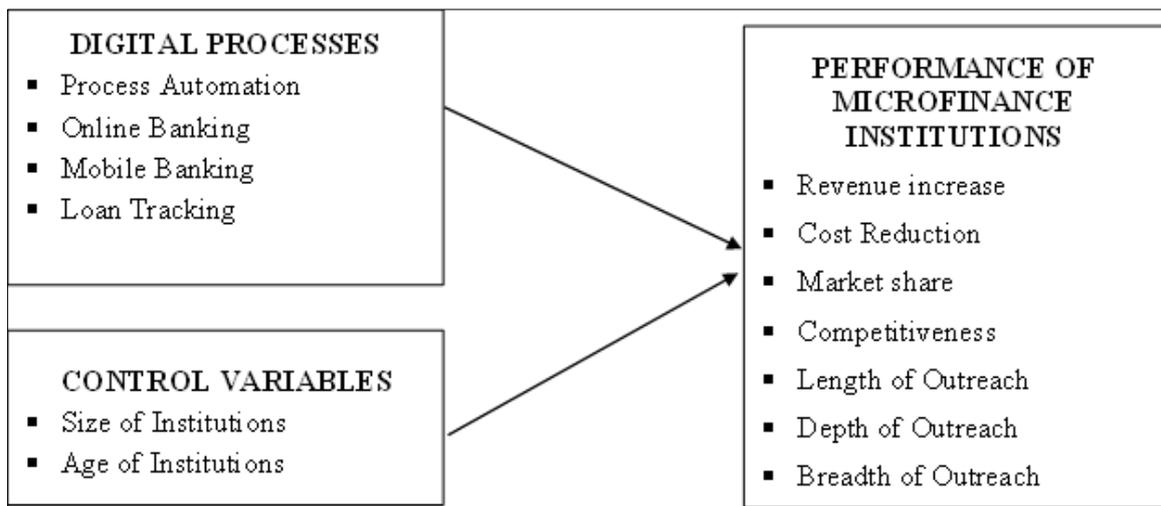

Figure 1 Conceptual Framework

Review of Previous Studies on Digital Processes and Performance of Microfinance Institutions

Previous empirical literature on the influence of digital processes on the performance of microfinance institutions can be summarized on the Table 1 below.

Table 1 Summary Literature on Digital Processes and Performance of Microfinance Institutions

Author	Year	Objective	Variables	Estimation Technique	Results
Dawood and Ibrahim	2023	To investigate the impact of financial process innovation on the financial performance of microfinance institutions in Mombassa County, Kenya	Remote data processing, digital cards, back-office automation and point of sale terminals as process innovation variables and ROA as performance variable.	Regression	Automated loan procedure by microfinance institutions enabled them to grant more loans and enhance performance
Akware and Magala	2023	To investigate the impact of digitalisation on the performance of microfinance institutions in Kyebando SACCO	Internet banking as digitalisation variable and competitiveness, cost reduction and efficiency as performance variables.	Descriptive statistics	55% of respondents agreed that internet banking helped microfinance institutions to sustainable and performant.
Nyamai et al.	2023	To investigate the influence of technology in strategic planning on the performance of microfinance institutions in Kitui County.	Information security system, feedback mechanism and electronic mailing system as technology variables and profits, market share, sales volume and cashflows as performance variables.	Regression	Technology had a significant positive influence on the performance of microfinance institutions in Kitui County.
Mwirichia, M	2023	To define the process innovation effects on the financial performance of microfinance institutions in Nairobi County in Kenya.	Remote data processing, digital cards, point of sale terminals and real time gross settlement as process innovation variables and profitability as financial performance variable.	Regression	Remote data processing, digital cards, point of sale terminals and real time gross settlement all have significant favourable effect on the return on assets used as a measure of the financial performance of microfinance institutions in the Nairobi County in Kenya.
Omwanza et al.	2022	To assess the effect of financial process innovations on the performance of microfinance institutions in Kenya from 2014 to 2021	Mobile banking, digital field applications and PESA links as innovation variables and return on asset as performance variables.	Regression	Process innovation had a positive and significant effect on the financial performance of microfinance institutions
Mosito et al.	2022	To assess the effect of mobile banking technology on the financial performance of deposit taking microfinance institutions in Kenya.	Data transfer and storage, money transfer and loans, cyber crime identification and authorization and authentication as mobile banking technology variables and return on assets as financial performance variable.	Linear Regression	Mobile banking technology has a positive and significant relationship with the financial performance of deposit taking microfinance institutions in Kenya.

Gaichuru et al.	2022	To examine the effect of process innovations on the performance of savings and credit cooperatives in Kenya.	Process design, cost effective processes, service delivery processes and process automation as process innovation variables and ROE as performance variable.	Regression	Process innovation has a significant positive effect on microfinance performance.
Wangui and Nzuki	2021	To investigate the effect of electronic fund transfer on financial performance of microfinance institutions.	Profitability, customer retention, net interest margin and share price as performance variables.	Descriptive statistics	Electronic money transfer has a positive effect on the performance of financial institutions.

Source: Computed by author (2024)

3. Material and methods

3.1. Research Design

The survey research design is adopted for this study to assess the influence of digital processes on the performance of microfinance institutions in Cameroon. The rationale for choosing this research design is based on the fact that the research design is able to provide the researcher with the opportunity of collecting primary data through the administration of questionnaire. This research design is pertinent for this study because the researcher used primary data which was collected from microfinance institutions in Cameroon through the administration of questionnaire. Specifically, the causal survey research design was used since the researcher intended to determine the nature of relationship between digital processes and the performance of microfinance institutions in Cameroon.

3.2. Area of Study

This study covered microfinance institutions operating in Cameroon. Cameroon is a member of the Central Africa Economic and Monetary Community (CEMAC) which comprise of Cameroon, Central African Republic, Chad, Congo, Gabon and Equatorial Guinea. Cameroon is the largest and most diversified economy within CEMAC, consisting of 44% of the total Gross Domestic Product of the region (IMF country survey, 2021). The financial sector of Cameroon is made up of credit institutions including banks and microfinance institutions under the supervision of the Banking Commission for Central African States (COBAC), insurance companies regulated by the Inter African Conference on Insurance (CIMA), and social security institutions under the supervision of the Inter African Social Security Conference (CIPRES). Cameroon's financial system is the largest in CEMAC, with 61% of the financial institutions operating within the zone located in Cameroon. Despite the different types of financial institutions, this study is limited to the microfinance institutions operating in Cameroon.

3.3. Study Population and Sampling Procedure

The population of this study is based on the 2023 statistics of microfinance institutions that are operating in Cameroon. As at the 31st of December 2023, there were 411 microfinance institutions operating in Cameroon. The simple random sampling technique was employed to select the institutions involved in the investigation from the population of 411. The number of microfinance institutions was determined using the Yamane's formula as follows

$$n = \frac{N}{1 + Ne^2}$$

Where

n = Sample size

N = Total Population

e = Error tolerance (0.05)

The number of microfinance institution included in the study were therefore calculated as follows

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{411}{[1 + 411(0.05)^2]}$$

$$n = \frac{411}{2.0275}$$

$$n = 203$$

3.4. Data Collection and analysis

This study made use of primary data collected through the administration of questionnaires. Questionnaires were administered to more than the 203 institutions that constitute the sample size. Before the administration of the

questionnaires, a pilot test was done involving some randomly selected microfinance institutions in Cameroon with the objective of testing the validity of the questionnaire as the main instrument of data collection. The data collected was cleaned and then coded for the purpose of data analysis. Since the questionnaire was based on a standard likert scale of five points, the coding was done such that strongly agree = 5, agree = 4, neutral = 3, disagree = 2 and strongly disagree = 1.

3.4.1. Operationalization of Variables

Table 2 Operationalization of Research Variables

Variable	Meaning	Description	Measurement
Dependent Variable			
PA	Process Automation	Act of operating banking processes with highly automated means to reduce human intervention	Number of office processes automated Investment in process automation
OB	Online Banking	A banking process that permits customers to carry out banking transactions online	Number of online banking subscribers Number of online banking transactions Value of online banking transactions
MB	Mobile Banking	A banking process that permits customers to carry out banking transactions on a mobile device	Number of mobile banking subscribers Number of mobile banking transactions Value of mobile banking transactions
LTR	Loan Tracking	The use of technology to monitor a loan to ensure repayment	Number of loans tracked online
Control Variables			
AGE	Age of Microfinance Institutions	The number of years that the institution has existed	Below 5 years = 1, 6 – 10 years = 2, 11 – 15 years = 3, 16 – 20 years = 4, Above 20 years = 5
SIZE	Size of Financial Institution	Total asset of the financial institution	Below 50 MF = 1, 51 – 100 MF = 2, 101 – 200 MF = 3, 201 – 400 MF = 4, Above 400 MF = 5

Source: Computed by Author (2024)

3.4.2. Model Specification

To determine the influence of digital processes on the performance of microfinance institutions in Cameroon, the following model was used.

$$PM_i = \beta_0 + \beta_1 PA_i + \beta_2 OB_i + \beta_3 MB_i + \beta_4 LTR_i + \beta_5 AGE_i + \beta_6 SIZE_i + \mu_i \dots\dots\dots\dots(1)$$

Where

- PM_i = Performance of Microfinance Institutions at period i
- PA_i = Process Automation of Microfinance Institutions at period i
- OB_i = Online Banking of Microfinance Institutions at period i
- MB_i = Mobile Banking of Microfinance Institutions at period i
- LTR_i = Loan Tracking of Microfinance Institutions at period i
- AGE_i = Age of Microfinance Institutions at period i
- $SIZE_i$ = SIZE of Microfinance Institutions at period i
- μ_i = Error term

β_1, β_2, β_3, β_4, β_5, and β_6 = Parameters for estimation

3.5. Estimation Techniques

In order to establish the influence of digital processes on the performance of microfinance institutions in Cameroon, this study adopted the structural equation modelling technique. This is a statistical technique that combines regression and factor analysis. The choice of this technique is based on its ability to model measurement errors and unexplained variances, its ability to simultaneously test variables and is good for analysis with multiple dependent variables. Given that the performance of microfinance institution in Cameroon includes both the financial performance and the social performance of the institutions, and considering that different questions are required to build an index to capture the constructs of digital processes, structural equation modelling was best for this study.

The multivariate factor analysis and principal component analysis techniques were used to construct indices for the variables that were used in this study to measure the different constructs of digital processes and performance of microfinance institutions in Cameroon. In the process, factor loadings were extracted to show the strength of the relationships and correlation between the variables and the underlying factors. Higher factor loadings, usually 0.7 or more indicate that the factors strongly influence the variables and the variables are good for factor analysis.

The parameters of the specified models were estimated using the maximum likelihood (ML) technique. The choice of the maximum likelihood as the main estimation technique is based on the fact that it provides a consistent but flexible approach which makes its suitable for a variety of applications, especially in cases where the assumptions of other models are violated. The maximum likelihood will estimate the parameters of the models so those parameters maximize the likelihood that the assumed models produce the data we can observed in the real world. The robustness of the SEM results obtained through the Maximum Likelihood estimation technique were tested based on the Ordinary Least Squares (OLS) estimation techniques. The choice of this estimation technique rests on the premise that the errors in the data set are uncorrelated. The Ordinary Least Square (OLS) was used as the estimation technique because it will produce the best linear unbiased estimates of the parameters of the models.

Considering the necessity for the data set to be used for inferential statistics to meet certain prescribed conditions, diagnostic tests were done on the data to ascertain that the data meet the assumptions of the analysis in order to avoid spurious regression which will lead to unreliable results. The data was tested for sampling adequacy, multivariate normality, multicollinearity and heteroscedasticity before proceeding with the regression analysis. Cronbach alpha, standard error test and the probability test were employed to test the reliability and to validate the results.

4. Results

4.1. Descriptive Statistics

244 questionnaires were administered during data collection and 201 were returned, given a response rate of 82.38% which was considered adequate following the recommendations of Mugenda and Mugenda (2003) that a response rate of 50% or more is adequate for a study. The descriptive statistics are presented on table 3 below.

Table 3 Descriptive Statistics for Digital Processes and Performance

Variable	Obs	Mean	Std. dev.	Min	Max
pm	201	0.734264	0.156131	0	1
dps	201	0.79733	0.152851	0	1
npa	201	0.856013	0.160378	0	1
nob	201	0.761081	0.204891	0	1
nmb	201	0.844072	0.16632	0	1
nltr	201	0.728152	0.243469	0	1
age_6_10	201	0.119403	0.325072	0	1
age_11_15	201	0.089552	0.286252	0	1
age_16_20	201	0.169154	0.375824	0	1
age_20	201	0.502488	0.501242	0	1

ta_51_100	201	0.024876	0.156135	0	1
ta_101_200	201	0.074627	0.263445	0	1
ta_201_400	201	0.129353	0.336428	0	1
ta_a_400	201	0.731343	0.444368	0	1

Source: Computed by Author using STATA Version 14

Table 3 shows that the total observations in the sample were 201. The results equally indicated that on average digital processes have a mean of 0.797 and a standard deviation of 0.153. Process automation has a mean of 0.856 and a standard deviation of 0.16. The values of the variables process automation, online banking, mobile banking, and loans tracking as well as all the control variables were normalized between 0 and 1 to get rid of negative values, which pose some interpretation difficulties. From the results, there was evidence of substantial spread and randomness in the variables.

4.2. Inferential Results

4.2.1. KMO and Bartlett's Test

The Kaiser – Meyer – Olkin (KMO) test of sampling adequacy and the Bartlett's test of sphericity were computed to determine whether the data for digital processes and performance were suitable for structural equation modelling. The results are presented on Table 4 below.

Table 4 KMO and Bartlett's Test for Digital Processes and Performance

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.861
Bartlett's Test of Sphericity	Approx. Chi-Square	2991.617
	df	171
	Sig.	0.000

Source: Computed by Author using SPSS Version 20

The results show the KMO and Bartlett's test were significant since the KMO value of 0.861 is more than the minimum cut off point of 0.5 and the p – value of the Bartlett's test (0.000) is less than 0.5. The results indicate that the sample is adequate for factor analysis.
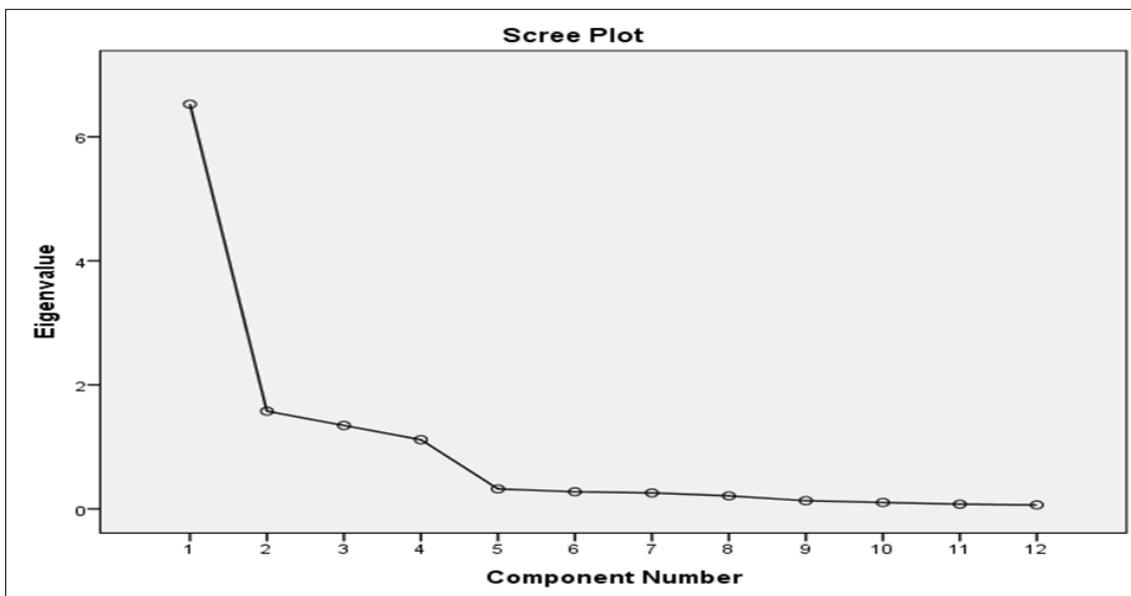

Figure 2 Screen Plot for Digital Processes

Figure 2 above shows the relationship between the eigenvalue and the number of components. The result revealed that from the items of digital processes, four components can be retained for analysis. It was necessary to perform a structural mimic model to determine the relationship between the constructs of digital processes and performance.

4.3. Structural Mimic Model

The relationship between the constructs of digital processes and performance of microfinance institutions in Cameroon can be presented on Figure 3 below.
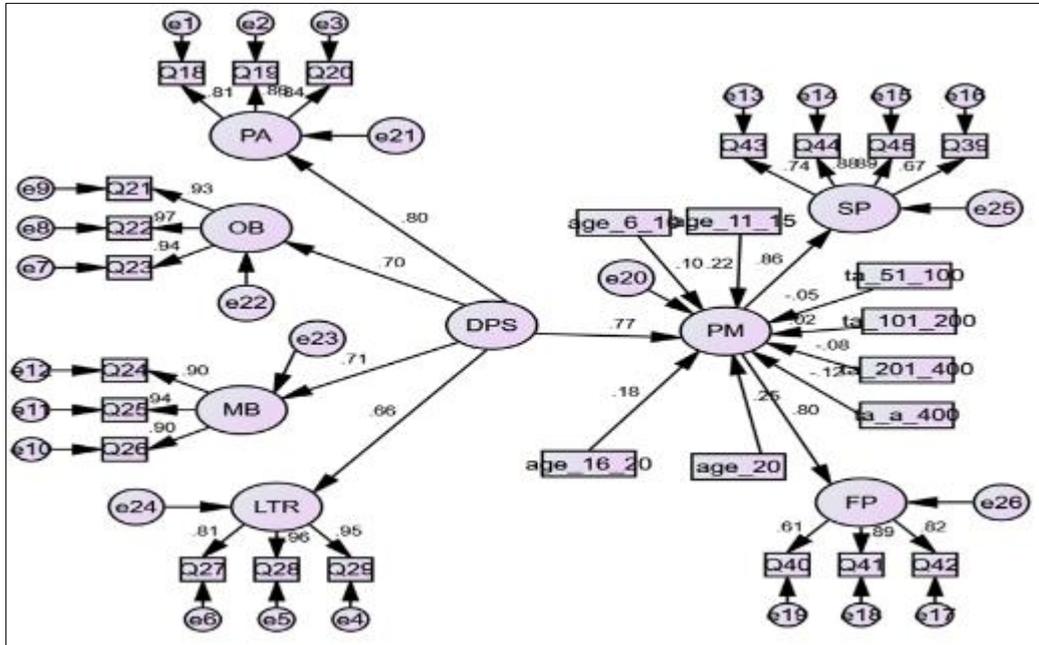
Source: Computed by Author using AMOS version 23

Figure 3 Structural Model of Digital Processes and Performance

The result presented in Figure 3 shows the relationship between the inner models constructs as well as the relationships between the observed variables, or indicators and constructs. The circle represents the construct while the rectangle represents the observed or manifest variables used in the construction of the model. The model indicated that digital processes (DPS) is an exogenous latent construct while performance of microfinance (PM) is an endogenous latent construct. The exogenous construct digital processes were captured using four formative constructs process automation (PA), Online Banking (OB), Mobile Banking (MB) and Loan Tracking (LTR). On the other hand, the endogenous construct performance of microfinance (PM) was captured using two formative constructs of social performance (SP) and financial performance (FP).

The used of constructs can be justified on the basis of the fact that digital processes and performance of microfinance institutions are multifaceted. This suggests that the use of a single observed variable on the questionnaire may not be appropriate to proxy for these concepts. The question items used as manifest of the constructs are valid and reliable as indicated in the result.

4.4. Pairwise Correlation of Digital Products and Performance of MFIs

The data was further subjected to correlation analysis in order to tract the level of association between the variables. Specifically, the pairwise correlation was used. This was done on the premise that positive values indicate positive correlation while negative values indicate negative correlation. Values closer to 1 indicate strong correlation while values closer to 0 indicate weak correlation. A value of 0 indicates that there is no correlation between the variables while a value of 1 indicates that there is perfect correlation between the variables.

Table 5 Pairwise correlations for Digital Processes and Performance

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) pm	1.000													
(2) dps	0.596*	1.000												
	(0.000)													
(3) npa	0.512*	0.763*	1.000											
	(0.000)	(0.000)												
(4) nob	0.475*	0.812*	0.488*	1.000										
	(0.000)	(0.000)	(0.000)											
(5) nmb	0.479*	0.750*	0.523*	0.525*	1.000									
	(0.000)	(0.000)	(0.000)	(0.000)										
(6) nltr	0.432*	0.813*	0.489*	0.517*	0.415*	1.000								
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)									
(7) age_6_10	-0.075	-0.011	-0.021	-0.051	-0.085	0.087	1.000							
	(0.289)	(0.875)	(0.770)	(0.472)	(0.228)	(0.220)								
(8) age_11_15	0.140*	0.134	0.058	0.132	0.111	0.113	-0.115	1.000						
	(0.048)	(0.057)	(0.414)	(0.062)	(0.117)	(0.112)	(0.103)							
(9) age_16_20	0.022	0.029	0.035	0.008	0.097	-0.024	-0.166*	-0.142*	1.000					
	(0.752)	(0.685)	(0.626)	(0.910)	(0.169)	(0.738)	(0.018)	(0.045)						
(10) age_20	0.020	-0.083	0.000	-0.027	-0.130	-0.097	-0.370*	-0.315*	-0.453*	1.000				
	(0.774)	(0.240)	(0.997)	(0.703)	(0.065)	(0.169)	(0.000)	(0.000)	(0.000)					
(11) ta_51_100	-0.035	-0.061	-0.218*	0.030	-0.059	0.005	0.040	-0.050	-0.072	-0.097	1.000			
	(0.626)	(0.389)	(0.002)	(0.668)	(0.409)	(0.946)	(0.576)	(0.480)	(0.309)	(0.172)				
(12) ta_101_200	-0.118	-0.207*	-0.205*	-0.154*	-0.256*	-0.081	0.071	-0.089	-0.027	-0.096	-0.045	1.000		
	(0.096)	(0.003)	(0.003)	(0.029)	(0.000)	(0.254)	(0.319)	(0.209)	(0.702)	(0.175)	(0.523)			
(13) ta_201_400	0.044	0.062	0.033	0.015	0.102	0.053	-0.142*	0.035	0.301*	-0.209*	-0.062	-0.109	1.000	
	(0.531)	(0.379)	(0.643)	(0.829)	(0.151)	(0.458)	(0.044)	(0.623)	(0.000)	(0.003)	(0.385)	(0.122)		
(14) ta_a_400	0.080	0.140*	0.222*	0.124	0.096	0.034	0.015	0.072	-0.176*	0.317*	-0.264*	-0.469*	-0.636*	1.000
	(0.261)	(0.048)	(0.002)	(0.078)	(0.176)	(0.627)	(0.827)	(0.309)	(0.013)	(0.000)	(0.000)	(0.000)	(0.000)	

*** p<0.01, ** p<0.05, * p<0.1
Source: Computed by Author using STATA Version 14

Table 5 reveals a significant positive relationship between the constructs of digital processes. There was no reason to suspect the model for the problem of multicollinearity as all the correlation coefficients were well below 0.6 which is considered as moderate.

4.5. Regression Results

The regression results for digital processes and performance of microfinance institutions in Cameroon are presented on Table 6 below.

Table 6 Regression Results for Digital Processes and Performance

	ML	(OLS)	(OLS)
VARIABLES	pm	pm	pm
dps	3.317***		0.309***
	(1.123)		(0.0370)
npa	--	0.543***	--
		(0.171)	
nob	--	0.234*	--
		(0.123)	
nmb	--	0.422***	--
		(0.148)	
nltr	--	0.167	--
		(0.110)	
age_6_10	0.604	0.0696	0.0470
	(0.411)	(0.0894)	(0.0837)
age_11_15	1.592**	0.197**	0.175**
	(0.650)	(0.0870)	(0.0812)
age_16_20	na	0.116	0.111
		(0.0805)	(0.0790)
age_20	1.026**	0.151**	0.137**
	(0.400)	(0.0719)	(0.0685)
ta_51_100	-0.093	0.0928	0.0301
	(0.122)	(0.168)	(0.156)
ta_101_200	0.179	0.0249	0.000932
	(0.453)	(0.148)	(0.142)
ta_201_400	-0.490	-0.0382	-0.0352
	(0.384)	(0.149)	(0.144)
ta_a_400	-0.566	-0.0689	-0.0585
	(0.321)	(0.137)	(0.131)
Constant	--	0.278	0.422**
		(0.192)	(0.172)
Observations	201	201	201
R-squared	0.394	0.394	0.377
F-Statistics		9.99***	10.23***

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Computed by Author using AMOS version 23 and STATA Version 14

The Result in Table 6 revealed that digital processes (DPS) have a significant positive influence on the performance of microfinance institutions in Cameroon. The implication of the finding is that if digital processes are increased by 1 unit, the performance of microfinance institutions in Cameroon will improve by 3.317 units. The significant of the influence of digital processes (DPS) on the performance of microfinance institutions in Cameroon permit us to ascertain that in this study digital processes do significantly influence the performance of microfinance institutions in Cameroon. The result also indicates that mobile banking, process automation, and age group 11 to 15 years and 20 years and above were the significant determinants of the performance of microfinance institutions.

5. Discussion

The regression results of digital processes on the performance of microfinance institutions in Cameroon reveal that digital processes significantly influence the performance of microfinance institutions in Cameroon. The results also reveal that process automation and mobile banking have significant positive influence on the performance of microfinance institutions while online banking and loan tracking have positive influence on the performance of microfinance institutions but the performance was not significant. The significant influence of process automation on microfinance performance implies that increasing the number of office processes that are automated will enhance the performance of the institutions. This is because innovative microfinance processes increase the transaction speed of the office staff and will reduce the transaction cost. This result implies that a 1 unit increase in process automation will improve the performance of microfinance institutions in Cameroon by 0.543 units. This result is in line with the findings of other researchers such as Mabrouk et al., (2016) Simuyu and Olwery (2018) and Ngazi et al., (2019) who attested to the positive influence of the automation of office processes on the performance of financial institutions.

Moreover, the results show that mobile banking has a significant positive influence on the performance of microfinance institutions in Cameroon. This is due to the fact that the customers of microfinance institutions can perform their banking transactions from anywhere using their mobile phones or tablets. An implication of this result is that an increase in mobile banking by the microfinance institutions will enhance the performance of the microfinance institutions in Cameroon. Specifically, a 1 unit increase in mobile banking will improve the performance of microfinance institutions in Cameroon by 0.422 unit. This result is in agreement with the findings of Ahmed et al., (2021), Salamata (2021), and Hufei et al., (2021) whose results reveal positive effect of mobile banking on the performance of microfinance institutions.

More to that, the results indicate that online banking has a positive and insignificant influence on the performance of microfinance institutions in Cameroon. This insignificant result is attributed to the fact that the customers of microfinance institutions in Cameroon that carry out online banking transactions are few, leading to low number of transactions as well as low value of transactions done online which could not have a significant influence on the profit of the institutions. More to that, loan tracking was found not to have a positive and insignificant influence on the performance of microfinance institutions in Cameroon. This is because most of the microfinance institutions in Cameroon lack adequate software that they can use to track loan effectively to ensure timely repayment for enhanced performance. This insignificant influence of online banking on the performance of microfinance institutions in Cameroon is in disagreement with the findings of Simiyu and Olwery (2018), Owoyemi et al., (2021) and Daulenova and Tayor (2019) whose findings reveal that online banking significantly influences the performance of financial institutions.

The regression of digital processes and performance of microfinance institutions revealed that digital processes have a positive and significant influence on the performance of microfinance institutions in Cameroon, implying that an increase in the digital processes of microfinance institutions will improve the performance of microfinance institutions in Cameroon. The implication of the significant influence of digital processes on the performance of microfinance institutions in Cameroon is that an increase in the digital processes of the institutions by 1 unit will improve the performance of microfinance institutions in Cameroon by 3.317 units. Microfinance institutions in Cameroon should therefore take essential actions to improve their digital processes in order to enhance their performance since performance will more than double if there is a unit increase in the digital processes of microfinance institutions in Cameroon. Knowing that process automation and mobile banking significantly influence the performance of microfinance institutions, adequate investment should be made in these digital processes to ensure a high performance.

The significant positive influence of digital processes on the performance of microfinance institutions in Cameroon permitted us to answer the second research questions of the study which is to what extent does digital processes influence the performance of microfinance institutions in Cameroon? Based on the findings, digital processes influence the performance of microfinance institutions in Cameroon to a positive and significant extent. This result also permitted us to accept the second alternate hypothesis of the study which states that digital processes significantly influence the

performance of microfinance institutions in Cameroon. This result is in conformity with the findings of Dawood and Ibrahim (2023), Nyamai et al., (2023), Mutisya et al., (2022), Gaichuru et al., (2022) and Munyi and Wachira (2021) who all attested the positive influence of digital processes on the performance of financial institutions, but in disagreement with the findings of Omwanza et al. (2022) whose findings reveal that process innovation negatively but significantly influence the financial performance of microfinance institutions in Kenya**.**

6. Conclusion

This study was carried out to investigate the influence of digital processes on the performance of microfinance institutions in Cameroon. The regression results of digital processes and performance of microfinance institutions reveal that digital processes significantly influence the performance of microfinance institutions in Cameroon. Process automation and mobile banking have positive and significant influence on the performance of microfinance institutions in Cameroon while online banking and loan tracking have positive but insignificant influence on the performance of microfinance institutions in Cameroon. The study concludes that digital processes significantly influence the performance of microfinance institutions in Cameroon.

Recommendations

In view of the findings of this study, the following recommendations are made. Firstly, from the significant positive influence of digital processes on the performance of microfinance institutions in Cameroon, the study recommends that microfinance institutions operating in Cameroon should focus on continuously innovating their existing processes and coming up with new and improved banking processes in an attempt to enhance their performance given that digital processes will positively influence their performance. Knowing that online banking does not significantly influence performance, microfinance institutions in Cameroon should not invest financial resources in online banking technology. These institutions should make adequate investment in process automation and mobile banking technology as such investment will contribute positively in enhancing the performance of the microfinance institutions.

Suggestions for Further Studies

This study does not incorporate all the constructs of digital processes in its empirical analysis. The study is limited to process automation, online banking, mobile banking and loan tracking. To researchers who will be investigating the influence of digital processes on the performance of microfinance institutions, this study suggests that more variables of digital processes should be included in analysis. The study also suggests incorporating more control variables such as the legal status of the institutions in further empirical analysis.

Furthermore, the study used survey research design and primary data collected through the administration of questionnaires in its empirical analysis. A different research design could be used which will permit researchers interest in this field to collect and use secondary data. Moreso, the study used structural equations modelling technique to establish the relationship between digital processes and the performance of microfinance institutions in Cameroon. The study suggest that a different analytical technique could be used in empirical analysis.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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