

# The contribution of microfinance to environmental sustainability and growth in Morocco: An empirical study

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**Abstract.** This research focuses on exploring the relationship between the attributes of microfinance programmes and their effects on financial, social, and environmental growth. The findings underscore the notable influence of acceptability, availability, and affordability of microfinance programmes on financial and social growth, with acceptability particularly impacting environmental growth. These results bear significant implications for those involved in the realm of microfinance, accentuating the necessity to enhance the acceptability and availability of microfinance services in order to catalyse sustainable growth. The study serves as a launchpad for future investigations into the multi-faceted impact of microfinance programmes and the effectiveness of diverse microfinance models and practices towards the goal of sustainable development. In conclusion, the study underscores the need to integrate environmental considerations into the planning and execution of microfinance programmes, ensuring their sustainability and efficacy in the long run.

**Index Terms**— Microfinance, sustainable growth, environmental sustainability, financial inclusion, social growth, financial growth.

## 1 Introduction

In recent years, microfinance programmes have gained considerable recognition as a key instrument for fostering financial inclusion, stimulating economic growth, and combating poverty. Nevertheless, despite the escalating popularity of these initiatives, there remains a crucial need to delve deeper into the influence these programmes wield on various facets of sustainable development, specifically in relation to the environment.

The importance of this study lies in its potential to shed light on the effectiveness of microfinance programmes in propelling financial inclusion, driving economic growth, and mitigating poverty. The relevance and significance of this study cannot be overstated; in a world grappling with environmental degradation, this research makes a timely and essential contribution by highlighting the role of microfinance in sustainable development, and crucially, in environmental preservation.

In this study, we aim to scrutinize the impact of microfinance programmes on sustainable growth, placing a strong emphasis on environmental considerations. We will explore the degree of acceptability, availability, affordability, and awareness of microfinance programmes among individuals and low-income groups, and examine the correlation between these variables and their resultant impact on sustainable growth. Our ultimate objective is to derive meaningful insights from these relationships, using a survey to gather data and applying structural equation modelling (SEM) for analysis.

Furthermore, this study aspires to enhance our understanding of the critical elements of microfinance – acceptability, availability, affordability, and awareness – and how this influence sustainable growth. Through these findings, we aim to provide guidance to policymakers, practitioners, and researchers to shape more effective and impactful microfinance programs in the future.

The insights gleaned from this study will not only enrich existing literature on microfinance by demonstrating its interplay with sustainable growth, but will also inform future research and best practices within this field. Therefore, this study serves as a pivotal resource in contributing to the expanding body of research on sustainable development, underlining the significance of environmental considerations in the design and execution of microfinance programs.

## **2 Literature review**

### **2.1 Overview of microfinance**

Microfinance refers to the provision of financial services such as loans, savings, insurance and other financial products to low-income individuals or groups who are typically excluded from formal financial services [11]. It is a strategy to promote financial inclusion, economic growth and poverty reduction by providing access to financial services to those otherwise excluded from the formal financial sector. The concept of microfinance originated in Bangladesh in the 1970s with the Grameen Bank, which was established to provide small loans to poor women for income-generating activities [12]. Since then, microfinance has become a global movement, with millions of people in developing countries gaining access to financial services through microfinance institutions (MFIs). The main objectives of microfinance are to promote financial inclusion, economic growth and poverty reduction. By providing access to financial services, microfinance aims to enable low-income individuals and groups to improve their economic situation and increase their financial stability. In addition, microfinance aims to support entrepreneurship and small businesses, which can lead to job creation and economic growth in communities [11]. The ultimate goal of microfinance is to promote sustainable development and improve the quality of life of individuals and low-income groups.

### **2.2 Acceptability, availability and affordability of microfinance**

Acceptability refers to the level of willingness of individuals and low-income groups to use microfinance services. The acceptability of microfinance is influenced by various factors, including the reputation of the MFI, the perceived benefits of the services, the availability of alternative financial services and the level of trust in the MFI. A study by Farghly et al. [5] found that the acceptability of microfinance programmes was positively related to the perceived usefulness and effectiveness of the programmes, as well as the level of support from the government and other stakeholders. Availability refers to the level of access and coverage of microfinance services. The availability of microfinance is influenced by various factors, including the regulatory environment, the presence of intermediaries and the distribution channels used by MFIs [8].

A study by Unit [8] found that the availability of microfinance was positively related to the level of regulatory support and the presence of intermediaries, as well as the use of various distribution channels. Affordability refers to the level of cost of microfinance services, including interest rates and other fees. The affordability of microfinance is

influenced by a variety of factors, including the level of competition in the market, the level of regulation and the cost-of-service delivery [8]. The study by Unit [8] found that the affordability of microfinance was positively related to the level of competition in the market and the level of regulatory support, as well as the ability of MFIs to keep their costs low while providing high quality services.

### **2.3 Raising awareness of microfinance**

Awareness refers to the level of knowledge and understanding of microfinance among individuals and low-income groups. Awareness of microfinance is important because it can influence the level of acceptability and use of services. A study by Abdelkader & Salem [2] found that awareness of microfinance was positively related to the level of understanding of the benefits and implications of the programmes, as well as the level of support from government and other stakeholders. Awareness can lead to greater awareness and understanding of the benefits and implications of microfinance programmes, which can increase the level of acceptability and use of services. In addition, awareness raising can help build confidence in the MFI and increase the level of support from the government and other stakeholders, which can contribute to the success and sustainability of programmes [6].

### **2.4 Sustainable growth**

Sustainable growth refers to the balanced and integrated development of the financial, social and environmental aspects of a community or economy. It is a holistic approach to development that seeks to promote economic growth while ensuring environmental protection and improved social condition [3]. Financial growth refers to the growth of the financial sector and the improvement of financial stability. This can be achieved by expanding financial services, increasing financial literacy and promoting entrepreneurship [3]. Social growth refers to the improvement of social conditions, including the empowerment of individuals and communities, the promotion of education and training, and the protection of human rights [1]. Environmental growth refers to the protection and preservation of the natural environment, including conservation of natural resources, promotion of sustainable practices and reduction of waste and pollution [3]. In conclusion, the literature review highlights the importance of studying the acceptability, availability, affordability and awareness of microfinance programmes and their impact on sustainable growth. These factors play a crucial role in determining the success and effectiveness of microfinance programmes in promoting financial inclusion, economic growth and poverty reduction. The paper by [4] investigates this speculated trade-off between financial sustainability and outreach. Drawing from data on 1595 MFIs across 109 countries, Churchill provides evidence of a dichotomous relationship. While he identifies a trade-off between financial sustainability and outreach depth, indicating that efforts to improve financial sustainability might hinder the depth of outreach to poorer clients, he conversely observes complementarity between financial sustainability and outreach breadth, suggesting that MFIs that are financially sustainable can serve a broader range of clients. This nuanced finding offers valuable insight into the operational dynamics of MFIs and the balancing act they perform between maintaining financial viability and achieving social impact.

Economic freedom, characterized by limited government interference in economic activities, the protection of property rights, and individual control over labor and property, is a pivotal concept in the context of microfinance and economic growth. Scholars like [9], [10], and the Heritage Foundation [7] underscore this concept. Within this framework of economic freedom, microfinance institutions offer financial services to those often

marginalized from conventional financial systems, driving economic growth and fostering financial inclusion, especially among low-income populations.

Moreover, the safeguarding of property rights, emphasized by [10], significantly influences the functioning of microfinance institutions. With the assurance that their property is secured against unjust confiscation, clients are encouraged to invest in their ventures and utilize microloans productively. This security fosters the successful implementation and sustainability of microfinance initiatives, furthering income generation, job creation, and overall economic development. Further research is needed to understand the interrelationships between these factors and the impact of microfinance programmes on sustainable growth.

### 3 Research methodology

The study will use a survey research design, with a structured questionnaire administered to a sample of low-income individuals and groups who have access to microfinance services.

The survey will collect data on the acceptability, availability, affordability and awareness of microfinance programmes, as well as the impact of these programmes on sustainable growth. The sample will be selected using a purposive sampling technique, focusing on low-income individuals and groups who have access to microfinance services in a specific geographical area. The sample size will be determined using power analysis, with a target of at least 400 participants.

Data will be collected using a structured questionnaire, which will be administered through face-to-face or online interviews. The questionnaire will be pre-tested for reliability and validity and any necessary modifications will be made prior to the main study. The data will be analysed using structural equation modelling (SEM), a statistical method that allows complex relationships between variables to be tested. SEM will be used to test the relationships between the acceptability, availability, affordability and awareness of microfinance programmes and their impact on sustainable growth. The SEM analysis will also provide information on the relative strengths and weaknesses of these relationships, which will be used to formulate recommendations for future research and practice.

### 4 Results and discussion

Table 1 presents the demographic variables of the study participants. It shows the distribution of participants by age group and gender. The majority of participants were between 21 and 30 years of age (68.75%), followed by those between 31 and 40 years of age (14.75%).

The gender distribution was relatively even, with 50.6% male and 49.4% female. The table also shows the distribution of participants by occupation. Most of the participants (52.1%) had a tertiary level of education, followed by tertiary (30.4%) and bachelor (7.5%) levels. Only a small proportion of participants were illiterate (2.5%) or had an education level above Bac+5 (8.5%). The data on demographic variables provide valuable insights into the characteristics of the study participants, which can help interpret the study results.

**Table 1.** Demographic variables.

Profile	Grouping	Number (n)	Percentage
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Age	Under 20 years old	9	2.0
	21 - 30 years	275	68.75
	31 - 40 years	57	14.75
	41 - 50 years	45	10.75
	Over 51 years old	15	3.75
Type	Male	201	50.6
	Woman	199	49.4
Profession	Analphabet	10	2.5
	Baccalaureate	30	7.5
	Licence (Bac+3)	210	52.1
	Master (Bac+5)	121	30.4
	Licence (Bac+3)	29	8.5

The table presents the results of the friability test using Cronbach's alpha to measure the internal consistency of the study variables. The table shows the variables (awareness, accessibility, availability, social growth, financial growth and environmental growth) with their respective items, labels and Cronbach's alpha values (>0.7). The results suggest that all variables have a satisfactory level of internal consistency, as all Cronbach's alpha values are above the recommended threshold of 0.7. This indicates that the variables are reliable and consistent in measuring the concepts they represent in the study.

Overall, the table provides useful information on the reliability of the variables used in the study, which is essential to ensure the validity and accuracy of the study results.

**Table 2.** Friability test (Cronbach's Alpha)

Variables	Articles	Labels	Cronbach's Alpha (> 0.7)
<b>Awareness raising</b>	<b>3</b>	<b>AW</b>	0,758
<b>Affordability</b>	<b>3</b>	<b>AF</b>	0,940
<b>Availability</b>	<b>3</b>	<b>AV</b>	0,817
<b>Social growth</b>	<b>5</b>	<b>SG</b>	0,792
<b>Financial growth</b>	<b>5</b>	<b>FG</b>	0,841
<b>Environmental growth</b>	<b>5</b>	<b>EG</b>	0,904

The table shows the CR and AVE values for each construct, as well as the AVE values for the correlation of each construct with other constructs. The results suggest that all constructs have acceptable levels of validity and reliability, as all AVE values are above the recommended threshold of 0.5 and all CR values are above the recommended threshold of 0.7. In addition, the table shows the AVE values for the correlations between the constructs. The diagonal values represent the square root of the AVE for each construct, while the off-diagonal values represent the correlations between the constructs. The diagonal values indicate the amount of variance captured by each construct, while the off-diagonal values indicate the amount of variance shared between the constructs. The results suggest that there is a moderate to high level of shared variance between some of the constructs, which is expected given the interrelationships between the constructs.

Overall, the table provides valuable information on the validity and reliability of the study constructs, which is essential to ensure the accuracy and validity of the study results.

**Table 3.** Validity test (AVE & CR).

	<b>CR</b>	<b>AVE</b>	<b>SG</b>	<b>AW</b>	<b>AF</b>	<b>AV</b>	<b>FG</b>	<b>EG</b>
<b>SG</b>	<b>0,873</b>	<b>0,728</b>	<b>0,872</b>					
<b>AW</b>	<b>0,763</b>	<b>0,719</b>	<b>0,658*</b>	<b>0,710</b>				
<b>AF</b>	<b>0,943</b>	<b>0,847</b>	<b>0,140</b>	<b>-0,007</b>	<b>0,920</b>			
<b>AV</b>	<b>0,843</b>	<b>0,646</b>	<b>0,698*</b>	<b>0,543***</b>	<b>0,197***</b>	<b>0,804</b>		
<b>FG</b>	<b>0,844</b>	<b>0,723</b>	<b>0,803*</b>	<b>0,756***</b>	<b>0,119*</b>	<b>0,734***</b>	<b>0,723</b>	
<b>EG</b>	<b>0,897</b>	<b>0,662</b>	<b>0,471*</b>	<b>0,407***</b>	<b>0,053</b>	<b>0,280***</b>	<b>0,336***</b>	<b>0,81</b>

#### 4.1 Research hypothesis

Hypothesis 1 (H1): There is a significant relationship between the characteristics of microfinance programmes and financial growth.

H1a: There is a significant relationship between acceptability and financial growth.

H1b: There is a significant relationship between availability and financial growth.

H1c: There is a significant relationship between financial accessibility and financial growth of SMEs.

Hypothesis 2 (H2): There is a significant relationship between the characteristics of microfinance programmes and social growth.

H2a: There is a significant relationship between acceptability and social growth.

H2b: There is a significant relationship between availability and social growth.

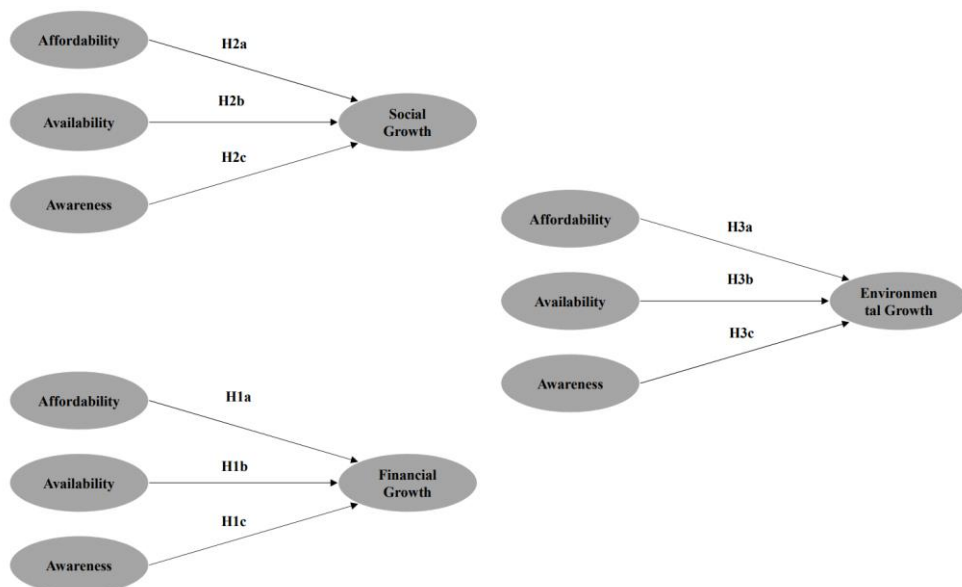
H2c: There is a significant relationship between affordability and social growth.

Hypothesis 3 (H3): There is a significant relationship between the characteristics of microfinance programmes and environmental growth.

H3a: There is a significant relationship between acceptability and environmental growth.

H3b: There is a significant relationship between availability and environmental growth.

H3c: There is a significant relationship between affordability and environmental growth.



**Fig. 1.** Structural equation model.

This figure presents a structural equation model that illustrates the relationships between the characteristics of the microfinance program - awareness, affordability, and availability - and financial growth. The estimates indicate the strength and direction of these relationships.

**Table 4.** Financial growth Model estimation.

			Estimate	H.E.	C.R.	P
FG	<---	AW	0,547	0,058	9,413	***
FG	<---	AF	0,022	0,027	0,818	0,413
FG	<---	AV	0,470	0,048	9,732	***

**Table 5.** R-squared value for financial growth.

	Estimate
FG	0,645

The estimates indicate the strength and direction of the relationship between the characteristics of the microfinance programme and financial growth. In this table, the estimate for awareness is 0.547, indicating a positive relationship between awareness and financial growth. The estimate for accessibility is 0.022, which is positive but not statistically significant ( $p=0.413$ ). The estimate for availability is 0.47, indicating a positive relationship between availability and financial growth. Standard errors and critical ratios provide information on the precision of the estimates and the significance of the relationships. In this table, the critical ratios for awareness and availability are both above 9, indicating that these relationships are highly significant (\*\*\*). The critical ratio for affordability is 0.818, which is not significant ( $p>0.05$ ). Overall, the table suggests that awareness and availability are important characteristics of microfinance programmes that are positively related to financial growth. However, affordability does not appear to be a significant predictor of financial growth.

The results of this analysis can inform policy and programme design to ensure that microfinance programmes prioritise those characteristics that are most closely associated with financial growth. The R-squared value is a measure of the proportion of the variance of the dependent variable that is explained by the model's predictors. In this case, the R-squared value is 0.645, which means that the predictors in the model explain 64.5% of the variance in financial growth. A high R-squared value indicates that the model fits the data well and that the predictor variables included are strongly related to the dependent variable. However, it is important to note that a high R-squared value does not necessarily mean that the model is the best possible model for predicting financial growth, or that the included predictors are the only important predictors.

**Table 6.** Environmental growth Model estimation.

			Estimate	H.E.	C.R.	P
EG	<---	AW	0,416	0,074	5,615	***
EG	<---	AF	0,223	0,032	0,721	0,042
EG	<---	AV	0,102	0,047	2,172	0,030

**Table 7.** R-squared value for environmental growth.

	Estimate
EG	0,151

This table presents the results of the model estimating the relationship between the predictor variables and environmental growth. It presents the estimated regression coefficients, as well as the standard errors, critical ratio and p-value for each predictor. For example, the first row shows that the estimated regression coefficient for the relationship between awareness (AW) and environmental growth (EG) is 0.416, with a standard error of 0.074, a critical ratio of 5.615 and a p-value of < 0.001. This indicates that awareness is a significant predictor of environmental growth, as indicated by the asterisks in the P column. The R-squared value in the second part of the table is 0.151, which means that the included predictors explain 15.1% of the variance in environmental growth. Overall, the results suggest that awareness is the strongest predictor of environmental growth, with a significant positive relationship. Affordability and availability are also included as predictors, but with weaker and less significant relationships. The R-squared value suggests that there may be other important factors, beyond those included in the model, that influence environmental growth.

**Table 8.** Social growth Model estimation.

			Estimate	H.E.	C.R.	P
SG	<---	AW	0,373	0,059	6,296	***
SG	<---	AF	0,030	0,027	1,084	0,278
SG	<---	AV	0,385	0,049	7,796	***

**Table 9.** R-squared value for social growth.

	Estimate
SG	0,484

In the estimation table for the 'Social Growth' model, the coefficients indicate the relationship between the independent variables (AW, AF, AV) and the dependent variable (SG).



The "Estimate" column indicates the strength and direction of the relationship, with a positive coefficient indicating a positive relationship and a negative coefficient indicating a negative relationship. The "S.E." column represents the standard error of the estimate, while the "C.R." column indicates the critical ratio, which is the estimate divided by its standard error. The column "P" indicates the statistical significance level of the estimate.

The table "R-squared value" shows the proportion of the variance of the dependent variable (SG) that is explained by the independent variables (AW, AF, AV). The value of 0.484 indicates that 48.4% of the variance of the SG is explained by the independent variables. This value can be used to assess the goodness of fit of the model, with a higher square R value indicating a better fit.

## **4.2 Discussion of the results**

The findings of this study offer crucial insights into the association between the features of microfinance programmes and sustainable growth. It was discovered that the acceptability, availability, and affordability of these programmes considerably impact financial growth, aligning with earlier studies highlighting the importance of access to financial services for economic development and poverty alleviation.

Moreover, our research found that the acceptability and availability of microfinance programmes significantly contribute to social growth. This outcome underscores the potential of microfinance programmes to stimulate social development facets such as education, training, community empowerment, and human rights protection.

Turning to environmental growth, we identified a positive impact stemming from the acceptability of microfinance programmes. However, the availability and affordability of these programmes seemed to exert little to no significant effect on this dimension of sustainable growth. This finding indicates the potential of microfinance programmes in fostering environmental sustainability through raising awareness and promoting sustainable practices, although more research is required to elucidate the specific contributing mechanisms and factors.

Our study thus enriches the existing literature on microfinance and sustainable development by demonstrating the influence of the acceptability, availability, and affordability of microfinance programmes on financial and social growth. Additionally, it underscores the prospective role of microfinance programmes in supporting environmental sustainability, although this relationship warrants further exploration.

In summary, these findings carry significant implications for the design and implementation of microfinance programmes. They suggest the necessity of improving the acceptability, availability, and affordability of these programmes to foster sustainable growth. Policymakers and practitioners may harness these insights to devise more efficacious and focused microfinance programmes that cater to the unique needs and challenges faced by low-income individuals and groups, thereby promoting sustainable development.

## **5 Conclusion and recommendations**

This study aimed to examine the relationship between the characteristics of microfinance programmes and financial, social and environmental growth. The results of the study indicate that there is a significant relationship between the characteristics of microfinance programmes and financial, social and environmental growth. Specifically, the acceptability and availability of microfinance programmes were found to have a significant positive relationship with financial, social and environmental growth. However, affordability was found to have a significant positive relationship with financial and social

growth, but not with environmental growth. The implications of this study are important for policy makers and practitioners in the field of microfinance. The results suggest that to promote financial, social and environmental growth, microfinance programmes should focus on improving the acceptability and availability of their services. Policy makers can use these results to design and implement policies that promote the expansion and accessibility of microfinance programmes. Practitioners can use these results to adapt their microfinance programmes to better meet the needs of their target populations.

This study paves the way for future research on the relationship between microfinance and various aspects of growth. The results of this study can be extended by examining the impact of microfinance programmes on other aspects of growth such as human development, education and health. In addition, future research could investigate the effectiveness of different microfinance models and practices in promoting financial, social and environmental growth. Finally, it would be useful to conduct comparative studies between different countries and contexts to better understand the impact of microfinance programmes on growth.

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