

# Article Empirical Study on the Key Influencing Factors and Development Mechanisms for the Sustainability of Microfinance Institutions Based on a Survey of Chinese Microcredit Companies

Jiming Li<sup>1,\*</sup>, Xiaoxi Li<sup>2</sup> and Jile Wang<sup>2</sup>

- <sup>1</sup> Institute of Digital Finance, Hangzhou City University, Hangzhou 310015, China
- <sup>2</sup> School of Business, Hangzhou City University, Hangzhou 310015, China
- \* Correspondence: lijm@zucc.edu.cn; Tel.: +86-133-0581-1939

Abstract: Microfinance institutions (MFIs) play a significant role in financial-inclusion and povertyalleviation activities. A critical challenge facing MFIs is of how they all can build their own capacity for sustainable and healthy development. By using the data from the pilot survey of 65 microcredit companies in Zhejiang, China, this paper explores the factors affecting MFIs activities by principal component analysis and analyzes the key Influencing factors and sustainable development performance with the analysis of variance and multi-regression model. The results indicate that four key factors of operational technology, external environment, financial condition, and institution size have a significant positive effect on the economic sustainability performance of MFIs, while the adjusted institution size has an insignificant positive effect on operational sustainability performance, which means that key factors of MFI sustainability have a greater impact on economic sustainability performance than operational sustainability performance.

Keywords: microfinance institutions; sustainable development; key influencing factors

# 1. Introduction

Since the 1990s, there has been a surge in the use of microfinance as a povertyalleviation tool among international development agencies and their networks, and microfinance has begun to grow in many countries through the establishment of multilateral aid agencies serving poor households and microentrepreneurs [1]. On the other hand, in order to expand their coverage, many microfinance institutions (MFIs) and their networks have started to appeal to commercialization strategies and have tried to transform in order to attract more capital investment and eventually become part of the financial system. In addition, the development of information and communication technologies (ICTs) has driven down many transaction costs in latest years. During this period, an increasing number of MFIs were found to be able to operate independently and self-sufficiently without relying on subsidies. At the same time, microfinance began to replace microcredit as the term for a diverse range of financial services provided to the poor, including lending, savings, and money transfers.

Microfinance has enjoyed impressive development over the past 30 years and developed sustainable institutional systems which could provide systematic financial services to the poor in some countries. Microfinance industries which cover microloans, microsavings, and microinsurance have been built in many developing countries, which amply demonstrated that financial services are available to low- and middle-income people, despite the costly microtransactions. As a matter of fact, the essence of microfinance, as a financial innovation that organically combines the policy objective of promoting rural economic development and the principle of commercialized operation of financial institutions, has



Citation: Li, J.; Li, X.; Wang, J. Empirical Study on the Key Influencing Factors and Development Mechanisms for the Sustainability of Microfinance Institutions Based on a Survey of Chinese Microcredit Companies. *Sustainability* 2023, *15*, 9817. https:// doi.org/10.3390/su15129817

Academic Editor: Ştefan Cristian Gherghina

Received: 5 May 2023 Revised: 11 June 2023 Accepted: 15 June 2023 Published: 20 June 2023



**Copyright:** © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/).



remained unchanged. Whether in early or modern times, advocates and practitioners of microfinance have been exploring and trying their best to solve three problems whenever possible. The first is how to increase quality financing services for the general public, mainly low- and middle-income people, i.e., the breadth problem. The second is how to gradually deepen the reach coverage of financial service residents in poorer and more remote areas, i.e., the depth problem. And the third is how to reduce costs for customers as well as financial service institutions, i.e., the cost problem. How microfinance can successfully deal with the above three issues and find out the key influencing factors and development mechanisms of sustainable development is a critical issue for MFI sustainability in the world, which means the exploration and creation a new path of sustainable development between traditional goals and modern methods. Section 2 of this paper is the literature review, and the theoretical analysis and research hypothesis are in Section 3. Section 4 is the survey design and data collection, and the results and analysis of this study are in Section 5. Sections 6 and 7 are subsequently at the end.

## 2. Literature Review

# 2.1. Sustainability and Economic Impact of MFIs

There have been two distinct international perspectives on the sustainability of microfinance, institutionalism and social welfarism, which were called the discrete nature of microfinance [2]. The main reason for this is the different understanding of the depth of services that are self-sufficient for MFIs. The former believes that the sustainability of MFIs is the successful delivery of financial services to the poor, while financial self-sufficiency is necessary to reach the sustainability [3]. Financing difficulties are increasingly becoming an important obstacle to the development of some small and medium enterprises (SMEs) [4]. Incomplete financial markets lead to distorted resource allocation, making SMEs only able to carry out technological innovation and development through endogenous financing and private finance. In essence, MFIs are a manifestation of financial system innovation and operational mechanism innovation [5].

On the contrary, social welfarism supports the belief that the sustainability of MFIs does not need financial self-sufficiency [1]. They believe that donors can be seen as social investors, and the general consensus is that there are clear balances between self-sufficiency and depth of service [6]. The study found that the function of MFIs to serve the disadvantaged has been achieved to a certain extent, but there is also a more obvious mission drift phenomenon [7]. Unfortunately, little evidence supports the reliability of sustainability of microfinance. Even so, some historical events have proved that microfinance is sustainable, such as the Irish loan fund which has survived for more than 100 years and the modern BRI of Indonesia.

As a useful supplement to financial markets, MFIs can provide good financial support for three rural areas, SMEs, and the individual private economy. It also plays a positive role in market stability and alleviates the lack of inadequate rural financial services and financing difficulties. The study found that the impact of expected returns on credit demand is partially offset by differences in capital accumulation and dependence on external finance among farmers with different entrepreneurial motives, with relatively greater credit demand among entrepreneurial farmers [8]. In fact, parties are guiding investors to finance MFIs. Theoretically, if capital markets could provide funds for MFIs and investors could obtain benefits while taking risk, it is more possible to eliminate poverty. However, the reality is not as rosy as one might think, as was the case of the microfinance crisis in India in October 2010.

## 2.2. Service Positioning and Risk Control of MFIs

International studies of the financial products and services that MFIs can offer show that there are many differences between the products and services that MFIs can offer, which are similar to formal financial institutions. For the lending business of microfinance, it is essential to divide the loans into business loans and household consumer or emergency loans.

A very important characteristic of poor households or SMEs is their financial vulnerability, and they are very susceptible to external risks and turbulence [9]. Therefore, the risk control mechanisms of MFIs have their own characteristics, such as relying on social guarantees of the target clients and group lending. The risk level matching criteria of higher credit rating and lower default loss rate can be used to classify the credit rating of clients [10]. In recent years, the microfinance industry has generally suffered from an inadequate risk management system and difficulties in loan recovery. Yao Mingrui explores and suggests that cross-border ecological regulation of fintech should be strengthened [11].

## 2.3. MFIs Operation and Performance Evaluation

Research about the effectiveness of practices shows that evaluation of the best performance has to be based on specific circumstances and conditions due to the difference between MFIs and formal financial institutions. In the existing literature, the top topics mentioned include the best loan interest rate, MFIs' commercialization, the size of the loan, and the division of credit rating. The scientific nature of the methodology and procedures is very important in assessing microfinance performance. The empirical study showed that MFIs extend the service coverage to the middle-income group and utilize the cash-flow-centered credit technology to make up for lack of traditional financial institutions [12].

The study of the effectiveness of MFIs for external performance is also of considerable interest in the existing international literature, where the main question addressed is whether microfinance is effective in eradicating poverty. It has been proved that the impact of microfinance and the external environment is highly related.

## 2.4. Business Innovation Practice of MFIs

In recent years, most research has focused on business innovation of MFI sustainability, which focuses on three aspects of MFIs: model innovation, securitization, and P2P network lending in the context of Internet finance. Compared with indirect financing and indirect financing, Internet finance is privileged in terms of information, cost, efficiency, and inclusiveness. Based on the views of community banks, the innovation and policy of rural finance service channels are studied. Asset securitization is one of the most important financial innovations in the past four decades [13]. Asset securitization is a feasible way for MFIs to broaden their financing channel [14]. Further research concludes that investors and financiers can create win–win situations by extending to offline small loans, Internet consumer loans, etc. [15].

With the development of the Internet and the innovation of financial instruments, P2P lending has become an important innovation mode of Internet finance. Based on the relevant content of the new regulation of Internet finance, the basic concept of Internet finance is defined, and seven models of Internet finance are proposed [16].

The study of microfinance, as a new scheme, has to unite actual elaboration. Early studies in the field of microfinance lacked the data needed for detailed empirical analysis, and some subsequent studies began to conduct more in-depth empirical analysis on specific topics and dimensions [17]. Studies of the sustainability of MFIs are more focused on the development of the whole industry without unified indicators. To meet the need of development of microfinance, it is important to explore empirically the key factors of microfinance and appropriate development path, which will be focused on in this study to offer operational suggestion for sustainable development of MFIs.

## 3. Theoretical Analysis and Research Hypothesis

The sustainability of MFIs has been influenced by many factors. So, key factors are the precondition and condition of whether to promote sustainable development and to make relevant policies. According to the previous literature, this study's hypotheses are as follows: The factors that influence the sustainability of MFIs include financial factors, operational factors, and political and legal factors.

Regarding financial factors, most MFIs have developed well in recent years; however, there are also some microfinance companies that have encountered difficulties in their development. Financial position is not only a direct manifestation of operation but also a prominent indicator of sustainability. As such, this study hypothesizes that financial position is one of the most important factors that affect the sustainability of MFIs. It is embodied in five aspects of asset ratio, asset–liability ratio, capital turnover, equity ratio, and loan losses.

Regarding operational factors, compared with traditional financial institutions, MFIs face even greater risk. Therefore, this study hypothesizes that the operation condition is also one of the most important factors that affect the sustainability of MFIs. It is mainly reflected in the following aspects, which include the degree of flexibility in establishing the loan period, the limitation of loan amount, the flexibility of loan interest rate, the speed of approval, the strength of the guarantee, the advantage of hardware, the advantage of technology, and the professionalism of the employees.

Regarding political and legal factors, the introduction of supportive government policies and related systems is of great importance to MFIs. There has been a financial document about the regulation of MFIs. In a sense, these specific laws and regulations boost the economic growth of MFIs. As a result, this study hypothesizes that political and legal factors play an important factor in the sustainability of MFIs. They can influence MFIs by relaxing the interest rate policy ceiling, with tax incentives, by relaxing deposit restrictions, with government public welfare guarantee policy, and with state subsidy policy.

#### 4. Survey Design and Data Collection

The questionnaire design of this study is mainly set for this paper around the factors influencing the sustainability of microfinance companies and the research content related to the judgment of microfinance company performance. The questionnaire includes five basic contents:

- (1) Basic information of microfinance companies;
- (2) Loans of microfinance companies;
- (3) Judgment on influencing factors of sustainable development of microfinance companies;
- (4) Judgment on performance factors of microfinance companies;
- (5) Prospects for the future development of microfinance companies.

The questionnaire used in this study was developed gradually on the basis of the results of a large amount of previous literature research, the results of interviews in microfinance projects, and some more successful forms of questionnaire design at home and abroad. The preliminary questionnaire was revised and improved after consulting with the regulators of relevant functional departments, banks, and professional practitioners, upon which the final questionnaire was formed.

In this paper, questionnaires were distributed on the spot to collect the required data. A total of 150 questionnaires were distributed, and 73 valid questionnaires were recovered, with a recovery rate of 48.7%. After the questionnaire is returned, the criteria for removing invalid questionnaires are that when filling in the questionnaire, those with no options or more than five missing items will be removed. After eliminating invalid questionnaires, 65 valid questionnaires were obtained, with a recovery rate of 43.3%. The key part of the questionnaire in this paper adopted the five-point system method of the Likert table. In this paper, the author used a self-developed questionnaire to conduct a questionnaire survey on the financial related personnel of micro-loans in Zhejiang Province. The questionnaire survey first selected two major directions, the actual situation of the company and the expectation of the future situation, and then measured the indicators that may affect the operation mode of microfinance companies in these two directions and obtained relevant data on the operation mode.

In addition, this paper has analyzed the company's managerial condition, risk profile, and future expectations by their annual report information, comparing them to the items above, and we also obtained relevant data from the Statistical Table of Regional Conditions of microfinance companies by the People's Bank of China. Finally, with the help of statistics software, the sustainable development degree of each factor above is analyzed.

## 5. Study Results and Analysis

# 5.1. Descriptive Statistics

The basic information of microfinance companies predominantly consists of the company's organizational form and the company's asset scale. The loan situation predominantly consists of loan interest rate, loan term, fund channel, and guarantee method.

1. Asset size of microfinance companies surveyed.

This study investigated the asset size and distribution of 65 microfinance companies. In accordance with the statistics of relevant data, the proportion of companies with assets of more than 200 million accounts for 46%. The proportion of companies with assets from 5 to 20 million, from 20 to 50 million, and from 50 to 80 million accounts each for 12%. The proportion of companies with assets from 80 million to 0.1 billion accounts for 3%, and that of 100~200 million accounts for 15%. This suggests that the asset scale of most microfinance companies in Zhejiang is comparatively large.

2. Loan interest rate and loan term.

In accordance with the results of the questionnaire, we can roughly know the range of changes in the minimum and maximum monthly loan interest rates of 65 companies in this study. The lowest monthly interest rate of these companies is chiefly in the range from 1.3% to 1.6%, while the highest monthly loan interest rate is in the range from 1.85% to 2.1%. Microfinance companies shall operate in accordance with the principle of marketization, and the upper limit of loan interest rate shall be liberalized but shall not exceed the upper limit prescribed by the judicial department.

Because the capital cost of microfinance companies is higher than that of banks, their loan term is generally shorter than that of banks. As displayed in the survey results, the loan terms of microfinance companies are primarily half a year and 1–3 months, which generally do not exceed one year.

3. Guarantee mode.

Microfinance companies pay more attention to risk control, and the guarantee mode of the lender is a vital factor for them to consider whether to lend. As displayed in the questionnaire survey, most microfinance companies chiefly choose mortgage and guarantee. When the debtor fails to pay off the debt, the microfinance companies can acquire priority in repayment by converting the property mortgaged by the debtor or by auctioning or selling the property, so as to lessen the risk more favorably. Similarly, when the borrower is unable to repay the loan, the guarantor will pay off the debt or assume responsibility in line with the agreement, which can ameliorate the recovery rate of the loan.

#### 5.2. Dimensional Analysis of the Sustainable Development of Microfinance Companies

The factor analysis method is explored to extract public factors from a group of related indicators and determine the number of factors, in order to determine the key factors affecting the sustainable development of microfinance companies. When carrying out factor analysis, the correlation between variables should be first determined, and KMO measurement and the Bartlett sphere test are conducted to determine whether the data are suitable for factor analysis. 5.2.1. Dimensional Analysis of the Factors of the Sustainable Development of Microfinance Companies

According to the theoretical analysis, the definition and measurement of variables of influencing factors of sustainable development of Zhejiang microfinance companies are shown in Table 1, in which Category a indicators are for financial indicators, Category b indicators are for internal factors, and Category c indicators are for external factors. From Table 2, the KMO value is 0.718, greater than 0.7, which indicates that there are common factors among variables. Meanwhile, the significance probability of Bartlett's statistical value is 0.000, less than 0.005, indicating that the scale items are suitable for factor analysis.

Variable	Measurement of Variables
a2	Asset-liability ratio
a3	Turnover rate of funds
a4	Shareholder equity ratio
a5	Loan loss rate
b3	Loan interest rate flexibility
b4	Approval speed
b6	Advantages of the hardware equipment
b7	Advantages of the technical level
b8	Professional quality of the employees
c2	Preferential tax policy
c3	State has relaxed the deposit restrictions
c4	Government public welfare guarantee policy
c5	State subsidy policy

Table 1. Definition and measurement of variables.

Table 2. KMO sample measures and the Bartlett spheroid test the sustainable development.

Kaiser–Meyer–Olkin Meas	0.718	
Bartlett's spherical degree test	Chi-square approximation df Sig.	333.607 78 0.000

After multiple common factor analysis of variance (ANOVA), the initial commonality of each variable and the commonality after principal component analysis was used to extract the principal components; this study finally retains 13 indicators.

As the factor analysis results show, owing to the strong correlation of the data, the above 13 indicators are divided into three categories; that is, three factors are extracted, which is consistent with the results of the gravel map. The third factor, the gravel slope line, is tremendously flat, indicating that there is no special factor worth extracting. As a result, it is appropriate to retain three factors. These three factors explain 60.177% of the total variance of the original 13 variables. The factor analysis method is used to convert the corresponding indicators of the sustainable development of microfinance companies. From the rotated component matrix of principal component analysis of Table 3, b7, b6, b8, and b4 can be constructed as common component 1, which is defined as operation technology. c2, c4, c3, c5, and b3 are constructed as common component 2, which is defined as financial situation. Among the 13 indicators, only indicator b3 is inconsistent with the original construct of this study and does not belong to an operational technology factor but rather to an external environment factor.

Variable	Component				
valiable –	1	2	3		
b7	0.861	0.113	0.057		
b6	0.839	0.137	-0.104		
b8	0.696	0.381	-0.179		
b4	0.677	0.509	-0.061		
c2	0.133	0.844	0.150		
c4	0.074	0.690	0.302		
c3	0.155	0.681	0.075		
c5	0.378	0.603	0.209		
b3	0.464	0.494	-0.264		
a2	0.165	-0.051	-0.707		
a4	0.097	0.139	0.654		
a5	0.270	-0.288	-0.604		
a3	0.520	0.001	0.525		

**Table 3.** Results of rotated component matrix of principal component analysis after Kaiser standardization for the factors of the sustainable development \*.

\* Rotation converged after eight iterations.

5.2.2. Dimensional Analysis of Sustainable Development Performance of Microfinance Companies

From the results of the KMO sample measure and Bartlett sphere test in Table 4, the KMO value is 0.752, greater than 0.7, which indicates that there are common factors among variables. Meanwhile, the significance probability of Bartlett statistical value is 0.000, less than 0.005, which means that the scale items are suitable for factor analysis. This study selects six performance indicators. Just as the ANOVA of the result of the common factor that the indicators are all above 0.5 illustrates, the commonality of each variable with other variables shows to be significant. Among the six indicators to measure the sustainable development performance of microfinance companies, this study extracted two common factors from them, in which the two factors explained 62.401% of the total variance of the original six variables.

Table 4. KMO sample measures and Bartlett spheroid test for sustainable development performance.

Kaiser–Meyer–Olkin Meas	0.752	
Bartlett's spherical degree test	Approximate chi square df Sig.	78.223 15 0.000

Table 5 is the rotated component matrix of principal component analysis after Kaiser standardization for the corresponding indicators of the sustainable development performance variables of microfinance companies. d1, d2, d4, and d5 are component 1, which is the construct of common factor 1 defined as economic sustainability performance. On the basis of the actual survey content, there are only two variables in component 2 including d3 and d6. The construct of common factor 2 is defined as operation sustainable development performance which is illustrated in Table 6.

In the dimensional analysis of influencing factors of sustainable development of microfinance companies, this paper selects six indicators and then measures the performance of microfinance companies. As illustrated in Table 5, six performance items can be divided into two factors factor analysis, of which four indicators are one factor, and the other two indicators are another factor. In general, it is reasonable to have three or more indicators for each factor. However, the data analysis of the questionnaire results indicates that it is most reasonable to select six indicators. If more indicators are added, the cumulative explanation of the factors will not heighten much, but they will be classified into three factors and divided into three dimensions, which will give rise to a poor fitting

effect of the regression model. As a consequence, it is most appropriate to divide the six indicators into two dimensions and define them as two factors.

**Table 5.** Results of rotated component matrix of principal component analysis after Kaiser standardization for the factors of the sustainable development performance \*.

Variable	Com	ponent
Variable	1	2
Size of the company	0.799	-0.250
Brand improvement	0.746	0.280
Risk control ability	0.664	0.410
Profitable level	0.643	0.328
Internal incentive policy	0.039	0.808
Type of production	0.245	0.752

\* Rotation converged after three iterations.

Table 6. Definition and measurement of variables of performance dimensions.

Performance Dimension	Variable	Indicators
	d1	Rate of increase of loan volume
Economic sustainability porformance	d2	Brand improvement
Economic sustainability performance	d4	Risk control ability
	d5	Profitable level
Or creational sustain shility rearformen so	d3	Internal incentive policy
Operational sustainability performance	d6	Type of production

5.2.3. Reliability Analysis of Key Factors for Sustainable Development of Microfinance Companies

This study explores the method of Cronbach's consistency coefficient to analyze the reliability. The internal consistency coefficient is the most suitable method for the homogeneity test to check whether each item in each factor measures the same or similar characteristics. For the items that describe the same indicators in the questionnaire, the measurement is reliable only when their answers are the same or similar reliability. When the coefficient  $\alpha$  is greater than 0.7, it means the reliability is comparatively strong. When the coefficient is between 0.5 and 0.7, it is considered that the reliability is average and should be further explored.

In the construct component 1 of operation technology, the value of internal consistency coefficient  $\alpha$  is equal to 0.868, which indicates that the reliability index is immensely ideal. The standardized internal consistency coefficient  $\alpha$  is 0.870, and the subscale contains four indicators. For this reason, the internal consistency coefficient  $\alpha$  at the operation technology level is higher than 0.800, and the split half reliability statistic Guttman Split Half coefficient is equal to 0.860, which fully indicates that the internal consistency at the operation technology level is highly reliable.

In the construct component 2 of external environment, the value of internal consistency coefficient  $\alpha$  is equal to 0.767, which indicates that the reliability index is considerably satisfactory. The standardized internal consistency coefficient value  $\alpha$  is 0.764. The coefficient values  $\alpha$  of the five selected indicators range from 0.692 to 0.781, and nothing but one is slightly higher than the coefficient  $\alpha$  of 0.767. Guttman's split reliability value of the external environment level construct is 0.733, and the internal consistency coefficient  $\alpha$  is higher than 0.700, which indicates that the internal consistency credibility of the external environment level is extremely high.

In the construct component 3 of financial condition, the internal consistency coefficient is equal to 0.670, which indicates that the reliability index is satisfactory. The standardized internal consistency coefficient is 0.661, and the subscale contains four indicators. The corrected total correlation coefficient value of the four indicators is between 0.617 and

0.650, which fully indicates that each indicator has a high consistency with the sum of the other items, and each item has no higher coefficient  $\alpha$  than 0.670. Since the internal consistency coefficient at the level of financial condition is higher than 0.600 and Guttman's half reliability value is 0.626, it means that the internal consistency reliability at the level of financial condition is slightly satisfactory (Table 7).

Table 7. Reliability statistics results for the sustainability influencing factors of microfinance companies.

Component	Cronbach's Alpha	Standardized Cronbachs Alpha	N of Items
Operation technology	0.868	0.870	4
External environment	0.767	0.764	5
Financial condition	0.670	0.661	4

5.2.4. Reliability Analysis of Sustainable Development Performance of Microfinance Companies

The internal consistency coefficient  $\alpha$  of the economic sustainability performance is equal to 0.672, which indicates that the reliability is favorable. The standardized internal consistency coefficient value  $\alpha$  is 0.726. The subscale contains four indicators. The corrected total correlation coefficient of these four indicators is from 0.413 to 0.574, which indicates that each indicator has a high consistency with the sum of the other items. The coefficient values  $\alpha$  of the four selected indicators range from 0.541 to 0.721, and only one is higher than the coefficient  $\alpha$  0.672 at the level of economic sustainability performance. The internal consistency coefficient  $\alpha$  of the economic sustainability performance is higher than 0.600, which indicates that the internal consistency reliability of the financial situation is still satisfactory. At the level of operational sustainability performance, the internal consistency coefficient  $\alpha$  is equal to 0.547, which indicates that the reliability is slightly acceptable. The standardized internal consistency coefficient  $\alpha$  is 0.551, and the subscale contains four indicators, as shown in Table 8.

Table 8. Reliability statistics results for the sustainability performance of microfinance companies.

Component	Cronbach's Alpha	Standardized Cronbach's Alpha	N of Items
Economic sustainability performance	0.672	0.726	4
Operational sustainability performance	0.547	0.551	2

#### 6. Discussion

6.1. Multiple Linear Regression Model Construction

Through factor analysis, three dimensions of influencing factors are obtained for sustainable development of companies, which are defined as operating technology, external environment, and financial situation. These three factor scores fully reflect the impact of 13 indicators on the sustainable development of microfinance companies. Through the model fitting, this study finally considers the use of these three factors and the vital factor of enterprise scale for regression analysis and design of the following model (1) and model (2).

$$Y_1 = \beta_1 \times X_1 + \beta_2 \times X_2 + \beta_3 \times X_3 + \beta_4 \times X_4 + \gamma$$
(1)

$$Y_2 = \beta_1 \times X_1 + \beta_2 \times X_2 + \beta_3 \times X_3 + \beta_4 \times X_4 + \gamma$$
<sup>(2)</sup>

where  $Y_1$  represents the economic sustainability performance in the model (1), and  $Y_2$  represents the performance of operational sustainability in model (2).  $X_1$ ,  $X_2$ ,  $X_3$ , and  $X_4$  represent the operation technology, external environment, financial situation, and enterprise scale, respectively.

## 6.2. Regression Analysis

The regression results of the model (1) are shown in Table 9, in which the adjusted R2 is 0.645. The fitted linear regression model reflects 64.5% of the original data. As revealed by this model, the fitting effect is good. The regression results of the model (2) can be seen in Table 9, in which the adjusted R2 value is tremendously small, and the fitting effect of the linear regression model is relatively insignificant.

Table 9. Rest	ilts of the regi	ression for the	sustainability	development.
	0		2	1

Model	R	R2	Adjusted R2	Standard Estimation Error
1	0.817	0.668	0.645	0.59387432
2	0.226	0.051	0.004	1.00381785

#### 6.3. Analysis of Variance (ANOVA)

ANOVA is adopted in this study to explore the variance of a single factor or several independent dependent variables to test whether the difference between the mean values of each factor is statistically significant. First, ANOVA of economic sustainability performance is tested. As model (1) showed in Table 10, the F statistic in the ANOVA results is 29.649, and the probability p value is less than the significance level of 0.05, so the model has a favorable fitting degree; that is, the four factors of operating technology, external environment, financial situation, and enterprise size have a remarkable impact on the economic sustainability of the sustainable development of microfinance companies.

Table 10. ANOVA results of the models for the sustainability development performance.

Μ	odel	Sum of Squares	df	Mean Square	F	Sig.
	Regression	41.827	4	10.457	29.649	0.000
Model 1	Residual	20.809	59	0.353		
	Total	62.636	63			
	Regression	3.252	3	1.084	1.076	0.366
Model 2	Residual	60.459	60	1.008		
	Total	63.711	63			

Second, the performance ANOVA of the operational sustainability is tested. As the results of model (2) show in Table 10, the F statistic in the ANOVA results is 1.076, and the probability p value is greater than the significance level of 0.05. The four factors have no noticeable impact on the operational sustainability of the sustainable development of microfinance companies.

# 6.4. Further Determination and Analysis of Regression

The parameter estimation results of the regression for the economic sustainability performance are shown in model (1) of Table 11; hence, regression Equation (3) can be established as follows.

$$Y_1 = 0.033X_1 + 0.156X_2 + 0.112X_3 + 0.660X_4 - 1.849$$
(3)

As the comparison of the fitted predicted value with the actual value reveals, the goodness of fit in the model is favorable. Apart from that, the economic significance of each variable coefficient symbol in the model is reasonable, and the growth of each influencing factor is positively correlated with the characteristics of sustainable economic development of microfinance companies. Meanwhile, the probability p value of the factor operation technology is equal to 0.062, greater than the significance level of 0.05, indicating that the operation technology factor in the model is comparatively unremarkable. The factor of enterprise size is positively correlated with the characteristics of sustainable economic

development of microfinance companies and is also the most remarkable among the four factors. The external environment is also extremely noticeable and is the second most influential factor.

Model		Non-Standardized Coefficients		Standard Coefficient	+	Sig
		В	SE	Bête	ı	515.
	(constant)	-10.849	0.189		-90.795	0.000
	Financial condition	0.112	0.075	0.112	10.485	0.043
Model 1	Operation technology	0.033	0.075	0.033	0.439	0.062
	External environment	0.156	0.075	0.156	20.082	0.022
	enterprise size	0.660	0.061	0.813	100.759	0.000
	(constant)	-0.008	0.125		-0.066	0.947
Model 2	Operation technology	0.026	0.126	0.026	0.203	0.839
	Financial condition	-0.213	0.126	-0.212	-10.683	0.098
	External environment	-0.075	0.126	-0.075	-0.595	0.554

Table 11. Regression results of the sustainable development performance.

The economic significance of each variable coefficient in the model does not conform to the actual situation, indicating that the influence of the three factors in the model is not striking, and the impact on the operational sustainable development of microfinance companies is not noticeable.

# 7. Conclusions

This article study takes 65 microfinance companies in Zhejiang Province as research samples, conducting an empirical analysis on the reliability and validity of relevant data and variables. As the research results show, the measurement of each variable in the model analysis meets the requirements of reliability and validity. Apart from that, confirmatory factor analysis confirmed the validity of the model constructed in this paper. As research shows, microfinance companies have large assets, and their corporate forms include a joint stock limited company and limited company. The ratios of these two forms are similar. Compared with small- and medium-sized enterprises, the number of shareholders of Zhejiang microfinance companies is comparatively small, and the personnel structure is comparatively complete and compact.

By the factor analysis results and questionnaire survey results, the establishment of the regression models in this paper confirms that the four factors of operation technology, external environment, financial situation, and enterprise size are noticeably positively associated with the economic sustainability of the MFIs sustainable development. The three factors of external environment, financial situation, and enterprise scale also have obvious and striking positive effects on the economic sustainability of MFI development.

The key factors influencing the sustainable development of MFIs are composed of three dimensions: the external environment dimension which includes preferential tax policies, government public welfare guarantee policies, national easing of deposit restrictions, national subsidy policies, etc.; the operation technology dimension which includes the advantages of technical level, hardware configuration, employee professionalism, approval speed, etc.; and the financial status dimension which includes asset liability ratio, share-holders' equity ratio, loan loss rate, capital turnover rate, etc. The sustainable development performance dimension of microfinance companies can be divided into economic sustainability performance which includes the increase rate of loan volume, brand improvement, risk control ability, profitability, and operational sustainability performance, which includes internal incentive policies and product categories. All influencing factors and performance dimensions have passed the reliability test.

Then, this paper tries to establish a regression equation between influencing factors and performance. Through variance analysis, this paper found that the four factors of operation technology, external environment, financial situation, and enterprise size have a noticeable impact on the economic sustainability of MFI development. However, these four factors cannot pass the significance test of their impact on operational sustainability. Aside from that, as the variable coefficients in the model show that there is a positive correlation between the four influencing factors and the economic sustainability of MFI development, which is consistent with the actual economic significance, but the significance of the operating technology factor is not satisfactory.

This study also has some limitations. This paper tries to empirically study MFIs by selecting complete samples and accurate research methods; however, there are still some deficiencies that need to be ameliorated in future research. First is on the questionnaire survey. The items setting of the questionnaire may not be perfect enough, and there may be concerns about human factors in the process of questionnaire design, so it may not be possible to answer on the basis of the real situation, aside from that which is owed to the limited human and material resources and the relatively fewer number of companies when the questionnaire survey was conducted. On the other hand, the amount of valid sample data recovered is extremely small. If these aspects can be improved, the research results will be more satisfied. Finally, the selection of research methods and models needs to be further studied and discussed, which needs more innovative methods in further research.

Addressing the current needs of the development of microfinance, this paper studies the sustainable development mechanism of microfinance companies and strengthens the empirical research of the key factors and suitable path selection in the development of microfinance institutions, which will help microfinance theory to be more operational in practice and the sustainable development of microfinance companies in the world.

**Author Contributions:** J.L.: conceptualization, validation, writing original draft, and writing review and editing; J.L., X.L. and J.W.: formal analysis, methodology, data curation, and software; J.W. and X.L.: investigation and visualization; J.L.: Supervision and project administration. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by Zhejiang Provincial Philosophy and Social Sciences Planning Project, grant number 12YD12Z.

**Data Availability Statement:** The authors confirm that the data supporting the findings of this study are available within the article.

Acknowledgments: The authors would like to thank the editors and anonymous reviewers for their thoughtful and constructive comments.

Conflicts of Interest: The authors declare no conflict of interest.

# References

- Datta, S.; Sahu, T.N. How far is microfinance relevant for empowering rural women? An empirical investigation. *J. Econ. Issues* 2022, 56, 97–112. [CrossRef]
- 2. Morduch, J. The microfinance schism. World Dev. 2000, 28, 617–629. [CrossRef]
- González-Vega, L.; Lombardi, H.; Recio, T.; Roy, M.F. Spécialisation de la suite de Sturm. RAIRO Theor. Inform. Appl. Inform. Théor. Appl. 1994, 28, 1–24. [CrossRef]
- 4. Pischke, J. Measuring the trade-off between outreach and sustainability of microenterprise lenders. J. Int. Dev. **1996**, *8*, 225–239. [CrossRef]
- Geng, X.; Feng, B. Study on the operation of microfinance companies and their sustainable development—A case study of shandong microfinance companies. *Shandongg Soc. Sci.* 2015, 1, 131–135. [CrossRef]
- 6. He, G.W.; Liu, T. A study on farmers' credit needs for entrepreneurship in poor areas: Based on the perspective of entrepreneurial type heterogeneity. *Financ. Insur.* **2019**, *40*, 11–18. [CrossRef]
- 7. Shi, B.F.; Wang, J.; Chi, G.T. The inclusive finance, bank loans and financing of small private business microfinance loan—based on matching credit risk and credit rating. *Chin. J. Manag. Sci.* **2017**, *25*, 28–36. [CrossRef]
- 8. Yao, M.R. Fintech cross-border ecological regulatory ideas to explore. Tsinghua Financ. Rev. 2021, 2, 91–94. [CrossRef]
- 9. Datta, S.; Sahu, T.N. Livelihood Transformation through Microfinance: An Empirical Investigation on Tribal Entrepreneurs in India. *Int. J. Bus. Innov. Res.* 2020, 29, 127–140. [CrossRef]
- Zhang, L.Y.; Yu, Y.; Yang, J. The inclusive effect of microfinance in china:evidence from 4220 farmers in 6 provinces. *Agric. Technol. Econ.* 2021, 2, 88–99. [CrossRef]

- Yang, Z.; Huang, M. Innovation of rural financial service channel and policy support suggestions based on the perspective of community banks. *South. Financ.* 2019, 12, 76–83.
- 12. Peng, X.F.; Zou, Z.T. Analysis of asset securitization business of small loan company in China. Econ. Syst. Reform 2017, 2, 144–149.
- 13. Jiang, X.L. Reflections and insights on asset securitization under internet finance. *China Econ. Trade Her.* **2019**, *12*, 82–84.
- 14. Zhang, Z.X. Analysis of the connotation and model of Internet finance. Finance. Account. Mon. 2017, 91, 84–91. [CrossRef]
- 15. Meehan, J. Tapping Financial Markets for Microfinance; Grameen Foundation USA: Washington, DC, USA, 2004; pp. 9–10.
- 16. Arvind, A. News and trends in fintech and digital microfinance: Why are European MFIs invisible? *FIIB Bus. Rev.* 2018, 7, 232–243. [CrossRef]
- 17. DeYoung, R.; Glennon, D.; Nigro, P. Borrower–lender distance, credit scoring, and loan performance: Evidence from informationalopaque small business borrowers. J. Financ. Intermed. 2008, 17, 113–143. [CrossRef]

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.