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# Determinants of Repayment among Male and Female Microcredit Clients in the USA. An Approach Based on Managers' Perceptions

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**Abstract:** Research on microfinance institutions (MFIs) has normally been focused on developing and emerging markets. However, an analysis of developed countries is also important for foreign MFIs wishing to take advantage of the growth potential of those markets. Therefore, the aim of this article is to determine whether MFIs working in the USA's market should change or adapt their microcredit policies with respect to women. In effect, there are no studies in the USA supporting the argument that women are a better risk of microcredit than men, or that there are differences in microcredit repayment behavior between women and men. Additionally, it was investigated if the payment behavior of women and men is related to variables such as their age, ethnicity, academic level, marital status, or the characteristics of the microcredits, like purposes, amounts, and payment terms. In the USA, there are not—as in other countries—strong incentives, motivations, or external pressures, other than those that men also have, which influence women to pay their microloans better than men. Then, domestic and international MFIs attracted to enter the USA's market should review their microcredit policies in relation to women. More research is needed about the microfinance market in the USA.

**Keywords:** MFI; repayment; microfinance; microloan; *t*-test

## 1. Introduction

The beginnings of microfinance, as currently known, originated simultaneously and independently in Asia and Latin America in the 1970s [1,2]. In effect, microfinance began with very remote initiatives, almost simultaneous and unknown amongst each other. A new industry was initiated which would lead to the United Nations declaring 2005 as the International Year of Microcredit, and in 2006, Muhammad Yunus and Grameen Bank received the Nobel Peace Prize for their efforts [1–4].

Microfinance institutions (MFIs), like any other business, have traditionally focused on quantifying the results of their programs and use impact measures to evaluate the effects of their products and policies [5]. The focus on and reach of poor clients and poor women has been one of the traditional impact measures of MFIs [5].

According to the 2015 State of the Campaign Report of the Microcredit Summit Campaign, on December 31, 2013 was reported the highest number of borrowers (211,119,547 from 3098 MFIs) in the history of the Campaign. It was also pointed out that 82.6% of the poorest clients served were women [6].

In the 1980s, the first microcredits began in the USA, and in the 1990s, there were MFIs in all 50 states [1]. However, the first efforts in the USA to approach the success achieved by the best MFIs in

Asia and Latin America failed [7]. In effect, microcredit programs were generally less successful, less efficient, and less effective, and have had higher default rates than their international counterparts [3,7].

Likewise, according to the results of the Small Business Credit Survey reported by the New York Federal Reserve, in the fourth quarter of 2016 and at the level of the 50 states, 55% of the surveyed firms requested credit of less than \$100 thousand, and only 45% successfully obtained it [8]. The survey found persistent credit gaps in companies with incomes of less than \$1 million per year, derived from weak credit records and insufficient credit histories, as indicated by the New York Federal Reserve [8]. This makes alternative vehicles for credit and microcredit programs necessary in order to serve these markets [9].

Microfinance institutions (MFIs) know from studies and analyses in different countries that there is evidence that women represent a lower risk than men in relation to the payment of their microcredit [10]. Abdullah and Quayes [11] indicate that MFIs focus on women as borrowers because they have found that, due to the high microcredit reimbursement rates associated with women borrowers, their financial results have improved.

Different researches conducted in several countries and globally—not including the USA—have found that female borrowers of microcredit have better rates of reimbursement than male borrowers [10–17]. However, Bhatt and Tang [18] state that very little is known about what determines the repayment of microcredit in the USA's programs, especially that of women.

There is an important difference between existing global knowledge about the behavior of microcredit reimbursements in other countries and the reality of the behavior of microcredit reimbursements in the USA's domestic market. A microcredit system which is suitable for one context may not be appropriate for another [19]. According to Bhatt and Tang [19], microcredit programs need to identify specific types of loan agreements which are best suited to the communities they serve, and must also match market demands in order to reduce the risks and costs of doing business. It has been shown that an offer of microfinance services which is not adapted to clients and their environment hinders the viability and scope of the MFI [20]. Recent research [21] confirms the presence, in the USA, of an important and unattended market, attractive in size and lacking competition, which offers opportunities to foreign MFIs. Foreign MFIs, attracted to the USA's microcredit market due to its locational advantages, should adapt or modify their microcredit policies to this market based on the behavioral differences between women and men in making microcredit repayments.

This manuscript aims to know if MFIs operating in the USA should adapt or modify their microcredit policies based on the difference in microcredit reimbursement behavior between women and men.

Therefore, the following hypothesis was derived from the research question:

**Hypothesis 1 (H<sub>1</sub>).** *The percentage of women fulfilling their microcredit payment commitments in the USA is greater than that of men, that is, there are significant differences in the microcredit repayment behavior between women and men in the USA.*

To better understand the payment behavior of women and men, a second research hypothesis was verified, which reads as follows:

**Hypothesis 2 (H<sub>2</sub>).** *The punctuality of men's and women's microcredit payment in the USA is affected by their ages, ethnicity, academic level, marital status, and by the amounts, terms, and purposes of their microcredit.*

As noted earlier, according to [18], very little is known about what determines the repayment of microcredits in the USA's programs.

This research is of interest to MFIs which offer their loan services in the USA's microcredit market. These companies may eventually need to review and establish their microloan subscription policies in light of the results obtained in order to minimize the costs of the risks they assume in their microloan portfolios. In the same way, this research has academic interest because there is no known work which

has investigated the repayment behavior of microloans of women and men in the USA, including MFIs throughout the country.

The non-existence of previous nationwide research on this topic makes this investigation original, but also gives its limitations because the results which were obtained could only be compared with partial work in this market or with works carried out in markets other than that of USA for analysis. In effect, this paper exhibits two kinds of limitations. First, at the end of the process of choosing, the sample was found to be small and self-selecting. On the other hand, the responses to the questionnaire are based on managers' views. Indeed, these circumstances justify a careful discussion of the significance and implications of the conducted research.

## 2. Literature Review

### 2.1. Microfinance in the World

Several scholars point to Muhammad Yunus and the Grameen Bank in Bangladesh as the pioneers of the concept of microfinance [4]. However, Richardson [1] and Chu [2] establish that the beginnings of microfinance as we now know it occurred simultaneously and independently in Asia and Latin America. Two non-governmental organizations, Opportunity International and ACCION International, made their first loans in 1971 in Colombia and in 1973 in Brazil, respectively, to people at the base of the pyramid [2]. In 1970, Bank Dagang Bali was founded in Indonesia for the purpose of serving low-income people, whilst in 1976 in Dhaka, Bangladesh, the initiative of what would become the Grameen Bank was started [2]. These very remote initiatives, almost simultaneous and unknown amongst each other, initiated a new industry which would lead to Yunus and Grameen Bank receiving the Nobel Peace Prize in 2006 for their efforts [1,2,4].

Microfinance encompasses a range of financial instruments which are denominated in small amounts, making them accessible to individuals previously excluded from formal financial institutions [22].

The most usual or extended microfinance instrument is the microcredit or microloan, which consists of issuing small unsecured loans to individuals or groups for the purpose of starting or expanding businesses [22]. The intention behind microfinance is empowerment and self-help rather than charity, and microloans allow clients to break the poverty traps by facilitating the growth of family income. Microcredit programs use criteria different from those employed by banks to evaluate borrowers and grant credit [23]. However, microentrepreneurs have considerable difficulties in accessing capital in formal financial institutions [24].

According to Microcreditsummit.org [25], as of December 2004, women represented 83% of the poorest clients reported by the 3164 MFIs, which had reached 92,270,289 clients in the State of the Microcredit Summit Campaign of the United Nations. The report reflects that women proved not only to be good clients, but to pay better than men [25,26]. When updating these figures, according to the State of the Campaign Report [6] of the Microcredit Summit Campaign, 82.6% of the poorest clients served were women, with 211,119,547 borrowers.

More recently, Abdullah and Quayes [11] report that two thirds of all MFI borrowers have been women; these institutions consistently enjoy high rates of loan repayments and satisfactory financial results. MFIs focus on women as borrowers because they have found that, due to the high rates of reimbursement of microcredit associated with women borrowers, their financial results have improved [11].

Several studies have been carried out on the behavior of microcredit reimbursements in specific countries and/or specific MFIs. Hulme [12] studied an MFI in Malawi which replicated the Grameen Bank model and found that reimbursements from women's microloans were 92%, whilst men only reached 83%. In addition, Kevane and Wydick [13] worked on a sample of 342 microentrepreneurs in Guatemala: The data indicated that women are as capable as men when it comes to managing credit, and that there was evidence that women present rates of reimbursement of credit greater than those of

men. Deshpande and Burjorjee [14] conducted a survey among 29 institutions located in Mexico, South and East Asia, Arab countries, and Eastern Europe, which together had more than 1.6 million clients, of which 60% were women. Deshpande and Burjorjee [14] pointed out that the MFIs which responded to their survey established that women were better clients from an institutional point of view, and that women were more reliable and punctual clients in the reimbursement of microloans than men.

Multiple studies have been conducted in Bangladesh. In this way, Armendariz de Aghion and Murdoch [15] specifically stated that at Grameen Bank, 95% of clients are women and have shown that they are more reliable than men. In addition, these scholars established that women are more reliable than men when it comes to the repayment of loans in Bangladesh, specifying that 81% of women did not show problems of reimbursement, whilst only 71% of men did not present problems. In China, Armendariz de Aghion and Murdoch [15] showed the results of several microfinance institutions with high percentages of women who presented percentages of reimbursement of their loans of close to 100% in some cases.

Global research of 350 MFIs from 70 countries by D'Espallier et al. [10] tested the effects of gender on microcredit reimbursement. The two main research hypotheses were: Microfinance institutions with a greater focus on women show better reimbursement results, and microfinance institutions with a greater focus on women show lower perceptions of credit risk. The findings indicate that microfinance institutions with higher proportions of female borrowers have lower risk portfolios and lower portfolio loss rates. The results confirm that women are, on average, good credit risk for MFIs, since they repay their loans better than men [10]. However, it should be noted that this study did not include US MFIs.

In the same way, Abdullah and Quayes [11] found that women have higher rates of reimbursement of their microloans, that having a high proportion of women borrowers reduces the risk of non-compliance, and that a higher participation of women resulted in a better financial performance. This research does not include US microfinance institutions.

## 2.2. MFIs in the United States of America

For more than 40 years, MFIs have lent money to people in need around the world, fostering and supporting business development [1,3]. Meanwhile, the USA's formal financial institutions also showed their risk aversion by not accepting borrowers with weak credit histories, insufficient collateral, or limited business experience, so that alternative credit vehicles became necessary and microcredit programs proliferated to serve these markets [9].

In the 1980s, the first microcredit programs began in the USA, based on programs similar to those used by ACCION and the Grameen Bank. In the 1990s, there were already MFIs in all 50 states, but, unlike the efforts in developing countries, the microloans did not involve the group-lending model [1]. However, in general, the first efforts in the USA failed to obtain the levels of success achieved by the best MFIs in Asia and Latin America [7].

There is not a single data source that indicates how many microentrepreneurs there are in the United States [27]. A market study in 1999 by ACCION USA to estimate the number of micro-businesses determined that there were a total of 13.1 million microentrepreneurs at that time, of which 10.8 million had not received bank loans for their businesses [27].

The need for microcredit in the USA may never have been greater, since microentrepreneurs have not been served by traditional financial institutions [3]. It is therefore estimated that, in the USA, the time is propitious for microcredit, with a great impact on business. So, economic factors make people—many women among them—see great opportunity in the development of companies and self-employment which could be supported with microcredit [28].

The results of the Small Business Credit Survey reported by the New York Federal Reserve, conducted in the fourth quarter of 2016 across 50 states, confirm this gap: 55% of the firms surveyed had requested credit of less than \$100 thousand; of them, 45% were successful in obtaining the credit [8]. The survey found persistent credit gaps in companies with incomes of less than \$1 million per year,

resulting from weak credit records and insufficient credit histories, as indicated by the New York Federal Reserve [8].

As of December 2014, 142 microcredit organizations in the USA had reported to the Aspen Institute Microtracker program; a total of 57,095 credits were disbursed in that year for the amount of \$214 million, with an average of \$12,400.40 per credit. Additionally, they maintained a current loan portfolio of \$179.8 million, with a total portfolio at risk greater than 30 days with an average of 9%, composed of 53.2% women and 66.1% clients from communities below the low-income line [29]. According to Sba.gov [30], \$26.7 million had been approved, and there was an outstanding balance of \$136.7 million from a microcredit program of the Small Business Administration as of December 2014.

Although the need for microloans is great in the USA, MFIs have fallen short in filling that gap [1,3,28]. Microfinance institutions have not reached large proportions of the US population, but the need for their services is great because microentrepreneurs cannot successfully obtain the loans they require from traditional banking institutions [1]. Less than 1% of microentrepreneurs had received microloans to date (see [28]).

In research carried out on the determinants of the reimbursement of credit in the USA, Bhatt and Tang [18] studied four of the oldest microcredit programs in the country, located in California, each of which served different types of clients: African-American, Latino, Asian, and African-American and Latino, respectively. One of the findings of this study was that women's reimbursement did not show consistency with existing microcredit research, as they did not show a higher propensity to repay loans better than men. In addition, Bhatt and Tang [18] noted that more systematic and rigorous research was needed to examine the determinants of microcredit reimbursement in the USA.

Another study conducted more recently in the USA is that of Salt [31], also on the modality of group microcredit in a single program in a large city in the Northeast Pacific region of the country. This program included mostly women. Among the findings was that, for participating women, the impetus to participate in microcredit did not focus on money, although for women in general, participation was positive because they were offered options, opportunities, and resources which had previously not been available [31]. Although very interesting and important, this research, like that of Bhatt and Tang [18], lacks the power of generalization because the populations were very small and not representative of the US market.

It can be observed that there is an important difference between global knowledge about the behavior of the reimbursement of microcredits in foreign markets and the knowledge of the behavior of the reimbursement of microloans in the US domestic market and, more specifically, in the reimbursement of women's microloans. Therefore, it is relevant to determine whether women represent a better credit risk than men in relation to the payment of microcredit in this country. MFIs in the US market might need to make important changes to their microcredit policies if it is not also found that women are better payers than men in the USA. This could also apply to international MFIs looking to expand their markets, given that the US market provides expansion potential for them. In the same way, investment funds and capital donors may need to review their policies in relation to MFIs dedicated exclusively to women.

### *2.3. Microcredit Repayment and Gender*

In this subsection, we will carry out a review focused on the literature on repayment and gender, justified by the continuous increase of MFIs in the globalizing industry which has motivated research to explain the determinants affecting this phenomenon.

In this way, the authors of [32] found that a focus on women significantly improves repayment but does not enhance overall financial performance. Others scholars [10] have concentrated on empirically demonstrating the role that gender has played in microfinance institutions (MFIs) due to the fact that women represent a lower risk than men in relation to the payment of their microcredit.

Most studies have been carried out specifically on the behavior of microcredit repayments with respect to women in some specific non-developed countries. Thus, Reference [33] analyzes how certain



aspects of gender relations in Malawi facilitate and constrain the impact of microcredit and found that the new interest in client-led microfinance presents an opportunity. In addition, the authors of [34] conducted a study in Mexico showing that loan officers play a crucial role in improving repayment rates in microfinance, and that male loan officers are more able to induce borrowers to repay than female loan officers.

A very recent study conducted in Bangladesh [35] considers that growing evidence suggests that women are more likely to repay collateral-free microloans than men. They find that women are more trustworthy than men and that they are more likely to repay their loans, irrespectively of any control mechanisms, such as joint liability or dynamic repayment incentives.

All of this literature clearly shows that research has normally focused on repayment of MFIs and gender in non-developed and emerging markets. Moreover, this literature points out that women are better microloan payers or less risky borrowers than men, especially in non-developed markets. However, there are no studies in the USA supporting that women are a better risk of microcredit than men, or that there are differences in the behavior of repayment of microcredits between women and men. As our paper investigates in the USA, an analysis of developed countries is also relevant.

### 3. Materials and Methods

#### 3.1. Population

The total population of MFIs in the USA is unknown because there is no census of MFIs in the country that has been found so far. However, there are 565 microfinance programs that are registered with the Aspen Institute in the MicroTracker data collection tool for microfinance institutions in the USA [29]. It was found that 2010 was the year with the highest number of organizations reporting to MicroTracker, of which 243 performed microcredit operations. It was also possible to obtain a list of MFIs from the Small Business Administration (SBA), which issued microcredit in addition to providing SBA loan services; 65 of these microfinance organizations were not included in the MicroTracker database. Thus, the total sample included 308 MFIs scattered throughout the territory of the USA.

#### 3.2. Sample

From the total sample of 308 MFIs scattered over the country, 105 were randomly selected to administer the pilot survey. We obtained 17 responses to the pilot survey (that is to say, 16.19%). The pilot survey was sent to test the instrument and to make adjustments to the questions for better understanding. As is known, the advantages of a pilot survey are its simplicity, speed, and economy, since it can be completed easily and quickly without major costs, and it can provide useful information about the process [36].

The final survey was sent to the remaining 203 MFIs, receiving a total of 36 responses (17.73%) during 2017 from experts, CEOs, or portfolio managers who received the survey. The survey was sent through Survey Monkey to 203 MFIs. It was possible to determine that the respondent MFIs operate in 32 states of the USA. These states represent a population of more than 264 million; moreover, according to the US Census Bureau on July 1, 2016 [37], this corresponds to 81.93% of the estimated population of the country in that year. Indeed, this shows an important range of geographic coverage in the operations of respondents.

In order to help readers to follow the process of choice of the sample involved in this study, we have summarized all of the steps in Chart 1.

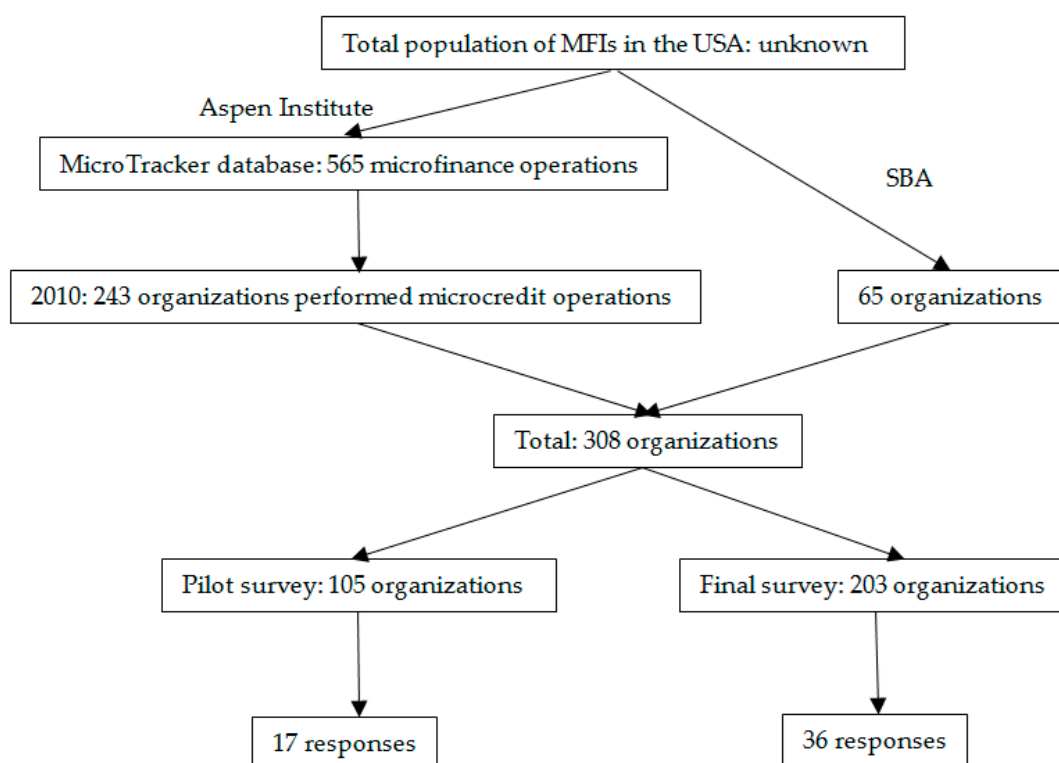


Chart 1. Process of choice of the sample. Source: Own elaboration.

### 3.3. Variables and Data

The study was designed in two stages:

Stage 1: An exploratory study was carried out to know the characteristics of the clients of the MFIs included in the sample. The instrument used in this investigation was a structured questionnaire-type survey.

Stage 2: In this stage of the study, it was determined if there are significant differences in mean between the punctuality of the payments of women and men according to the variables which could affect it: Age, ethnicity, educational level, marital status, amount, term, and purpose of the microcredit.

In summary, the purpose was to determine if the punctuality of the payments is due to some characteristic of women or men, or of the microcredits granted. Table 1 summarizes the variables analyzed in this study by specifying their type. The way of obtaining the data will be described and justified in Section 3.4 (Methodology).

Table 1. Variables analyzed in this paper and their type. Source: Own elaboration.

Variable	Type
Age	Quantitative (discrete)
Ethnicity	Qualitative
Education Level	Qualitative
Marital status	Qualitative
Amount of the microcredit	Quantitative (continuous)
Term of the microcredit	Quantitative (discrete)
Purpose of the microcredit	Qualitative

#### 3.3.1. Stage 1

In this stage, the CEOs of the MFIs involved in the study were asked to provide quantitative information about the characteristics that better describe women and men served by their organizations.

In our opinion, taking into account the final objective of this paper, age, ethnicity, level of education, and marital status are the basic personal traits when analyzing the behavior of individuals who face the repayment of a loan, specifically a microcredit. This idea is confirmed by the usual “credit score” applied by banks when analyzing the solvency and credit worthiness of a potential client.

Each CEO was required to assess the degree of belonging of his/her (male or female) “standard client” to the characteristics and modalities displayed in Table 2. To do this, they used a Likert scale from 1 to 5 (1: “Not important”, 2: “Scarcely important”, 3: “Moderately important”, 4: “Important”, and 5: “Most important”). For example, Table 2 exhibits the response of a specific CEO about the age of his/her male “standard client”.

**Table 2.** Response of a CEO on the age of a standard client. Source: Own elaboration.

Age:	1	2	3	4	5
Age between 18 and 25 years			X		
Age between 26 and 45 years				X	
More than 45 years	X				

This means that a ratio of 3 to 8 ( $= 3 + 4 + 1$ ) clients are between 18 and 25 years, a ratio of 4 to 8 are between 26 and 45 years, and that a ratio of 1 to 8 are older than 45 years. This interpretation can be extended to the rest of the characteristics, modalities, and sex. Finally, although the survey was responded to by 36 MFIs, some of them provided incomplete information for some modalities. This is the reason whereby the number,  $n$ , of valid responses by modality and sex is lower than 36. The specific number of valid responses, as well as the mean and the standard deviation, by modality and sex are displayed in Table 3.

**Table 3.** Composition of sample organizations with microcredits. Source: Own elaboration.

Characteristics and Modalities	Men			Women		
	Mean	St. dev.	$n$	Mean	St. dev.	$n$
<b>Age:</b>						
Age between 18 and 25 years	1.54	0.76	24	1.52	0.75	25
Age between 26 and 45 years	3.52	1.03	27	3.33	0.98	27
More than 45 years	2.92	1.32	25	2.92	0.93	25
<b>Ethnicity:</b>						
White	2.28	1.31	29	2.38	1.37	29
African American	2.56	1.29	27	2.56	1.26	27
Hispanic or Latino	2.34	1.21	29	2.34	1.18	29
Other ethnicity	1.77	1.19	26	1.81	1.09	27
<b>Education:</b>						
Elementary School	2.55	1.66	20	2.55	1.66	20
High School	3.48	1.21	23	3.43	1.47	23
College	2.5	0.96	24	2.46	0.87	24
Graduate School	1.45	0.72	22	1.77	1.00	22
<b>Marital status:</b>						
Single	2.55	0.78	22	3.12	0.95	25
Married	2.86	0.76	22	2.95	0.77	22
Divorced	2.23	0.90	22	2.33	0.84	21
Other	1.63	1.05	16	1.67	1.07	15

### 3.3.2. Stage 2

In this second stage, the executives of the MFIs were asked for their opinions about the punctuality of men and women with respect to the following independent variables: Age, ethnicity, educational level, marital status, amount, term, and purpose of the microcredit.



Firstly, the punctuality was measured by the microcredit portfolio at risk of more than 30 days (PAR 30) of MFIs in USA at the date of their last fiscal year (2017). The PAR 30 is a known term used in the industry to measure the portfolio at risk. This is calculated by dividing the total dollar amount of loans which are overdue or with payment in arrears over thirty days by the total loan portfolio.

Secondly, experts responded to the survey by pointing out how independent variables affect PAR 30 depending on the sex. As in stage 1, each CEO was required to assess the degree of influence of the characteristics of his/her (male or female) “standard client” on the microcredit repayment. To do this, they answered on a Likert scale from one to six: 1: “Totally disagree”, 2: “Disagree”, 3: “Somewhat disagree”, 4: “Somewhat agree”, 5: “Agree”, and 6: “Totally agree”. In the beginning, the independent variables could or could not affect payment behavior depending on the sex of clients [38]. For the sake of clarity, take into account that CEOs or portfolio managers in MFIs are responsible for keeping the payments in arrears under control for MFI sustainability; their professional experience and the appreciation of the situation of their MFI is the way to obtain the information needed for the study through the survey. In other words, the opinions and the beliefs of MFI managers about the personal traits of their clients is the “only truth” they are willing to take into account when giving a microcredit.

The specific number of valid responses, as well as the mean and the standard deviation, by characteristic and sex are displayed in Table 4.

**Table 4.** Punctuality of microcredit repayment by sample organizations. **Source:** Own elaboration.

Characteristics	Men			Women		
	Mean	St. dev.	<i>n</i>	Mean	St. dev.	<i>n</i>
Age	2.9	1.49	30	2.57	1.31	30
Ethnicity	2.33	1.22	30	2.17	1.16	29
Education	3.4	1.50	30	3.40	1.43	30
Marital status	2.7	1.35	30	2.67	1.37	30
Amount of the microcredit	3.47	1.09	30	3.48	1.33	30
Term of the microcredit	3.23	1.20	30	3.20	1.19	30
Purpose of the microcredit	3.23	1.54	30	3.23	1.61	29

### 3.4. Methodology

As indicated, this paper focuses on data obtained from managers because managers perceive the most important determinants of repayment. In effect, the manager’s opinion plays a very significant role in planning and making decisions of the companies and the way in which forthcoming algorithms should be developed, due to the fact that managers provide us with plenty of information coming from their daily business lives.

The following paragraphs justify the chosen methodology as the only way to obtain the information necessary to implement the empirical analysis.

First, take into account that MFIs are required to contribute actual information on their clients. Each manager, apart from the information on PAR 30, has to look for the information of the actual characteristics of all his/her clients. If the number of clients of a specific MFI is high, it is possible that this manager has to select a sample of their clients.

Second, when providing managers’ perceptions about these characteristics, the number of valid responses was 36. Consequently, in the case of requiring actual information, we foresee that the number of valid responses could be insignificant because managers are not willing to lose time to respond to questionnaires.

This paper focuses on data obtained from managers. More specifically, it is assumed that the opinions and beliefs of MFI managers about the personal traits of their clients are considered as if they were the “only truth” that they are willing to take into account when giving a credit.

Therefore, our research is based on how the involved MFI managers perceive the most important determinants of loan repayment, providing us with quantitative information about the characteristics

that better describe women and men served by their organization, such as the punctuality of men and women with respect to the following independent variables: Age, ethnicity, educational level, marital status, amount, term, and purpose of the microcredits.

Although perception is a cognitive process [39], some authors provide some evidence on the critical role of managerial perception in both organizational decision-making and strategy formulation processes by providing some evidence on the significant influence that research from a managerial perception perspective has had on the understanding of how strategy forms in the organizations [40]. The main contribution of this effort is the elaboration of various ways in which managerial perceptions influence strategy development processes beyond only implementation [40].

As a relevant reflection, the article proves that the levels of perception that managers have about the conditions and characteristics of the organizational environment should contribute to the formation of their vision about the way strategies should be designed and appropriately implemented to adapt to the requirements of the specific environment; in our research, the microcredit policies in relation to women in the USA.

Many have been written about the accuracy of managers' perceptions. In this way, Reference [41] discusses an odyssey into the study of managerial perceptions spanning two decades and two empirical studies. It depicts the evolution of research questions, samples, study designs, problems with such research, and inferences drawn. It also identifies some errors which tend to be especially large and suggests some corrective actions.

As a matter of fact, using algorithms could be considered as a more precise tool than managers' opinions. The fact that these decisions are made by algorithms rather than by people may influence perceptions of the decisions that are made, regardless of the qualities of the actual decision outcomes [42].

In favor of our idea of the importance of the manager's point of view, some academic research [43] and results reinforce the argument that the general public does not fully trust algorithms or find it fair to use algorithms for decisions involving subjective judgments of human workers.

Further research needs to be done in order to understand what contributes to the perception that certain tasks can be done well uniquely by humans. People's attitudes toward and perceptions of technologies have changed throughout history; some technologies originally considered to be socially awkward, rude, or unacceptable were eventually adopted as perceptions changed, or designs were improved to better fit human conceptions.

Crawford and Calo [44] referred to a critical perspective on current trends in algorithms and artificial intelligence in industry. They argued that people fear that artificial intelligence is taking over human jobs, when, in fact, the problem is that industries often incorporate technology whose performance and effectiveness are not yet proven, without careful validation and reflection.

A lot of managers make decisions and analyze decision problems on the basis of their own intuition and creativity rather than on rational thinking [42].

Some authors point out that their findings indicate that the financial information used in operational management is highly rated by managers when they focus on managers' perceptions of the management accounting information systems in transition countries [45].

Thus, managers' opinions and perceptions play a very significant role in planning and making decisions of the companies, whilst providing us with plenty of information coming from their daily business lives.

Historically, the results obtained by [46] show that decision-makers and users do not have much time for a thorough analysis and consultation of the results with researchers or other employees in the company.

In consequence, as Tversky and Kahneman proved a long time ago, human judgments which accompany decisions are frequently subject to systematic biases [47].

On the other hand, a *t*-test was conducted to specifically investigate if, in the USA, there are differences in microcredit repayment behavior between women and men. In order to analyze the significance of the difference between the means obtained by women and men in the responses to

the survey, we will perform the *t*-test [48,49]. In effect, to know if the variables “age”, “ethnicity”, “educational level”, “marital status”, “amount of the microcredit”, “term of the microcredit”, and “purpose of the microcredit” are affected by the sex of respondents, we will calculate the *t* of the two samples (women and men), first to analyze if there are significant differences between the traits of the clients of the surveyed MFIs by sex, and then to analyze the perceived punctuality in microcredit repayment by clients.

For this purpose, the following two null hypotheses will be tested: (1) There is no significant difference in the averages of the traits of clients, and (2) there is no significant difference in perceived punctuality of microcredit repayment by clients. To do this, we first need to determine the standard error of the difference between the two means, which is also called the margin of error of the *t*-test:

$$S_{x_1-x_2} = \sqrt{\frac{\sum x_1^2 + \sum x_2^2}{n_1 + n_2 - 2} \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}. \quad (1)$$

Second, we have to determine the ratio of the difference of the means to the margin of error, that is to say, the experimental value:

$$T = \frac{\bar{X}_1 - \bar{X}_2}{S_{x_1-x_2}}. \quad (2)$$

Third, the number of degrees of freedom is the total sample size minus two:

$$d.f. = n_1 + n_2 - 2, \quad (3)$$

which is used in significance testing. Fourth, we determine the theoretical (critical) value *t* at the 5% significance level and  $n_1 + n_2 - 2$  degree of freedom. If  $T < t$ , the null hypotheses cannot be rejected and the difference of the means is due to randomness.

#### 4. Results

According to stage 1 proposed in Section 3.3, we analyze whether there is a significant difference by sex in the composition of the organizations which have received microcredit, in terms of age, ethnicity, level of education, and marital status. To do this, we have taken the means and the standard deviations of each characteristic (even differentiated by modalities) and we have calculated the *T* and *t* values (see Table 5).

**Table 5.** *t*-test for the composition of organizations with microcredits. **Source:** Own elaboration.

Characteristics and Modalities	<i>T</i> -Values	<i>t</i> -Values
Age between 18 and 25 years	0.1969	1.6779
Age between 26 and 45 years	0.6758	1.6747
More than 45 years	0.0000	1.6772
White	0.2933	1.6725
African American	0.0000	1.6747
Hispanic or Latino	0.0000	1.6725
Other ethnicity	0.1457	1.6753
Elementary School	0.0000	1.6860
High School	0.1095	1.6802
College	0.1582	1.6787
Graduate school	1.2127	1.6820
Single	2.2422 (*)	1.6794
Married	0.3957	1.6820
Divorced	0.3997	1.6829
Other	0.1090	1.6991

Therefore, it can be concluded that there is no significant difference in the composition, by women and men, of the companies that have obtained microcredit, except for the proportion of single women and men (marked in Table 5 with an asterisk).

On the other hand, with respect to stage 2 (punctuality in the repayments of microcredits), in the administered questionnaire, the managers were asked if, in their opinion, the repayment behavior for women's microloans is better than that of men, as well as if, in their professional experience, there is no difference in microcredit repayment behavior between women and men. The answer to the first question showed a mean value of 3.45. On the other hand, the second question showed a mean value of 3.72. It could be stated that, on this basis of the beliefs of the managers who responded to these questions, there is some agreement—somewhat stronger—that there are no differences in the microcredit repayment behavior of women and men in the USA.

Taking into account that the difference of means is very slight and that the standard deviations are similar (1.22 and 1.23, respectively), it is likely that the difference of means is not significant. To answer this question, we used a *t*-test for the following paired samples, which represent the answers to questions 1 and 2, by using a Likert scale from 1 to 6 (see Table 6).

**Table 6.** Responses to questions 1 and 2 (paired sample). Source: Own elaboration.

Manager No.	Answers to	
	Question 1	Question 2
1	4	3
2	1	5
3	3	4
4	5	2
5	5	2
6	4	3
7	5	2
8	1	6
9	4	4
10	3	6
11	4	3
12	4	4
13	2	2
14	4	4
15	3	6
16	4	3
17	5	3
18	1	3
19	5	3
20	2	2
21	4	3
22	4	5
23	4	4
24	3	5
25	4	4
26	4	4
27	2	5
28	2	3

In this way, we test the following null and alternative hypotheses:

$$\begin{cases} H_0 : \mu_D = 0 \\ H_1 : \mu_D < 0 \end{cases} \quad (4)$$

where  $D$  is the difference of the scores of the answers to questions 1 and 2. In this case, we obtain  $\bar{x}_D = -0.25$  and  $s_D = 2.0839$ , whereby the experimental statistics are:

$$t = \frac{\bar{x}_D}{s_D / \sqrt{n}} = -0.6348. \quad (5)$$

As the observed value is not in the critical region (the interval  $[1.7033, +\infty)$ ) and the degrees of freedom are 27, the null hypothesis cannot be rejected. More precisely, the decision is “fail to reject” the null hypothesis.

Consequently, this is the reason for which managers were asked separately about what factors they believe would determine repayment performance among male and female borrowers as reliable proxies for actual repayment behavior. To do this, we took the means and the standard deviations of each characteristic and we calculated the  $T$  and  $t$  values (see Table 7).

**Table 7.**  $t$ -test for the punctuality of microcredit repayment. **Source:** Own elaboration.

Characteristics	$T$ -Values	$t$ -Values
Age	0.9203	1.6716
Ethnicity	0.7576	1.6716
Elementary School	0.0000	1.6716
Education level	0.0949	1.6716
Single men	0.3190	1.6716
Marital status	0.1077	1.6716
Amount of the microcredit	0.0000	1.6716
Term of the microcredit	0.9203	1.6716
Purpose of the microcredit	0.7576	1.6716

Regulated financial institutions do not lend money to borrowers with weak credit histories or thin credit files, non-conventional collaterals (mortgages), and businesses or entrepreneurs with limited or little experience [21]; today, we are seeing credit offerings of \$30,000 to borrowers by Community Banks; those are microcredit in the USA. The microfinance methodology makes the difference in that it lends to borrowers in a sustainable way and that it can make attractive this important unattended market present in the USA. Grameen USA is a perfect example of this point [21]. Specifically, microcredit is addressed to the empowerment of women in non-developed countries. This justifies the objective and conclusions of this paper, where it can be observed that, in all cases, the experimental value  $T$  is less than the theoretical value  $t$ , which indicates that there is no significant difference in the punctuality of microcredit repayments according to the condition of the client as a woman or man.

## 5. Discussion and Conclusions

From the early microcredit programs until now, microfinance has increased exponentially due to its academic interest, becoming an important research subject [50]. Moreover, microfinance institutions (MFIs) have attracted great attention due to their significant role in poverty reduction [51]. However, as the sector evolves and is incorporated into the mainstream financial system, the challenge for researchers ahead is to analyze the evidence on gender differentiation [52].

Research has normally been focused on microfinance institutions in developing and emerging markets. However, an analysis of developed countries is also important. Specifically, MFIs in the USA face social, economic, and institutional environments which are both similar to and different from those faced by their counterparts in developing countries.

Specifically, foreign MFIs wishing to enter the USA's market should change or adapt their microcredit policies in relation to or oriented towards women. In the same way, foreign MFIs who decide to enter the USA should take appropriate measures to adapt their microcredit policies in relation

to women, choosing microcredit practices that work in the USA and reconfiguring those that do not, even when those methods have proven to be successful in international MFIs.

What could be influencing women's repayment in the USA compared with other countries? According to Bhatt and Tang [18], women of low-income communities in the US have more access to public benefits than men with similar socio-economic levels. Unlike in other countries, women are not dependent on future credit as a source of income. Similarly, in neighboring Canada, Carrington [53] found no significant difference in accessing credit, obtaining approvals, terms, and conditions of loans to businesses belonging to either women or men.

On the other hand, in the USA, the educational achievements of women and men are equal. This could indicate that both women and men know their duties and rights when dealing with credit situations. In Bangladesh and Bolivia, women are not as equal to men. Regarding birth and life expectancies, the three countries show similar rates. Finally, political empowerment in the USA shows a very low level of parity, while in the other two countries, the level is significantly higher.

In the beginning, we can think that the punctuality of both men's and women's microcredit payments is affected by their ages, ethnicities, academic levels, and marital statuses as well as by the amounts, purposes, and terms of their microcredit. Nevertheless, according to the results obtained, there are no important differences in microcredit repayment between women and men in the USA.

In summary, this paper has demonstrated that there are no significant differences in the reimbursement of microcredits between men and women in the USA.

On the one hand, the statistical results confirm that, as expected, the convergence of roles of women and men in developed countries does not find an exemption with respect to microcredit reimbursements. On the other hand, the pragmatic utility of this paper lies in the irrelevance of the variable "sex" when dealing with microcredit policy decisions based on the variable "reimbursement". Effectively, it should be taken into account that the behavior in the USA of the beneficiaries of microcredit could be different from those of other countries, as was initially established in this research.

There is no lack of studies arguing that women outperform men in terms of repayment in microfinance [54,55]. In effect, some scholars recently found that, when controlling for other factors, there is no significant relation between gender and repayment [10]. On the other hand, the paper by Agier and Szafarz [56], which aimed to analyze whether men and women benefit from the same credit conditions by using 34,000 loan applications from a Brazilian microcredit institution, discovered that there was no gender bias related to loan denial, whereas there was different treatment related to credit conditions. Enhanced female repayment rates are driven by a focus on nonfinancial services in the case of Bangladesh [57] or the adaptation of loan methodologies to local contexts in the USA [18], as mentioned in our paper.

One author [58] presents a comprehensive review of literature on the gender pay gap especially focused on the USA, with detailed empirical evidence to show that some of the core issues have changed since the 1970s. In a very recent study [59], the gender pay gap in the USA is examined. The main conclusion implies that it might be better not to think of a single gender pay gap, but of a series of different pay gaps for different groups. Thus, it is shown that, when the concentration of women in lower-paid occupations and industries (gender segregation) is taken into account, then the gender pay gap increases.

Although the debate is about whether MFIs working in the USA's market should change or adapt their microcredit policies with respect to women, this study is another step to revisiting the literature on MFIs, especially in relation to gender and when they are located in the USA. Anyway, it is beyond any doubt that further research needs to be done about repayment behavior among male and female microcredit borrowers and to investigate the role of sex in credit risk in the USA.

Despite the small sample used in this research, this article makes a contribution to the scant empirical literature on repayment behavior among male and female microcredit borrowers in the USA. According to managers, the determinants of repayment are similar for men and women, which would seem at odds with the conventional wisdom of women being better payers. The conclusion obtained



in this study helps in revisiting the literature on MFIs, especially in relation to gender and when they are located in the USA.

Finally, our aim is to continue the research on this topic by collecting data on actual repayment performance (PAR, write-off, restructured portfolio, etc.), customer traits (e.g., gender, age, etc.), and MFI characteristics (size, location, etc.) instead of being based on managers' perceptions.

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