Managing Risk and Promoting Success:
How Microfinance Lenders Can Better Utilize Borrower Insights for Collateral Strategy

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I. ABSTRACT

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The Impact of Collateral Structure on Microfinance Lending
(Under the direction of Dr. Olga Hawn)

At its conception, microfinance was a lending mechanism designed to alleviate poverty by providing group-structured lending to those who could not otherwise receive financing. As it has spread into new markets, microfinance lending has grown and changed significantly — especially as the model was adopted in the United States. While its goal is still to fund and empower entrepreneurial ventures by lending to the poor, the payment and collateral structure of microfinance in the U.S. is drastically different from the original microfinance model established by the Grameen Bank in Bangladesh.

The most notable difference, the lack of social collateral, has contributed to higher default rates (and thus, higher operating costs) and slower growth among microfinance institutions in the U.S., relative to much of the world. Higher default rates are important because they have pushed U.S. micro-lenders to find new ways to mitigate the risk of these loans, including the use of individual lending models and/or physical collateral. Prior literature has discussed the various forms of collateral available to microlenders, their potential uses in the U.S., and the impact of each on operating costs and margins. But there has been little research conducted surrounding lender meetings/interactions as a potential form of collateral. Furthermore, little research has been done to quantify the effectiveness and importance of these forms of collateral from the borrower's perspective. Overall, the voice of the borrower has been largely excluded from the loan-structuring process.

To address these gaps, I conducted research with borrowers from two microlending institutions: The *North Carolina Rural Center* and *The Women's Microfinance Initiative of Uganda*. I selected these two lenders to compare and contrast different loan features and collateral tools in a domestic and international setting. Additionally, the two samples represented one struggling microlender (NC Rural Center) and one successful high-growth lending institution (WMI-Uganda). My findings suggested that more frequent **lender meetings/interactions** can potentially help reduce late/missed loan payments. Additionally, my findings indicated that incremental **professional development courses** could potentially serve as collateral for borrowers, influencing borrowers to repay their loans, and improve their ability to do so (thus reducing overall risk).

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II.   INTRODUCTION

Microfinance is a popular lending solution for low-income and developing regions of the world. This lending solution has grown considerably since its inception and is projected to continue to grow at an average of 19.3% until 2019 (Hug, C., 2014). However, microfinance institutions (MFIs) vary significantly with with respect to success and lending strategy across different regions. As a relatively young lending solution, microfinance has not yet been studied as thoroughly as older lending functions. Most studies focus on the performance or impact of microfinance within a country, region, or specific MFI, with the existence of some notable global comparative studies. Limited customer-focused research has been conducted within the space.

A. Research Question

This study seeks to answer the question of how MFI lending strategies — specifically implemented loan features and collateral structures — impact borrowers' perception and motivation to repay. Borrower surveys were conducted on groups from the United States (*The NC Rural Center*) and Uganda (*Women's Microfinance Initiative*) to assess the importance of various forms of collateral from the customer's perspective and to draw correlations between loan features, borrower perception, and repayment.

Survey results were analyzed quantitatively and qualitatively and used to form conclusions and provide recommendations to *The NC Rural Center* and U.S. MFIs in general on improving lending strategy and loan repayments.

B. My Interest in Microfinance

My interest in microfinance stems from a course I took in Santiago, Chile as an exchange student. Inspired by the growth and impact of microfinance in Latin America

and across the world, I dove further into the subject. My passion for microfinance was developed after reading Muhammad Yunus's *Banker to the Poor* (1999). Yunus discusses his experiences with poverty and inequality in his home country of Bangladesh. He implemented a micro-lending program, called the Grameen Foundation, which stimulated entrepreneurship and promoted growth in impoverished areas by providing loans for small-scale ventures such as farming and weaving (Yunus, 1999). As a result, even the most underprivileged Bangladeshis were given the opportunity to escape poverty — a seemingly impossible feat before the establishment of this program. Since Yunus established the Grameen Foundation, the use of microfinance lending has grown exponentially, successfully alleviating poverty across the globe.

But upon further research, I was surprised to learn that microfinance lending has not found the same success in the United States. Understanding that a number of influencers — ranging from social and cultural values to government policies — have impacted the success of microfinance, I set out to learn what factors have promoted or deterred the success of microfinance in the United States. My research will ultimately seek to provide recommendations to the NC Rural Center, a local micro-lending institution, on its lending strategy and use of collateral.

III.   OVERVIEW OF MICROFINANCE

In this section, I will define microfinance and provide a brief overview of its history. I will also discuss the current situation within the U.S. and the relationship between default rates, interest rates, and collateral structures for micro-lending solutions. Lastly, I will spotlight the NC Rural Center and how its current situation relates to larger microfinance trends in the U.S.

A. Microfinance Definition

Microfinance is defined as "formal and informal institutions offering financial services to the poor" (Brau & Woller, 2004). The original microfinance model aimed to provide small (micro) loans with low interest rates to the poorest individuals to help establish and develop their entrepreneurial ventures. Microfinance models since have adapted their practices slightly, but still aspire to extend financial inclusion to groups that were previously thought of as un-lendable (Yunus, 1999).

B. History of Microfinance

Micro-lending has existed for centuries, arising in various regions by different names throughout history. From West Africa to Mexico, microfinance lending systems were established well before Yunus's Grameen Foundation (Helms & Goodwin-Groen, 2006). While micro-lending popped up in certain areas, the vast majority of societies viewed the poor as "unreliable" borrowers due to the lack of tangible collateral they offered (Yunus, 1999). Therefore, lending institutions largely avoided low-income populations, which meant microfinance saw little to no growth for centuries (Helms & Goodwin-Groen, 2006).

In the 1970s, Muhammad Yunus — who is widely considered the father of modern day microfinance — experimented with group-based micro-lending. Recognizing the impact of social push, especially in Bangladesh, Yunus implemented loans that effectively established social, rather than physical collateral. The Grameen model established small groups (5 to 7 members) consisting of mostly female non-family members. These loan groups established an internal monitoring system, holding each other accountable for repaying loans. In Yunus's model, a single member missing a payment meant repercussions for the entire group. With two forms of collateral — social collateral and the promise of future loans — pushing borrowers to repay, the Grameen model proved extremely successful, especially in areas with similar social constructs. Yunus's microfinance model spread across the world, with slight changes, bringing with it financial inclusion for tens of millions of impoverished borrowers (Yunus, 1999). Hundreds of thousands of microfinance lending institutions exist around the world today.

C. Microfinance in the United States

Microfinance lending models have varied in their effectiveness and success throughout different global markets. Microfinance was adopted in earnest within the United States in the late 1980s and early 1990s (Lieberman, Mudd, & Goodeve, 2012), but has failed to find the same success as many of its international counterparts. An estimated 367 MFIs existed in the U.S. as of 2012, which represents ~18% growth in the past decade, which is below the international average (Lieberman et al., 2012). A number of key factors, including *default rates*, *interest rates*, and the use of certain *forms of collateral* have contributed to this limited growth in recent decades. In this section, I will address the role that each of these factors has played in the success of U.S. microfinance

and the decisions-making strategy of MFIs.

Default Rates:

As Yunus (1999) highlights, microfinance differentiates itself from other lending models because of its ability to maintain impressively low default rates, while lending to the the otherwise unbankable. Because low-income borrowers typically lack the assets to back their loans (otherwise called collateral, which will be discusses later), minimizing loan defaults is especially imperative to the success of micro-lenders. Yunus's model, and many of those that followed internationally, thrived because of the ability to prevent loan default. Some microfinance institutions, such as the Grameen Bank and The Women's Microfinance Initiative of Uganda have boasted repayment rates as high as 98% in the past (Nietert, 2016). This level of risk-mitigation has accelerated the growth of microfinance in these regions, promoting the success of the microfinance institutions that are established.

While some microfinance institutions have succeeded to sustain high repayment rates, the story has largely followed a different tune with respect to default rates in the U.S. On average, U.S. microloans have a 9.1% default rate, which is far higher than the averages in areas such as South Asia, where average default rates were 3.03% (Lieberman et al., 2012). This phenomenon has further increased the risk of lending to the poor and limited the success of microfinance lending in the U.S. Especially considering the limited options that U.S. lenders have to combat higher loan default rates — which is linked directly to the available collateral structures in the U.S. versus other regions — the burden of higher loan default has stymied the growth of microlending significantly. Lastly, higher default rates — specifically the administrative costs

associated with repayment collection — drive up already-high operating costs for U.S.

microlenders and make it more difficult to do business (Chakrabarty, & Bass, 2013).

Interest Rates:

Interest rates also play a pivotal role in influencing the decision-making processes

of MFIs, both from an operational standpoint and with respect to affordability for

borrowers. Microfinance institutions, and really all lending institutions, lean on interest to

fund the back-end costs of lending and to establish profitability. Interest rates are driven

by a number of factors, including default rate and available collateral, that ultimately

determine a lender's profit margin and overall success. Rosenberg et al. (2013)

determined the key drivers of microfinance interest rates to be as follows:

$$Interest\ Rate(\%) = \beta_{OC}(Operating\ Expense) + \beta_{LL}(Loan\ Loss) \\ - (Collateral\ Standing) + (\%\ Profit\ Margin)$$

In short, each of these factors creates upward (or downward) pressure on interest

rates. This formula serves as a simplified equation, boiling down how each of these key

factors drives interest rates. Beyond interest rates, these factors also have an impact on

the decisions that lenders make and the loan features and collateral structures that they

ultimately include. Operating expenses, loan losses (or default risk), and profit margins

drive interest rates up, while collateral standing — a given borrower's available collateral

(whether tangible or intangible) — drives interest rates down. Although, often times,

profit margins are dictated by interest rates rather than the other way around.

In the U.S., there is a higher level of relative upward pressure on interest rates,

largely due to these three key factors. Differences in collection practices and social

integration have led to higher operating costs in the U.S., relative to the world average

(Chakrabarty, & Bass, 2013). Additionally, as mentioned before, higher default rates also create upward pressure on interest rates. Lastly, the lack of available collateral, namely social collateral, also impacts both interest rates and lending strategy. Collateral will be further explained in the following section. These factors have driven interest rates to an extent, but their impact has been felt more profoundly by the MFIs in the form of lower profit margins. This, understandably, has contributed significantly to the slower growth of MFIs in the U.S.

Despite the upward pressure that exists on MFI interest rates in the U.S., there has been little evidence to suggest that U.S. microfinance rates are significantly higher than the world average. While exact interest rate averages are hard to pinpoint, largely because of the long-standing issue of transparency in the U.S., Lieberman et al. (2012), estimated that average interest rates in the U.S. were 10.8%. According to Kneiding and Rosenberg (2008), the international average for microfinance interest rates is 35%, which is significantly higher than the predicted U.S. average. Kneiding and Rosenberg cite a number of outliers, such as Uzbekistan who charge rates around 80% as potential drivers of high international averages. Still, however, there is little evidence to suggest that U.S. interest rates are higher than the national average.

A study by Rosenberg et al. (2009) concluded that microfinance interest rates are not too high in the U.S. High microfinance interest rates have been tied to higher default rates in other regions, due to the bottom-line impact they have on entrepreneurial success for borrowers. Interestingly, interest rates do not seem to be the primary determinant for the higher on-average loan defaults in the U.S.

This brings attention to available collateral, the other key contributing factor to

loan defaults. This phenomenon drove me to focus my study on collateral structures and their profound impact on repayment and overall MFI success.

Collateral Structures:

As mentioned, collateral plays an imperative role to the repayment of loans and the overall success of a MFI. In short, collateral serves two purposes for a lender:

1. To influence borrowers to repay loans

2. To recuperate some/all of the losses in the case of default.

For a number of reasons, the first purpose will be the focus of this thesis. Firstly, since microfinance loans target poor borrowers, collateral rarely serves as ample coverage for the loan in the case of default. With limited physical collateral available, lenders turn to other forms of collateral — both tangible and intangible — to reduce risk. The establishment of collateral structures such as group lending (and social collateral) largely aims to reduce loan default (1), rather than recuperate losses (2).

Additionally, the recuperation of losses is a largely reactive function of collateral, which is more difficult to change, relative to the circumstance. Conversely, promoting loan repayment is an active use of collateral, and has a greater impact on default rates overall.

When structuring loans, MFIs are faced with a number of options (and limitations) with respect to the collateral that will back a loan. Naturally, loans provided through microlending programs have inherently higher risk than those of other lending solutions. Thus, the effective use of collateral is vital in limiting default and possibly recuperating losses. I will discuss the different types of collateral and its availability in the U.S. in more detail throughout the literature review.

Loan Feature Decision Making:

Another important caveat to note with respect to operating costs and their role as a key driver of interest rates is their residual impact on the decision-making process for lenders. With existing pressure on interest rate margins, lenders must tailor the extensiveness of their loan features to match the availability of operational funding. For example, Chakrabarty and Bass (2013) mention that some lenders forego offering services such as personal/professional development programs in order to reduce operating costs. These limitations increase the importance of implementing only the most impactful and effective loan features. This notion motivates part of this study, as I seek to recommend the most effective loan features to the NC Rural Center.

D. NC Rural Center

The NC Rural Center, a local organization that serves North Carolina's 80 rural counties, provides microfinance loans to the poor in rural areas. The center faces many of the issues addressed above, especially with respect to operating costs and available collateral. Below is a comprehensive breakdown of the loan services and features that the NC Rural Center offers, compared to national U.S. averages (Lieberman et al., 2012) & (Rosenberg, 2009).

Table 1: Loan Services & Features, NC Rural Center vs. US

Loan Feature	NC Rural Center	Average U.S. Loan
Lending Model	Individual Lending Model*	Individual Lending Model
Primary Market	Low-Income Rural Borrowers	Low-Income / Variable
Interest Rate	U.S. Prime + 4% (8-9%)	10.8%
Collateral	- Home/Property Collateral - Credit Score Rating - Promise of Future Loan - Strict Repayment	- Home/Property Collateral - Credit Score Rating - Promise of Future Loan - Strict Repayment - Other
Required Meetings With Lender	No	No (Exceptions Apply)*
Business/Professional Development Program	One time only. Prior to receiving loan.	Yes. Depth/Frequency Varies.
Default Rates	~13%	9.1%

*In the past, the NC Rural Center has experimented with the use of a group lending structure. After a highly successful first round, strategic default and increasing administrative expenses plagued the effectiveness of successive rounds of lending. Ultimately, the NC Rural Center returned to an individual lending model after three rounds of loans.

Despite some differences in loan features, the NC Rural Center serves as a good,

relative representation of the U.S. microfinance landscape. Some incongruences do exist,

such as the fact that the NC Rural Center has slightly lower interest rates than the national

average and slightly higher default rates. Nonetheless, the issues facing NC Rural Center

parallel those facing lenders in the larger U.S. microfinance market. By studying,

analyzing, and ultimately making recommendations for the NC Rural Center, I can

extend some of my recommendations to U.S. MFIs as well.

IV.   LITERATURE REVIEW

This section will review the literature available on collateral structures and risk-mitigating tools across the microfinance landscape. In addition, it will discuss the structural differences between U.S.-based micro-lending collateral and international microfinance institutions (MFIs). In this literature review, I will discuss:

- Group vs. Individual Lending Structure

- Social Collateral in the United States

- Other Risk-Mitigating Tools

- Applying These Tools in the U.S.

In this section, I will also work to point out the gaps within the relevant literature. Specifically, I will discuss the lack of research surrounding *lender meetings* as a potential form of (social) collateral and the absence of the borrower voice in the loan-structuring process. By outlining the information available and comparing the research that has been conducted, I will use this literature review as the foundation for my research methodology and recommendations.

A. Group vs. Individual Lending Structure

Group lending has been one of the most integral parts of microfinance since its conception. Yunus detailed the concept of group lending as it first appeared in the Grameen Bank — the MFI Yunus developed to combat poverty in Bangladesh. Borrowers who received loans from the Grameen Bank did so in groups of five or seven members, assuming joint responsibility for any loans they received (Yunus, 1999).

Lending methodologies have expanded since Yunus's original model, modifying the group lending model that exists and even venturing away from the group model entirely. In general, three prominent lending methods exist. Two group lending methods: (1) Solidarity, and (2) Village Bank and one non-group lending method: (3) Individual dominate the microfinance landscape today (McGuire & Conroy, 2000a, 2000b).

Solidarity Model:

The most common lending model for microfinance lending, the solidarity model is the modern implementation of Yunus's original group lending method. Loan groups consist of five to seven group members who guarantee each other's loans and attend regular meetings together. Self-monitoring tendencies within this model reduce operating costs for lenders as well.

Village Bank Model:

Less common in international practice, but still prominent, the village banking model consists of "agencies" comprised of 30-50 village members. Loans are provided to individuals, who exist within a larger social group. Peer pressure and tight-knit social bonds motivate borrowers to repay in full. Funds from this structure are typically recycled to fund future loans within the same "agency."

Individual Model:

The individual model more closely parallels typical lending models for non-microfinance loans. This model provides credit to clients on a person-to-person basis, establishing individual liability on each separate loan. This model is limited in the non-tangible collateral it can produce. Additionally, loan screening and collection are highly centralized in this model, driving up operating costs for lenders.

In both group lending structures, each individual borrower's ability to take out future loans depends on the ability of the group (or other individual borrowers) to avoid default. This structure establishes two forms of leverage for the lenders: tangible and social collateral.

(1) *Tangible Collateral*: Because loans are spread across the group, a loan can be repaid by the group in the event that one member defaults in a given period. Since missing a payment means compromising the ability of the entire group to attain future loans, the lender is protected from individual defaults by the rest of the group.

(2) *Intangible (Social) Collateral*: In an interwoven, network-based society, the social pressure from the other group members also pushes borrowers to make their payments. Lenders benefit from this social push because the groups self-police when payments are due.

While group lending has been shifted and adjusted by other banks and MFIs since the 1970s, it still remains a major part of microfinance lending models across the world. The latter, *social collateral*, is a major pillar of the microfinance model and cited by Yunus (1999) as the biggest benefit of group lending. Yunus attributes much of Grameen Bank's success to the role that group liability serves to create collateral.

Group lending's necessity and benefit, however, have been contested by some. In Treb Allen's *Optimal (Partial) Group Liability in Microfinance Lending* (2012), he highlights the shortcomings of the group lending structure as a pure form of collateral. Allen (2013) instead proposes a system of partial group liability, where individual

borrowers are not punished as heavily if members of their group default. Additionally, one of Allen's biggest criticisms of the group liability model is its dependence on the cultural and social structure of the home country.

According to Allen (2013), the United States is a good example of a society that doesn't support group lending models well. The difficulty associated with implementing group lending in the United States — because of an inability to establish *social collateral* — has led many banks to turn entirely to individual liability. With a lack of collateral from social pressure, lenders have also implemented other forms of collateral and abandoned the effort to establish social collateral entirely in many cases (Allen, 2013). While Allen researched partial group liability in Mexico, a partial liability structure in the U.S. may offer lenders some level of collateral — though it is unlikely that the social collateral that Yunus describes could be achieved.

B. Social Collateral in the United States

The absence of social collateral in the U.S. drives many of the decisions that MFIs make. The most notable decision, of course, is the movement away from group lending models to individual lending with largely tangible collateral. Considering the pivotal role that group lending and social collateral played in the success of early microfinance, according to Yunus (1999), it is important to continue researching the role (if any) that it could play in the collateral strategies of U.S. MFIs. Research surrounding this question poses one underlying question: Why doesn't social collateral work in the United States?

Why Doesn't It Work?

A number of reasons could account for social collateral's lack of success in the U.S. The research on this topic differs slightly in the reasons offered to explain the

absence of social collateral in the U.S. microfinance market. Additionally, some broader

cultural research can be used to deduce a possible explanation as well. Ultimately,

research surrounds three possible reasons for the absence of social collateral: (1)) Social

Construct/Infrastructure, (2) Strategic Default, and (3) Cultural Dimensions.

Social Construct/Infrastructure:

Allen (2013) notes that one of the biggest undoings of social collateral may

simply be the lack of feasibility for group lending in the U.S. Nietert (2016) noted that

group lending thrives in areas with tight-knit societies, much like that of Bangladesh,

where Yunus had so much success (Yunus, 1999). Village settings, where borrowers

likely have pre-existing relationships, breed more successful group lending models and

higher levels of social collateral.

Therefore, the societal construct of the U.S. is cited by Allen as a major reason for

social collateral's failure. In settings such as the small-village lending groups in Yunus's

original model, borrowers could not escape the social pressure placed upon them by their

village (Yunus, 1999). Without the same interconnection in U.S. society, the same level

of social collateral is difficult to recreate.

Additionally, Yunus (1999) and Bastelater (2006), both credit freedom of

movement as a significant factor in the effectiveness of social collateral. Yunus discussed

limited freedom of movement in Bangladesh well before the creation of the Grameen

Model. In many settings, such as that which Yunus highlights in rural Bangladesh, the

inability to escape one's home town or village limits economic freedom and his/her

ability to locate employment. Conversely, Feigenberg et al. (2010) notes that this is one

of the keys to success for microlending models that rely on social collateral. The situation

is quite different in the U.S., and can be cited as yet another potential cause for the

relative ineffectiveness of social collateral. In a microfinance setting, specifically when

observing social collateral, the ability to relocate physically (and to a lesser extent, within

subgroups of society) limits the effectiveness of social collateral.

Still, in many cases, borrowers can be bound physically due to land-ownership or

employment limitations. In an interview with Robyn Nietert, the President of *The*

Women's Microfinance Initiative, Nietert cited rural settings and military bases as areas

where social collateral could be successfully implemented (Nietert, 2016). Therefore,

while U.S. social construct and infrastructure limits the effectiveness of social collateral

significantly, it doesn't completely negate its potential success in certain settings.

Strategic Default:

Without the same social consequences for defaulting on a loan, such as a

tarnished reputation, strategic default is also a major risk for MFIs in the United States.

Strategic default occurs when one (or all) of the borrowers in a group intentionally

default on a loan in a group setting shortly after receiving it. By defaulting, borrowers

pass on much of the liability to the remaining group members, while limiting personal

exposure (Allen, 2013).

Without the existence of social collateral, this problem persists, often times

forcing lenders to move completely away from the group liability model — never

allowing social collateral to begin forming in the first place. Another common issue with

strategic default is the "race to the bottom" effect that it has on a loan group. Once one

member defaults intentionally, it is not uncommon for the entire group lending structure

to fall apart shortly after (Allen, 2013).

Cultural Dimensions:

Another possible reason for the failure of social collateral in the U.S. is based on broader research surrounding cultural dimensions in different countries around the world. Geert Hofstede (2001) conducted a study comparing six cultural dimensions in different countries. The first dimension, Individualism vs. Collectivism serves as a possible explanation for the success of social collateral in some areas and its failure in others. Below is a list of some areas where individual lending models exist vs group lending models (McGuire & Conroy, 2000a, 2000b).

Individual Lending Model	Group Lending Model
• United States	• Ghana
• Switzerland	• Bangladesh
• United Kingdom	• India
• Chile	• Kenya
• Germany	• China

Using Hofstede's cultural dimension indicator to compare these countries, a clear trend exists distinguishing the two groups of countries. Below is a comparison between the countries above, on the basis of Hofstede's first cultural dimension (Hofstede, 2010).

While it would be valuable to assess the cultural dimensions of Uganda, it was not one of the countries included in Hofstede's analysis. Uganda's relative level of collectivism can be predicted by using Kenya, its neighboring country. While it is likely that the cultural dimensions differ between the two countries, Kenya is still the best representative of Uganda's level of collectivism.

Figure 1: Hofstede Cultural Dimensions by Country/Lending Model

Hofstede Cultural Dimensions By Lending Model
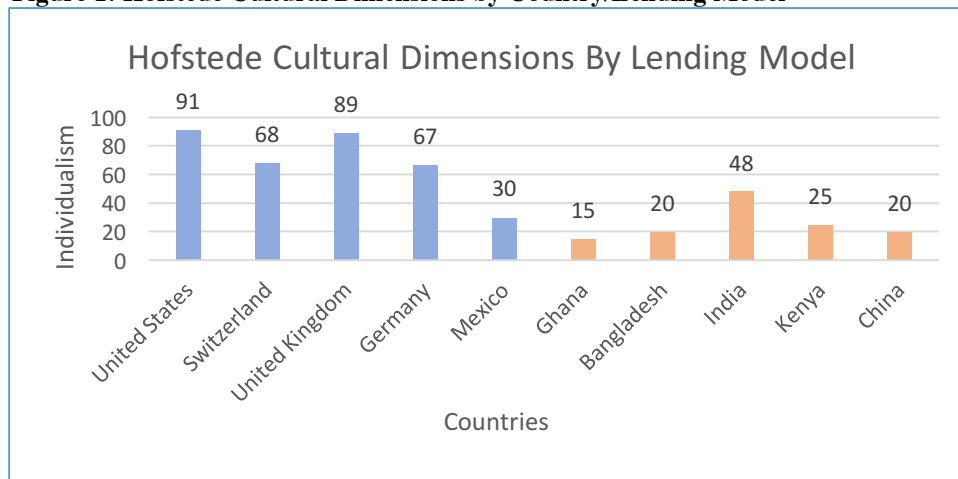
Source: **(Hofstede & Minkov, 2010)**

Not surprisingly, countries where the individual lending model persists — and thus social collateral is absent —display individualistic cultural dimensions. Conversely, the countries where group lending and social collateral are most effective display collectivist cultural trends. This trend does not stand true across all nations, of course. Mexico, for example, was ranked highly collectivistic, but its MFIs found the most success utilizing individual lending models (Rosenberg, 2007). Still, the trends suggest that social collateral is dependent on the level of collectivism a country's culture displays.

C. Other Risk-Mitigating Tools

In addition to (sometimes instead of) group lending liability, international micro-lenders also implement other tools to reduce the risk of their loans and establish collateral. Some of the most prevalent tools include:

- Meetings with loan group

- Meetings with lender

- Professional development courses

- Tangible collateral

MFIs and micro-lenders also use an array of other tools to attempt to reduce default risk. Some or all of these features were identified as impactful loan features by Cohen (2002); Chakrabary and Bass (2013); and Feigenberg et al. (2010). Each of these works assess the effectiveness of one or more of these tools, and the findings differed between sources.

Meetings with group:

The role that group interaction plays in improving repayment rate has been explored in a number of studies. Interestingly, however, the findings have been drastically different depending on the country. Van Bastelaer and Leathers (2006) found that more frequent meetings had a negative association on loan repayment rates in Zambia. In a later study, Feigenberg, Field, and Pande (2010) concluded through their study that more frequent group meetings were correlated with lower default rates in India. The study concluded that meetings with lenders may be more impactful than group lending structures with respect to creating social collateral (Feigenberg et al., 2010).

The polarized conclusions likely suggest that more research needs to be done on the subject. More importantly, they address the possibility that interactions themselves can develop relationships and build social collateral. While these studies focus specifically on interactions between borrowers within loan-groups, the possible impact of other interactions (whether positive or negative) is brought to light.

Meetings with lender:

Comparatively, virtually no research has been done on the impact of meetings between the borrower and the lender. Many of the same relationship-developing and shared-collateral theories applied above could be hypothesized about a borrower and

her/his lender. In rural microfinance operations, most borrowers already know their lender (or lending manager) personally (Yunus, 1999).

This gap will be a major focal point for my study. I will work to study and address this gap in the research section of this thesis.

Professional development programs:

Professional development programs have widely been correlated with better strategic decision-making, more successful ventures, and higher repayment rates. Chakrabary and Bass (2013) conclude that providing professional development courses are an unwritten duty because of (1) the lack of institutional training available and (2) the default risk associated with failed entrepreneurial ventures. Thus, lenders are pressured into taking on this significant opperating cost (Chakrabary & Bass, 2013).

This study also concluded that high levels of foreign direct investment (FDI) encourages MFIs to provide entrepreneurial training to its customers. For many locally funded and operated MFIs, though, the absence of outside investment makes it more difficult to bare the cost of this offering — constantly weighing the operating costs vs. default risks (Chakrabary & Bass, 2013).

While both Chakrabary and Bass (2013), as well as Carr and Tong (2002) agree that professional development courses are beneficial for borrowers — helping them increase their business acumen and reduce their risk of failure — there has been little research comparing the effectiveness of these programs with other loan features available to a lender. Often times, lenders make these strategic decisions without understanding of the true impact that programs such as personal/professional development courses have on borrower success and willingness to repay.

Additionally, the voice of the borrower is largely underrepresented with respect to the services available to her/him (Cohen, 2002). Because of the importance of these decisions for the long-term success of many micro-lenders, it is important to understand which services add the most value for borrowers when trade-offs inevitably need to be made.

D. Applying These Tools in the U.S.

Many microfinance lenders in the U.S. use some or all of the tools mentioned to establish collateral in order to mitigate risk and promote repayment. But rather than primarily reduce upward pressure on interest rates — by serving as supplementary collateral — tools such as business development programs have instead further increased upward pressure on interest and reduced overall margins (Chakrabary & Bass, 2013).

This phenomenon is a result of multiple factors, including but not limited to already-high operating costs and social collateral's relative ineffectiveness in the U.S. Nevertheless, this phenomenon leaves lenders with two options: (1) increase interest rates, or (2) limit the loan features/collateral tools in place (Chakrabarty & Bass, 2013). While Rosenberg (2013) notes that many MFIs have turned to higher interest rates, virtually every lender is also forced to face the latter. Chakrabarty and Bass point out that the "balancing act" of strategizing which loan features and collateral tools to include often leads to U.S. loans offering fewer resources for borrowers and leaving fewer risk-mitigating tools in place to protect lenders.

These are both factors to consider when studying the struggles of microfinance in the U.S. Lastly, it further increases the importance of strategic decision-making when electing which tools/features will ultimately be included in a borrower's loan package.

I will look to provide recommendations for some of these decisions in the final section of this thesis.

E. Conclusion

Due to the lack of social collateral in the United States, many MFIs turned to individual lending models, which put upward pressure on operating costs and interest rates. Unable to utilize intangible collateral, lenders have toggled with the use of other forms of collateral to mitigate risk and address the issue of higher default rates. However, considering the upward pressure that each additional loan/collateral feature places on operating costs, lenders are constrained by limited resources. Thus, MFIs are forced to balance between including various loan/collateral features, further increasing the importance of implementing the most effective and efficient set of loan features.

Understanding that social collateral likely doesn't work in the U.S. as a result of a combination of (1) social structure/infrastructure, (2) strategic default risk, and (3) cultural dimensions, little research has been done to consider other techniques for establishing social collateral. Namely, a major gap exists in research surrounding the establishment of social collateral through meetings/interactions with lenders.

Research has been conducted on a number of other sources of collateral (and risk-mitigation tools) available to MFIs. These features, however, still increase operating costs and place pressure on overall profit margins. This leaves lenders to make strategic decisions about which loan features to include and which ones to eliminate. In this space, neither research nor practice has sought to include the voice of borrowers in determining which tools are most effective at influencing repayment. Capturing the voice of the borrower will be a fundamental goal of my research methodology.

V.   RESEARCH METHODOLOGY

The data used in this study is derived from investigation results from a questionnaire (Table 1) distributed to two groups of borrowers. The study was conduct from February to March, 2017. This questionnaire was designed to collect high level information about repayment tendencies, loan features, and perceived importance of various collateral structures. This survey serves to better understand the two borrower groups (and their relative similarities/differences) and to work towards better inclusion of borrower voice in the decision-making process of lenders.

The survey contains four overarching sections. The first assesses how often borrowers (1) miss/delay a loan payment, (2) meet/interact with their lender, (3) receive business/professional development courses, and (4) meet/interact with their loan group (if applicable). The second part assesses the perceived importance of a set of six collateral features. Similarly, the third section assesses the perceived impact of each collateral feature on a borrower's business operations. Lastly, an open-ended qualitative question is posed to understand what ultimately motivates borrowers to repay.

It is important to note that small adjustments may be made during the collection of the data to maintain logical and consistent results. For example, if a borrower omitted a "Yes/No" answer for a "Do you have the following collateral?" question, but ultimately selected a level of importance for that form of collateral, it was assumed that the answer for the first question was "Yes." As a result, inferable incomplete or missing information was altered, in part, to assist the analysis of the results. Only feature-based responses were altered in this study. Ultimately, the adjustments allowed for matching sample size across various responses, allowing for cleaner and more accurate data analysis.

This section will discuss how/what data was selected, how it was analyzed, and also what limitations the study contains.

A. Data Selection

In creating and distributing this survey, the goal was to draw comparisons between two groups of borrowers in order to provide some recommendations to one or both of them, based on the other. Additionally, the survey seeks to identify and quantify trends within each group of borrowers. The two groups of borrowers belonged to two unique MFIs, which differed in location, reach, and overall success. This section will discuss how (and why) each group was selected and the metrics that were measured.

Samples:

I administered this survey to two groups of borrowers to compare overarching trends within the data. The surveys were administered to two groups of borrowers, from: *The NC Rural Center* in the U.S. and *The Women's Microfinance Initiative (*WMI*)* in Uganda. The two groups share some interesting similarities, but differ in the social settings in which they operate and many of the loan features that they offer. Below is a comparison of the two lenders.

Table 2: Loan Services & Features, NC Rural Center vs. WMI Uganda

MFI/Loan Features	NC Rural Center	WMI Uganda
Lending Model	Individual Lending Model	Group Lending Model
Primary Market	Low-Income Rural Borrowers	Low-Income Rural Women
Active Borrowers	67	4,250
Relative Loan Size	$5,000- $25,000	$4,000 - $20,000 (Adjusted for GDP per Capita)
Interest Rate	U.S. Prime + 4% (8-9%)	10%
Collateral	• Home/Property Collateral • Credit Score Rating • Promise of Future Loan • Strict Repayment	• Social Collateral • Group-Based Collateral • Loan Group Meetings • Promise of Future Loan • Strict Repayment
Required Meetings With Lender	No	Yes
Professional Development Program	One-time-only. Prior to first loan.	Yes. Periodic Course Offerings.
Default Rates	~13%	2-3%

These two groups differ significantly, especially in size, location, loan features, and overall success. The most important differences for this study are the loan features, collateral features, and overall success of the two MFIs — which will be measured in default rates. The results from each group will be analyzed to draw correlations between various features and certain borrower preference and overall success indicators.

While neither is a perfect comparison, each sample was also selected to represent two larger groups of lenders. As mentioned in the introduction, the NC Rural Center shares a number of similarities with the average U.S. microfinance lender, especially in terms of collateral features and default rates. While a number of key differences exist, especially considering the limited scale and reach of the NC Rural Center, parallels exist between the struggles of the Rural Center and those of the larger U.S. market.

Additionally, *WMI* is among the many international MFIs that have enjoyed high growth and repayment rates. Of course, with the massive variance in MFI success from country-to-country, it would be unwise to use WMI as a reference for the entire international microfinance landscape. Instead, it serves as an example of a highly successful MFI, largely due to the successful use of social collateral.

Overall, these two samples will be utilized for comparisons against each other, with the ultimate goal of providing recommendations or feedback to the NC Rural Center, which has struggled with high default rates. When relevant, some recommendations may be extended to MFIs within the United States, though largely without the backing of statistically significant data, considering the size and diversity of the U.S. microfinance market.

Survey Questions:

This short questionnaire seeks to measure a number of descriptive and potentially predictive metrics, but most importantly it seeks to include the borrower's voice with respect to the effectiveness of various collateral tools. In crafting this survey, I pulled from various sources to design each question. In short, five questions are posed to the borrowers to assess the following:

- Number of late/missed payments in the past 2 years.

- (Some) Loan Features

- Importance of Collateral

- Impact of Collateral on Business

- Motivation to Repay

Late/Missed Payments: (Figure 4)

While certainly not exact, this question provides a baseline measurement for each borrower's repayment history and serves as a predictor of risk of loan default. Though this question is largely based on borrower memory, it still serves as a valuable metric to refer back to when considering the impact of the explanatory variables throughout the rest of the survey. Additionally, it is used by lenders to determine the potential risk of lending to borrowers, which will be explained below.

Because surveys are collected from two larger groups, this question serves as a proxy to quantify loan loss/default on a borrower-to-borrower basis. By assessing how many payments a borrower has missed or been late on, we can begin to draw correlations between repayment and other factors on a person-to-person basis, rather than MFI-to-MFI or country-to-country. Thus, this metric can be used as a dependent variable during the data-analysis phase.

This metric is also used by the NC Rural Association, to assess the potential risk of default for individual borrowers. According to Amanda Young, the Director of Entrepreneurship at the NC Rural Center, past borrowers are generally placed into one three categories when being considered for a follow-up, which help the bank predict the risk of future loan loss. While each loan is still reviewed on a case-by-case behavior, this metric is used to mitigate risk for borrowers who habitually miss or delay payments.

Figure 2: NC Rural Center Risk Buckets

Minimal Risk (0% - 15%)	Medium Risk (~40%)	High Risk** (85%-90%)
Never	2	4
1	3	5 or More
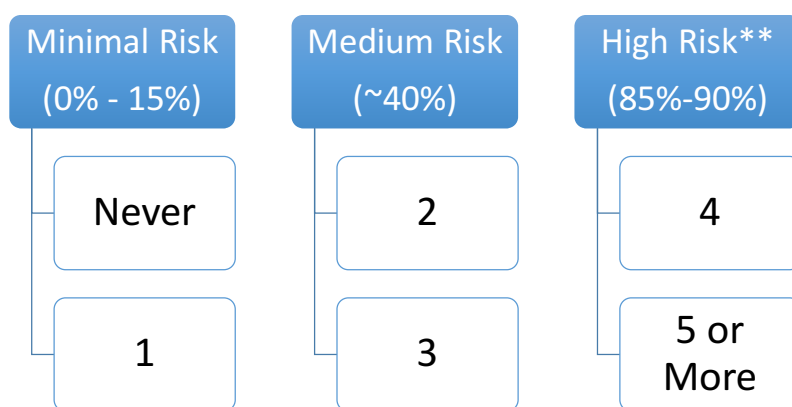
**It is extremely rare for a past borrower who classifies as "High Risk" to receive a follow-up loan. Some exceptions have been made, however.

The data collected from this question is valuable because it provides borrower-specific information with respect to loan default/late payment. It also helps forecast a borrower's potential risk for future default, which is a valuable predictive measure. While I will not implement these buckets in my data analysis, because they only apply to past NC Rural Center borrowers, these three census-backed buckets allow me to operate with the assumption that a borrower with more payments missed or payed late are riskier than borrowers with less late or missed payments. Predictably, this will impact my recommendations significantly.

<u>(Some) Loan Features:</u>

The second set of questions asks borrowers how often they (1) meet/interact with their lender, (2) receive business/professional development courses, and (3) meet/interact with their fellow borrowers. Responses from this question provide two valuable types of data. The first serves to identify which (if any) loan features they have. This list is not extensive because I set out to focus on a select few features. For both the NC Rural Center and WMI, I was able to identify the universal loan features that exist within each, so this won't be novel data. Though, these three features can be used as dummy variables if needed.

More importantly, this question provides data about the frequency of each of these activities. This, much like the first question, will provide borrower-specific information, which would otherwise be unavailable. Using responses for each, I will also be able to draw connections between borrower opinions (below sections) and the frequencies of each activity. These metrics can be used as explanatory variables for analyzing relationships with every other response in the survey except those from the final (open-ended) question.

Lastly, and especially critical to this study, this section introduces meetings/interactions with one's lender. By assessing how often borrowers meet with their lenders, a connection will be made to the successive sections to analyze whether meetings with lenders can influence borrowers to repay their loans. Thus, the possibility of lender meetings as a form of social collateral can be further explored. This is one of the focal points of my thesis, because this concept has been virtually ignored in the past.

<u>Importance of Collateral:</u>

The third and fourth sections are likely the most important in the entire survey. In these sections, the borrower is given a voice, which is a major gap in current microfinance and collateral research. Borrowers identify which forms of collateral they have. These "Yes/No" responses will be used as dummy variables for potential regression analyses. Below are the forms of collateral included:

- Loan Group Meetings
- Meetings with Lender
- Strict Repayment Periods

- Interest Payments
- Home/Property Collateral
- Other

In addition to identifying whether they have each form of collateral listed, borrowers will also be asked, "How important is each factor in influencing you to repay your loan?" in Section 3 and "How do each of these factors impact your ability to do business?" in Section 4.

The questions in section three will gauge how important each form of collateral is, thus translating how effective (or ineffective) each form of collateral is for motivating each individual borrower to repay. This section focuses on the effectiveness of the actual collateral, which is a key metric for lenders who are faced with mutually exclusive collateral-establishment decisions.

Similarly, section four will assess the impact that collateral features have on business, in the eyes of the borrower. This data speaks to both the impact of various collateral structures on day-to-day business, but also the perceptual process of each borrower. Obviously, if many borrowers find that one form of collateral increases their

entrepreneurial success, while effectively motivating them to repay, this should be a

focus for lenders going forward.

<u>Motivation to Repay:</u>

The final question in this survey seeks to gather information that was either

overlooked in the survey-creation process or impossible to capture through Likert-Style

survey questions. These results will be (largely) unquantifiable, but they will still provide

valuable insight into the minds of the borrowers and what motivates them to ultimately

repay their loans. Results form this section will occupy the qualitative analysis portion of

this study.

B. Data Analysis

In order to fully understand and synthesize the survey results, I will use a

combination of quantitative and qualitative data analysis. Using quantitative data, I will

first seek to find patterns within each group's respective results as well as identify and

compare/contrast data from each of the two borrower groups. Furthermore, I will seek to

qualitatively analyze the quantitative data results, when applicable. Lastly, I will utilize

the open-ended section of this questionnaire to draw deeper insights from borrowers and

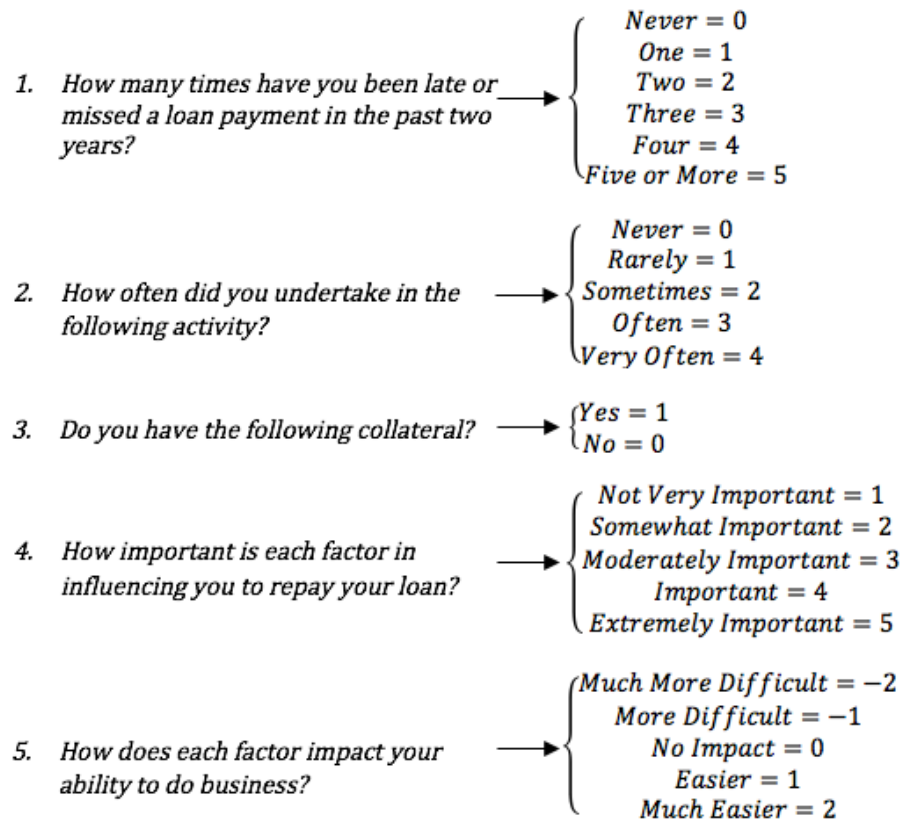generate a more robust analysis.

Quantitative Analysis

<u>Quantifying the Data</u>

As one can note, there are no continuous numerical results on the questionnaire

(Figure 4). In fact, the majority of the responses, such as level of importance, are

qualitative in nature. Thus, the first step of my analysis is to quantify the different

response points. This will allow for the use of various data-analysis tools on the dataset,

which was otherwise unfeasible with qualitative responses.

Still, however, all of the responses throughout the questionnaire are categorical.

This means borrowers can only fall into one of the designated boxes, rather than

reporting on a continuous scale. This, in fact, limits some of the analytical tools and

programs that can be used. Overall, this technique still proves to be a powerful technique

when analyzing categorical data. Below is a quantification of each response in the

questionnaire.

Figure 3: Coding Method for Survey Questions

1. *How many times have you been late or missed a loan payment in the past two years?* $\longrightarrow$ $\begin{cases} Never = 0 \\ One = 1 \\ Two = 2 \\ Three = 3 \\ Four = 4 \\ Five\ or\ More = 5 \end{cases}$

2. *How often did you undertake in the following activity?* $\longrightarrow$ $\begin{cases} Never = 0 \\ Rarely = 1 \\ Sometimes = 2 \\ Often = 3 \\ Very\ Often = 4 \end{cases}$

3. *Do you have the following collateral?* $\longrightarrow$ $\begin{cases} Yes = 1 \\ No = 0 \end{cases}$

4. *How important is each factor in influencing you to repay your loan?* $\longrightarrow$ $\begin{cases} Not\ Very\ Important = 1 \\ Somewhat\ Important = 2 \\ Moderately\ Important = 3 \\ Important = 4 \\ Extremely\ Important = 5 \end{cases}$

5. *How does each factor impact your ability to do business?* $\longrightarrow$ $\begin{cases} Much\ More\ Difficult = -2 \\ More\ Difficult = -1 \\ No\ Impact = 0 \\ Easier = 1 \\ Much\ Easier = 2 \end{cases}$

This coding method is widely used when analyzing Likert-Style survey results.

The logic behind this quantification method is far from perfect, but it still serves as an

effective way to translate the responses numerically. The primary flaw with this method

is that it sets rigid, relative standards for a set of subjective responses. Not only does

"Somewhat Important" carry a different meaning from borrower to borrower, this method

also treats it as half as important as a response selecting "Important."

This is one of the shortcomings of Likert survey questions, but this method still

stands as the most common and reliable way to gauge subjective thoughts from

respondents. So, while it is expected that there is some level of error derived from the

subjectivity of the response options and their codification, the overall results are

trustworthy and synthesizable. With the survey data denoted numerically, I then began

my analysis by observing a set of comparative statistical measures.

Comparative Statistics:

As a preliminary form of analysis, I will compare the results for the two borrower

groups against each other by section within the survey. Through the use of sample means,

standard deviations, and medians (when necessary), this comparative statistics section

will provide an overview of where each microlender stands relative to the other.

First, I will utilize two-sample t-testing to compare sample means (across

responses) between the NC Rural Association borrowers and the WMI borrowers. I will

compare sample means for (1) late/missed payments, (2) activity frequency, and (3)

collateral importance. I will seek to either accept or reject the H_0, or null hypothesis, that

the two sample means are the same. This will allow me to better predict whether

differences exist between the two populations, based on the samples. These underlying

differences, if my analysis finds that they exist, must be taken into consideration when

forming recommendations as well.

It is important to make one key note about the use of means with these survey results. As mentioned before, the data collected through this questionnaire is categorical, rather than continuous, data. In calculating means, however, the mean will most likely exist as a decimal between two categories (e.g. Often (3) < μ = 3.71< Very Often (4)). Because these are subjective scales, these means can be treated continuously despite the categorical nature of the response options themselves.

While these comparative statistical methods serve as an effective method for displaying and comparing data, there are a few shortcomings with these specific tools. Most notable is the limited sample size of this questionnaire, relative to the overall population size — especially with the Women's Microfinance Initiative. This makes it difficult to conclude that the sample represents the overall population well, reducing confidence intervals and often thwarting attempts to establish statistical significance. The issue of sample size will be discussed further in the limitations section below.

Regression Analysis:

To take a step beyond comparative data analysis, I will utilize statistical regressions to better understand and predict the relationships between each of the survey questions (15 in total). While regression analysis for this type of data does pose some challenges, it is still a useful method for analyzing correlation and the statistical significance of certain relationships.

After the regressions are conducted for each borrower group, the results will be compared side-by-side to determine if any similarities, differences, inefficiencies, or opportunities exist for either group.

Multiple Linear Regression

I will leverage both multiple and single linear regression models for my data analysis. Both by design and as a result of customer insight — which will be elaborated upon in the qualitative analysis section — some survey questions will act as both response (dependent) variables and explanatory (independent) variables, depending on the regression that is being conducted.

The multiple linear regression model will be used to analyze how numerous factors can explain the variation in late/missed payments. Four separate multiple regressions will be conducted to investigate the impact of Section 2, Section 3, and Section 4 on loan repayment. Additionally, a larger multiple linear regression will be run on the entire dataset. The multiple linear regression model serves to estimate coefficients, using the Ordinary Least Squared (OLS) method, which can be written as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \beta_n X_n + E_i$$

Where β_0 is the intercept, β_n is the coefficient associated with X_n, an explanatory variable for the response variable: Y_i. This method is applied because it allows us to control for a number of factors that could simultaneously impact Y_i.

For this study's multiple regression analyses, the variables can be defined as follows:

Table 3: Multiple Regression Models

WMI	(Section 2)	Late/Missed Payments	Frequency				
			Lender Meetings	Business/Prof. Dev. Courses		Loan Group Meetings	
Both	(Section 3)	Late/Missed Payments	Importance				
			Loan Group Meetings	Lender Meetings	Strict Repayment	Interest	Home/ Property
Both	(Section 4)	Late/Missed Payments	Impact on Business				
			Loan Group Meetings	Lender Meetings	Strict Repayment	Home/Property	
Both	Combined	Late/Missed Payments	↑	All of the Above		↑	

These four regressions will help to highlight any statistically significant coefficients with respect to late/missed payments. After conducting the regressions for each group, I will also compare the statistically significant coefficients (if any) of each. Beyond statistical significance, I will also leverage line-fit/residual plots to identify any trends that may provide some added insight, even if they do not prove statistically significant. This will likely be out of necessity, considering the limitations of this study.

Single Regression:

In addition to the multiple linear regression, I will also conduct some single regressions to directly assess the relationship between sets of variables. The formula for multiple linear regressions can be simplified for single regressions to:

$$Y_i = \beta_0 + \beta_1 X_1 + E_i$$

As mentioned before, some of the dependent variables for these analyses were independent variables for the previous (multiple) regression models. These variables in these single regressions were paired based on logical relevance and lender/borrower insights. The following single regressions will be carried out:

Table 4: Single Regression Models

Group	Single Regression	Y_i - Dependent Variable	X_n – Independent Variable
Both	Impact of Lender Meetings/Interactions (Importance)	Importance in Influencing Repayment (Section 2)	Frequency of Meeting/Interaction
WMI	Impact of Loan Group Mtgs. (Importance)	Importance in Influencing Repayment	Frequency of Loan Group Meeting/Interaction
Both	Impact of Lender Mtgs./Interactions (Business)	Perceived Impact on Business	Frequency of Meeting/Interaction
WMI	Impact of Loan Group Mtgs. (Business)	Perceived Impact on Business	Frequency of Meeting/Interaction
WMI	Impact of Business Training (Repayment Periods)	Perceived Impact on Business	Frequency of Business Development Course
Both	Average Importance (Late/Missed Payments)	Late/Missed Loan Payments	Average Collateral Importance
NCRC	Home/Property Collateral (Importance)	Late/Missed Loan Payments	Importance in Influencing Repayment

*Some regressions can only be run on one borrower group because of the individual vs. group lending structure. Additionally, only the NC Rural Center utilizes physical (home/property) collateral.

Qualitative Analysis:

In addition to the quantitative portion of my data analysis, I will also qualitatively analyze the questionnaire results. This analysis will come from two places in the survey: (1) the "other" option at the end of sections three and four, and (2) the open-ended question to end the survey. These purely qualitative results will add deeper borrower insight into this study and make it more robust.

While reading through these two sections, I will be looking for recurring comments/themes that may signal a shared opinion among borrowers. I will also be searching for signs of cultural difference, namely collectivism vs. individualism. In the open ended question — which asks "What motivates you to pay back your loan?" — this will manifest itself in the individualistic (wealth, personal responsibility, etc.) or collectivistic (helping future borrowers, improving community, etc.) motifs that may exist in the responses.

But most importantly, the qualitative responses will serve as a place for borrowers to answer questions that I should have asked, but didn't. The questionnaire creation process is inevitably imperfect, and this section may bring to light important phenomenon that I may have overlooked completely. This will be the focus of the qualitative analysis piece of my research.

C. Limitations

It is important to note that numerous factors and circumstances exist that may limit the success of this study and its ability to fully answer the hypotheses posed. The most significant limitations for this study are (1) sample size, (2) borrower bias, and (3) variables selected/tested.

Without a doubt, the biggest limitation of this study is the sample size. Due to limited time, funding, and lender cooperation, the sample size for the two borrower groups is rather small. This will limit, significantly, my ability to establish statistical significance throughout my data analysis. It may be the case, in fact, that the sample size limits any statistically significant conclusions to be made. In this case, I will work to analyze and synthesize the data to make some observations, though they may need further testing to be proven statistically significant.

In addition, borrower bias is a limitation that may skew the data one way or another, reducing its reliability. Borrowers may show an unwillingness to report negative information about themselves, such as late/missed payments, despite the anonymity of the survey. Thus, borrowers may misrepresent facts, whether intentionally or not, due to internal biases. Furthermore, the subjectivity associated with the questions posed may allow for this issue to be exacerbated. One of the biggest limitations with Likert Scale

questions is that "often" or "important" have a different meaning from a person-to-person or borrower-to-borrower basis. This, however, is simply a risk associated with probing and quantifying consumer opinions. Additionally, the memory of borrowers is a potential limitation of this study. Borrowers are asked to recall how many late/missed payments they have had in the past two years, which opens the door for inaccurate responses.

Lastly, while I based my explanatory factors on past research, these factors are just some of the many factors that can impact a microfinance borrower. It is possible that other statistically significant factors were omitted, or that the factors included are falsely given statistical significance based on this error. But, by using other research and lender insights as a benchmark for my factors, I hope I have mitigated this risk.

VI.   RESULTS

Before diving into the data analysis and key findings, it is important to consider the purpose of this research and the reasonable expectations for the significance of its results. Understanding the resource constraints and limitations associated with the the data-collection process, this study will serve a largely exploratory purpose. Because the study seeks to address a major gap in microfinance research and literature, far more research would have to be conducted to back up and solidify the findings of this study. Additionally, a far wider net would need to be cast in order to draw significant conclusions about larger microfinance markets or the international landscape as a whole.

Nevertheless, by analyzing and comparing the findings from each of these two borrower groups, I was able to spot some interesting trends and utilize the tools highlighted previously to draw statistically significant associations within the data. In this chapter, I will discuss the overall data, my statistically significant findings, and how they compared to some of my predictions before the study. In this chapter, I will address:

- Comparative & Descriptive Statistics

- Results from Multiple & Single Regression Calculations

- Findings from Qualitative Analysis

A. Comparative & Descriptive Statistics

Just by taking a high-level look at the questionnaire results, a few noteworthy observations can already be made. In this section, I will discuss the results from the comparative analysis of sample means for (1) late/missed payments, (2) lender meetings, and (3) collateral importance. The following page contains graphics depicting the descriptive statistics for the two samples.

Table 5: Comparative Descriptive Statistics, NC Rural Center vs. WMI-Uganda

	Occurrence (Past 2 Years)		Frequency of Activities						Importance of Collateral in Influencing Repayment									
	Late/Missed Loans		Lender Interaction		Bus/Prof. Dev. Course		Loan Group Interaction		Loan Group Meetings		Lender Meetings		Strict Repayment Periods		Interest Payments		Home/Property Collateral	
	NC Rural Center (A)	WMI - Uganda (B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
N	35	28	35	28	-	28	-	28	-	28	35	28	35	28	35	28	35	-
Sample Mean	1.17	1.14	1.74	3.64	-	3.00	-	3.79	-	4.00	2.60	3.82	3.49	3.61	3.66	3.32	4.03	-
Median	0.00	0.50	2.00	4.00	-	3.00	-	4.00	-	4.00	2.00	4.00	4.00	4.00	4.00	4.00	5.00	-
Standard Deviation	1.67	1.51	1.17	1.31	-	0.94	-	1.10	-	1.09	1.54	1.19	1.52	0.99	1.45	1.09	1.32	-

Table 6: Collateral Importance Breakdown (NC Rural Center)

Collateral Importance Breakdown (NC Rural Center)

Question	n	Not Very Important	Moderately Important	Somewhat Important	Important	Extremely Important	Total
Meetings/Interaction with Lender	35	9%	9%	20%	34%	29%	100%
Strict Repayment Periods	35	11%	11%	17%	23%	37%	100%
Interest Payments	35	14%	11%	6%	31%	37%	100%
Home/Property Collateral	35	6%	14%	6%	20%	54%	100%

Table 7: Collateral Importance Breakdown (WMI-Uganda)

Collateral Importance Breakdown (WMI - UGANDA)

Question	n	Not Very Important	Moderately Important	Somewhat Important	Important	Extremely Important	Total
Meetings/Interaction with Lender	28	4%	11%	25%	21%	39%	100%
Loan Group Meetings	28	4%	7%	14%	36%	39%	100%
Strict Repayment Periods	28	4%	7%	32%	39%	18%	100%
Interest Payments	28	11%	11%	18%	57%	4%	100%

Late/Missed Payments:

Interestingly, the sample means for the two borrower groups were highly similar with respect to the late/missed payments metric. Despite the different loan features and collateral structures, the sample means differed by just .03, though the NC Rural Center sample's higher Standard Deviation (1.67) suggests more polarized data than the WMI borrower group (1.51). By using standard errors to estimate the population means for these two groups, the similarity is highlighted further. The formula can be written as:

$$\mu = \overline{x} \pm SE$$

Where μ is the population mean, and $\overline{x} \pm SE$ is the sample mean and standard error, which are used to estimate how far off the estimation would likely be. Standard Error can be calculated by using the following formula:

$$SE = \sigma/\sqrt{n} \qquad \longrightarrow \qquad SE = S/\sqrt{n}$$

In this formula, σ represents the standard deviation of the population. Since that information is not available, it is acceptable to utilize the standard deviation of the sample mean as an estimate. Below are the calculations for the estimated population mean of each borrower group.

$$\mu_{WMI} = \overline{x_{WMI}} \pm SE \longrightarrow SE = 1.51/\sqrt{28} = .285 \longrightarrow \mu_{WMI} = 1.14 \pm 0.285$$

$$\mu_{NCRC} = \overline{x_{NCRC}} \pm SE \longrightarrow SE = 1.67/\sqrt{35} = .282 \longrightarrow \mu_{NCRC} = 1.17 \pm 0.282$$

Using this formula, we can estimate with 95% certainty that the population mean for the NC Rural Center with respect to late/missed loan payments is between 0.888 and 1.452. Additionally, we can also estimate with 95% certainty that the population mean for

WMI-Uganda is between 0.855 and 1.425. Additionally, by conducting a 2-sample t-test,

we conclude that we cannot reject the null hypothesis that there is no difference between

the two population means. Prior to this study, I assumed that the late/missed payments

would be significantly higher for the NC Rural Center, which it still may be, but the data

collected does not indicate that there is a significant difference between the two

populations. It will be important to keep this finding in mind when analyzing how

different forms of collateral impact the *late/missed payment* trends for these two samples.

Lender Meetings:

Just at first glance, the sample means for the two borrower groups seem vastly

different, with respect to how frequently borrowers meet/interact with their lender. The

NC Rural Center's sample mean is 1.74 (~Sometimes), compared to WMI's sample mean

of 3.64 (Often–Very Often). After conducting the same calculations as above, this

difference is further highlighted. We can estimate with 95% certainty that the population

mean for the NC Rural Center with respect to lender meeting/interaction frequency is

between 1.94 and 1.54. Additionally, we can estimate with 95% certainty that the

population mean for WMI-Uganda with respect to lender meeting/interaction frequency

is between 3.39 and 3.89.

After conducting a two-sample t-test on these two sample means, we find that the

difference between the sample means is significant. Thus, we can reject H_0, the null

hypothesis, that the two means are the same. This stark difference between the two

borrower groups will be a focal point of my discussion and recommendations sections.

Collateral Importance:

After conducting two-sample t-tests on the level of importance of each type of collateral, my findings show that there is no significant difference between the two samples with respect to any of the five types of collateral. Before conducting the analysis, I predicted that the two sample means were statistically significant with respect to the importance of lender meetings/interactions. Lender meetings had an average importance of 3.82 (~Important) for WMI-Uganda borrowers, compared to an average importance of 2.60 (~Somewhat Important) for NC Rural Center borrowers. Despite a seemingly significant difference between the two borrower groups in terms of importance for lender meetings/interactions, statistical testing determined that we cannot reject H_0, the null hypothesis, which states that the two population means are the same. This difference in sample means, while not significant, does indicate a need for further testing.

B. Multiple Regression Calculations

A number of multiple linear regressions were conducted for this study, seeking to explain the number of late/missed payments for each borrower group based on various independent variables. Seven multiple regression tests were conducted in all, as shown in Table 3, which is repeated below for reference. In this section, I will discuss the findings from each of the regressions and compare the results across each borrower group.

Table 3 - Repeated

Group	Multiple Regression	Y_i - Dependent Variable	X_n – Independent Variables				
WMI	1 (Section 2)	Late/Missed Payments	Frequency				
			Lender Meetings	Business/Prof. Dev. Courses		Loan Group Meetings	
Both	2 (Section 3)	Late/Missed Payments	Importance				
			Loan Group Meetings	Lender Meetings	Strict Repayment	Interest	Home/ Property
Both	3 (Section 4)	Late/Missed Payments	Impact on Business				
			Loan Group Meetings	Lender Meetings	Strict Repayment	Home/Property	
Both	4 Combined	Late/Missed Payments	All of the Above				

First Regression:

The first regression, which was only run on the WMI-Uganda sample, sought to use the frequency of lender meetings, business/professional development course, and loan group meetings to explain the change in late/missed payments. This regression was not run on NC Rural Center borrowers because the last two independent variables did not apply to that sample. After running a multiple regression, the findings showed that the frequency of *loan group meetings* had a **negative** association with *late/missed payments*. The coefficient (-0.9504) had a P-value (0.00018) that was significant at 5%. This result supports the underlying principle that loan group meetings/interactions are designed to positively influence loan repayment. These findings also support the findings of Feigenberg et al (2010) in their study.

Second & Third Regression:

The second and third regressions also featured interesting results, including one major similarity. These two regressions — which seek to measure the association between the importance of the five collateral features discussed and late/missed payments — both found that *the importance of lender meetings* had a **negative** association with *late/missed payments*. The WMI-Uganda regression showed that lender meetings had a coefficient of -1.009 and a P-value of 0.00713, which is significant at 5%. Similarly, the NC Rural Center regression showed that lender meetings had a coefficient of -0.7799 and a P-value of 0.002, which is also significant at 5%. While further data collection is necessary, this finding indicates the possibility of lender meetings as a potentially viable form of collateral. It should be noted that the number of lender meetings for the NC Rural

Center was significantly lower than WMI-Uganda, showing that lender meetings showed similar negative association in two significantly different settings.

Fourth & Fifth Regression:

The fourth and fifth regressions sought to establish some association between the impact of each collateral feature on business and the late/missed loan payments for each borrower group. The results showed that there was no significant association between the impact that any of the collateral features had on business (whether positive or negative) and late/missed loan payments.

Sixth & Seventh Regression:

The final two multiple regressions combined all of the independent variables above, to assess whether any statistically significant association could be found between the 12 variables and the number of late/missed payments. The regression found that there were no statistically significant variables at either 10% or 5% significance. This was not unexpected, considering the sample size of the two survey groups. More expansive research might still find that one of the variables has a statistically significant impact on loan repayment.

C. Single Regression Calculations

In addition to running multiple regressions, several single linear regressions were also conducted to take a deeper look at the individual relationships between certain variables within this study. A total of 10 single regressions were conducted, with three conducted for each samples (six regressions in total), three conducted on the WMI-Uganda sample only, and one conducted on the NC Rural Center sample. The table below illustrates the results of each regression.

Table 8: Single Regression Results, WMI-Uganda vs. NC Rural Center

Reg. No.	Y_i - Dependent Variable	X_n – Independent Variable	WMI-Uganda Result		NC Rural Center Result	
Ex.	Importance of Meetings (Mtgs.)	Frequency of Meetings (Mtgs.)	+/–/ o	Coefficient P-Value	+/–/ o	Coefficient P-Value
1	Importance of Lender Mtgs.	Frequency of Lender Mtgs.	+	0.517467 0.009833**	+	0.490820 0.004825**
2	Business Impact of Lender Mtgs.	Frequency of Lender Mtgs.	o	— —	+	0.258261 0.068886*
3	Late/Missed Loan Payments	Average Collateral Importance	–	-1.321157 0.008763**	o	— —
4	Importance of Loan Group Mtgs.	Frequency of Loan Group Mtgs.	+	0.336244 0.076706*	N/A	N/A N/A
5	Business Impact of Loan Group Mtgs.	Frequency of Loan Group Mtgs.	o	— —	N/A	N/A N/A
6	Business Impact of Prof. Courses	Frequency of Prof. Courses	o	— —	N/A	N/A N/A
7	Late/Missed Loan Payments	Importance of Property Collateral	N/A	N/A N/A	–	-0.596414 0.004390**

*Significant at 10%; **Significant at 5%

Note: Correlations and P-values for regressions resulting in 'o', or no association are omitted for table readability.

Considering that multiple regressions for both WMI-Uganda and the NC Rural Center showed a statistically significant association between importance of lender meetings and late/missed payments, I anticipated a positive association between frequency of lender meetings and importance of lender meetings for both groups as well. The first set of regressions supports this, showing that there is, in fact, a positive association between frequency of lender meetings and importance of lender meetings for both samples.

Additionally, the second set of regressions identified a positive association between the frequency of lender meetings and business impact of lender meetings. The positive coefficient is, however, relatively small. This finding is notable because it differs

from the regression result for the WMI-Uganda sample, which found no statically

significant association between the two variables.

Average collateral was a metric developed based on the results. Average collateral

calculated the overall average of the importance assigned to each of the collateral features

combined. This metric helped to identify how important overall collateral was to each

borrower, and sought to identify if any significant associated existed between this metric

and late/missed payments. The two regressions run found that there was a negative

association between average collateral importance and late/missed loan payments for the

WMI-Uganda sample, but no such association was found for the NC Rural Center

sample.

Additionally, an individual regression was conducted to follow up the findings for

the first multiple regression, which established negative association between frequency of

loan group meetings and late/missed payments. This regression found a significant

positive association between frequency of loan group meetings and importance of loan

group meetings. This finding, too, would support the research conducted by Feigenberg

et al (2010).

Lastly, by conducting a single regression on the relationship between importance

of home/property collateral and late/missed payments, a statistically significant negative

association was found between the two. No association was found with respect to the

importance of home/property collateral during any of the multiple regressions, but this

positive association could signal a potentially significant association between the two

variables through multiple regression analysis upon further (more robust) research.

Generally, individual regression analyses hold less weight than multiple regressions due to the low R^2 values within each regression analysis. Multiple regressions tended to have higher R^2, meaning they explain a higher percentage of the change in the dependent variable. Still, these individual regressions help to signal potential correlations, which likely need to be supported by further research.

D. Qualitative Results

In addition to quantitative analysis, this study also included qualitative analysis to identify trends that data could not capture or important questions that the survey may not have asked. Overall, two notable trends were gathered from conducting qualitative analysis of the results: (1) Individualism vs. Collectivism, and (2) Business/professional development courses as potential collateral. The first serves to both to support the research on cultural dimensions, which was mentioned in the Literature Review, and to point out a form of collateral that the survey fails to address. The second, and perhaps most intriguing, pointed out a hole in the survey, and highlights an area that requires future research.

Open-Ended Final Question:

The final question in this survey asks borrowers a simple question: "What motivates you to pay back your loan?" in hopes of identifying some trends in the responses. This question helped to point out a form of collateral that the survey fails to address within the WMI-Uganda borrower group. Additionally, the results from this data provided insight on the differences in cultural dimension between the NC Rural Center and the WMI-Uganda borrower groups, specifically with respect to collectivism vs. individualism. After reading through the comments, the responses began to fall into three

buckets: (1) Comments about promise of future loans, (2) Individualistic comments, and (3) Collectivistic comments. The latter two are directly linked, and will be discussed separate of the first bucket.

<p align="center">Promise of Future Loans:</p>

Between the two borrower groups, the 'promise of future loans' differed slightly, though it existed for both. For WMI-Uganda borrowers, the promise of future loans exists as part of the group-lending structure that WMI utilizes. This indicates a form of collateral that was not directly addressed by the survey. While the survey addresses loan groups as a form of social collateral, the promise of future loans is not included exclusively as its own form of collateral. Of the 28 survey responses, eight mentioned the promise of future loans as what motivates them to repay their loans. This indicates, as mentioned in the Limitations section, one of the possible explanatory factors that is not accounted for in this survey.

For the NC Rural Center borrower sample, the responses cite the importance of maintaining their credit scores in order to preserve access to future loans. Nineteen borrowers cited this as the reason they repay their loans. While the two differ, they could both act as potential forms of collateral that are not addressed by the survey questions, indicating the need for expanded research with the inclusion of this factor.

<p align="center">Individualism vs. Collectivism:</p>

To analyze the differences in cultural dimensions between the two samples, I conducted a simple comparison of the two samples, understanding that the results are merely exploratory. It is important to note that the analysis of these responses is largely subjective. To minimize on personal bias, I used a simple rule to differentiate between

individualistically-centered responses and collectivistically-centered responses. If the response spoke about internal motivation or self-preservation, it was considered individualistic. If the response mentioned other borrowers, future borrowers, or the notion of paying-it-forward, it was considered collectivistic. If neither was mentioned, or there was a level doubt, I did not place the response in either category.

For WMI-Uganda borrowers, 13 borrowers had collectivistic responses compared to just four with individualistic responses. A few pertinent examples of collectivistic responses include:

- *"I repay because it helps keep the loan program operating to give loans to other women. So that others can benefit."*

- *"I finish it so others can get a loan. I have benefitted from loan program and want other women to benefit."*

- *"I do not want to disappoint or fail friends in the loan group. Once you miss payments, you lose respect."*

The following were among the 13 collectivistic responses for the WMI-Uganda borrower sample. Conversely, only two of the borrowers from the NC Rural Center group had collectivistic responses, compared to 12 individualistic responses. Some examples of individualistic responses include:

- *"Self-discipline and personal motivation. To keep my business growing."*

- *"To clear my books and grow my business."*

While these responses don't definitively establish a cultural difference between the two borrower groups, it is interesting to note that WMI-Uganda borrowers had far more collectivistic responses than individualistic ones, while NC Rural Center borrowers

had six times as many individualistic responses as collectivistic ones. These responses

bring light to the cultural differences between the two. Still, the existence of collectivistic

responses in the NC Rural Center sample and individualistic responses in the WMI-

Uganda borrower sample indicate that collectivistic and individualistic borrower

mentality can exist within both countries.

"Other" Form of Collateral:

Another intriguing finding was a powerful trend in the response titled "other" as a

form of collateral. This question was also designed to capture forms of collateral that this

survey may have missed. After reading the responses, borrowers in the WMI-Uganda

sample provided valuable insight with respect to a form of collateral that I, the lender,

and virtually all of the research surrounding microfinance and collateral seem to have

overlooked. Surprisingly, 24 of the 28 borrowers entered business/professional

development courses as an important form of collateral. Furthermore, 20 of the 24 said it

was an "Extremely Important" factor in influencing them to repay their loan. This

phenomenon will be discussed further in the discussion section.

VII.   DISCUSSION

In this section, I will discuss the key findings from this study and what the takeaways may signal for lenders. Lastly, I will provide a recommendation for the NC Rural Center based on these findings.

A. Key Findings

The key findings of this study are that, for both borrower groups, there is a significant negative association between the importance of meetings/interactions with lenders and late/missed payments. This negative association parallels the relationship that would ideally exist between collateral and loan repayment. Additionally, single regression analyses found a positive association between frequency of meetings with lenders and importance of lender meetings for both borrower samples. These two findings highlight an opportunity and the potential action to best capitalize on this opportunity.

Furthermore, a negative association was found, through the use of a single regression, between the importance of home/property collateral and late/missed payments fort he NC Rural Center borrower group. It is important to note however, that no significant association was found for home/property collateral in any of the multiple regressions conducted. Still, this association was significant at 5%, pointing out the need for more robust research when examining the association of this variable in the multiple regression models.

Lastly, none of the multiple or single regressions found any statistically significant association with respect to frequency of business/professional development courses. There was, however, qualitative data to suggest that business/professional

development courses serve as a form of collateral, highlighting a critical opportunity that

has been largely overlooked.

B. Key Takeaways

While none of the quantitative analyses indicates a causal relationship between

the explanatory and response variables, a number of key takeaways can be used to signal

potential opportunities or areas for future research. In this section, I will discuss the key

takeaways considering the associations made with respect to lender meetings,

home/property collateral, and the qualitative results with respect to business/professional

development courses.

Lender Meetings/Interactions:

The statistically significant findings with respect to lender meetings/interactions

signal a potential opportunity for lenders to reduce default rates. Considering the negative

association between the importance of lender meetings/interactions and late/missed

payments for both the NC Rural Center and WMI-Uganda, meetings with lenders seems

to be a potential form of collateral already in place for both borrower groups.

Additionally, the significant positive association between frequency of lender meetings

and the importance of lender meetings/interactions for both borrower groups indicates an

actionable way to potentially address this opportunity.

As mentioned before, the tests conducted do not prove any causal relationships,

but these results indicate the possibility that lender meetings could serve as a form of

collateral, and that increasing lender meetings/interactions could serve to increase their

importance and reduce late/missed payments. These, of course, are all possibilities.

Further testing would need to be conducted to study the role of collateral importance on

reducing late/missed loan payments. Additionally, these results indicate that far more research needs to be conducted on how lender meetings can strengthen relationships and potentially act as non-group-loan-dependent forms of social collateral. This study simply opens the door to this line of study, which has been largely ignored.

Overall, however, these results are an encouraging sign that lenders can benefit significantly by increasing the frequency of lender meetings/interactions with borrowers, whether the exact line of impact has been explicitly defined or not.

Home/Property Collateral:

While none of the multiple regressions identified a statistically significant association with respect to home/property collateral and late/missed payments, the negative association between the importance of home/property collateral and late/missed repayments, using a single regression, indicates the need for more robust research. With a larger sample size, it is possible that statistically significant associations can be found between the two variables through multiple regression testing.

More importantly, this finding indicates the importance of home/property collateral in influencing NC Rural Center borrowers to repay their loans. This finding, while not a novel discovery, should not be overlooked when deciding what loan features to include going forward.

Business/Professional Development Courses:

Considering that neither the multiple regressions nor the single regressions identified a significant association between frequency of business/professional development courses and late/missed payments, I was surprised to see that 24 borrowers had mentioned these courses as a form of collateral — and an extremely important one, at

that. After identifying the strong trend that existed within the WMI-Uganda borrower

sample, I reached out to the loan managers in Uganda, in hopes of gaining further insight

on how these courses served as a form of collateral for the borrowers.

Upon following up with some of the respondents, I learned that many borrowers

see the courses as so valuable, they believe their business would not succeed without

them. For WMI-Uganda, these courses teach borrowers skills such as budgeting, planning

into future periods, and much more. It was a surprise to both WMI loan managers and

myself that these courses were seen as so important they served as a form of collateral.

This finding, while qualitative, highlights a topic had gone overlooked by the lender for

years.

Furthermore, these findings indicate an opportunity that exists to capitalize on this

form of collateral and increase its efficiency and use. Featuring high-quality business

development courses on an incremental basis is a loan feature that a) can be replicated,

and b) does not rely on social collateral, which may not be easily transferred across

cultures. Of course, further research must be done to quantify and validate this factor as

an influential form of collateral, but this finding is an encouraging opportunity for

lenders, and one that pointed out a major hole in this survey.

VIII.   RECOMMENDATIONS

Based on the key findings of this study — and to an extent, the study itself — a number of recommendations can be made to the NC Rural Center as it weighs which loan features and collateral structures to include in its loans. In working to reduce loan default, as well as the number of late/missed payments, I recommend that the NC Rural Center:

1. Increase the frequency of lender meetings/interactions.

2. Continue the use of home/property collateral.

3. Explore offering incremental business/professional development courses.

4. Continue studying its borrowers, and including their voice in the decision-making process.

A. Increasing Lender Meetings/Interactions

Considering the statistically significant (negative) association between importance of lender meetings/interactions and late/missed payments, and the (positive) association between frequency of lender meetings/interactions and their importance in influencing repayment, I recommend that the NC Rural Center increase the lender-to-borrower meeting/interactions. It may even be wise for the NC Rural Center to mandate some form of lender meeting/interaction to facilitate this change. The NC Rural Center had significantly less lender meetings/interactions, on average, than WMI-Uganda. Thus, this area serves as an opportunity to potentially decrease the number of late/missed payments and ultimately increase the lender's success. Still, however, further research is necessary to support these findings.

B. Home/Property Collateral

While more robust research needs to be conducted to determine if any statistical significance can be found with respect to multiple regression models, the negative association through single regression between the importance of home/property collateral and late/missed payments is an important finding to keep in mind. If nothing more, this finding indicates that home/property collateral is an important feature for NC Rural Center borrowers in influencing them to repay their loans. Thus, I recommend that this form of collateral be maintained by the NC Rural Center.

C. Business/Professional Development Courses:

Substantial follow-up research is necessary to determine whether the qualitative findings from the WMI-Uganda surveys are, in fact, significant and impactful with respect to loan repayment. Still, this finding identified an opportunity for lenders to utilize business/professional development courses — a pre-existing loan feature for most programs — as a form of collateral to further mitigate risk. I recommend that the NC Rural Center explore changing its business training offerings to better match that of WMI-Uganda. Contingent on findings from follow-up research that support the qualitative findings of this study, this change would better position these courses to act as both standard loan features and forms of collateral.

D. Continuing Borrower Studies

With respect to all of the recommendations above, it is critical to point out the need for further research and the pursuit of deeper borrower insights. This not only addresses the exploratory nature of this study and the limitations posed by the small sample-size, but also the continued need for the inclusion of the borrower's voice in the

loan-structuring process. This may seem to be an obvious recommendation, but the NC

Rural Center has conducted its decision-making, largely without the voice of borrowers

throughout its history. This recommendation can be applied more broadly, as well,

considering the lack of the borrower's voice was also a gap identified in the Literature

Review.

E. Caveat: Operating Costs

It is important to note that these recommendations do not specifically address the

issue of operating costs. While it is an underlying assumption that the lender will balance

loan features and collateral structures to minimize operating costs, the direct implications

of each recommendation on expenses are not addressed. Due, in large part, to the lack of

transparency with MFIs, operating costs are beyond the scope of this study and its

recommendations. Strategic decisions will be made on a firm-to-firm basis to minimize

operating costs and maintain a profit margin. This study simply seeks to identify and

highlight potentially effective and/or high-potential loan features and collateral structures.

IX. CONCLUSION

Utilizing group-lending structures and social collateral, microfinance has found great success and growth in many regions. In the U.S., however — largely due to high default rates and the absence of social collateral — MFIs have struggled to grow and succeed like many of their international counterparts. Prior literature has discussed the forms of collateral available to microlenders and their potential uses in the U.S. However, little research has been conducted exploring lender meetings/interactions as a form of collateral. Also, a gap exists in the research conducted to quantify the effectiveness and importance of these forms of collateral from the borrower's perspective.

A study was conducted to analyze the relationship between late/missed payments, loan features, and collateral structures. The questionnaire was given to two groups of borrowers, one from the NC Rural Center and the other from WMI-Uganda. Regression analyses of the data indicated that importance of lender meetings, interest payments, and home/property collateral importance have a significant negative association with late/missed payments, respectively. Additionally, regressions showed frequency of lender meetings is positively associated with importance of lender meetings for both groups. Furthermore, qualitative analysis showed that a majority of WMI-Uganda borrowers considered professional development courses a highly important form of collateral, highlighting both an unaddressed variable in the survey and a major opportunity for lenders to capitalize on this potential form of collateral. Based on these findings, I recommend that the NC Rural Center increase lender-borrower interaction, maintain home/property collateral, change the structure and timing of business development courses, and continue borrower-focused research going forward.

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APENDIX A: SAMPLE QUESTIONNAIRE

Figure 4: Sample Questionnaire

How many times have you been late or missed a loan payment in the past two years?

Never	1	2	3	4	5 or More

How often do you undertake the following activities?

	Never	Rarely	Sometimes	Often	Very Often
Meet/interact with your lender	○	○	○	○	○
Receive business/professional development courses	○	○	○	○	○
Meet/interact with your loan group	○	○	○	○	○

How important is each factor in influencing you to repay your loan?

	Do You Have The Following Collateral?		How important is each factor in influencing you to repay your loan?				
	Yes	No	Not Very Important	Moderately Important	Somewhat Important	Important	Extremely Important
Loan Group Meetings	○	○	○	○	○	○	○
Meetings With Lender	○	○	○	○	○	○	○
Strict Repayment Periods	○	○	○	○	○	○	○
Interest Payments	○	○	○	○	○	○	○
Home/Property Collateral	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○

How do each of these factors impact your ability to do business?

	Do You Have The Following Collateral?		How do each of these factors impact your ability to do business?				
	Yes	No	Much Easier to do Business	Easier to do Business	No Impact	More Difficult to do Business	Much More Difficult to do Business
Loan Group Meetings	○	○	○	○	○	○	○
Meetings With Lender	○	○	○	○	○	○	○
Strict Repayment Periods	○	○	○	○	○	○	○
Home/Property Collateral	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○

What motivates you to pay back your loan?

APENDIX B: MULTIPLE REGRESSION RESULTS

Dependent Variable: Late/Missed Payments
Table 9: Multiple Regression 1 (Section 2)

WMI Uganda

Independent Variables	+/–/o	Coefficient
		P-Value
Frequency of Lender Mtgs.	O	0.197376645
		0.430510357
Frequency of Business/Prof. Development Courses	O	-0.13431929
		0.55803064
Frequency of Loan Group Meetings	–	-0.95041155
		0.000181277**

*Significant at 10%; **Significant at 5%

Dependent Variable: Late/Missed Payments
Table 10: Multiple Regression 2 (Section 3)

Independent Variables	**NC Rural Center** +/–/o	Coefficient	**WMI-Uganda** +/–/o	Coefficient
		P-Value		P-Value
Importance of Loan Group Meetings	N/A	N/A	O	0.079759817
		N/A		0.737976122
Importance of Lender Meetings	–	-0.779935848	–	-1.00928064
		0.002291766**		0.00717231*
Importance of Strict Repayment Periods	O	0.043630603	O	-0.283492784
		0.872303183		-0.283492784
Importance of Interest Rates	O	0.334123939	O	0.110202182
		0.209865301		0.394730366
Importance of Home/Property Collateral	O	-0.426623121	N/A	N/A
		0.233215397		N/A

*Significant at 10%; **Significant at 5%

Dependent Variable: Late/Missed Payments
Table 11: Multiple Regression 3 (Section 4)

Independent Variables	+/−/o	NC Rural Center Coefficient P-Value	+/−/o	WMI-Uganda Coefficient P-Value
Business Impact of Loan Group Meetings	N/A	N/A N/A	O	-0.063429192 0.529175861
Business Impact of Lender Meetings	O	-0.149349473 0.676179573	O	-0.311929962 0.54385423
Business Impact of Strict Repayment Periods	O	0.586799888 0.174001047	O	0.183864314 0.731552294
Business Impact of Interest Rates	O	-1.111635166 0.143254587	O	-0.345527918 0.365489458
Business Impact of Home/Property Collateral	O	0.265966897 0.520939825	N/A	N/A N/A

*Significant at 10%; **Significant at 5%

Dependent Variable: Late/Missed Payments
Table 12: Multiple Regression (All)

	Independent Variable	NC Rural Association Coefficient	P-value	WMI-Uganda Coeficient	P-value
Frequency	Meet/Interact with Lender	-0.1282284	0.6155666	-0.52663319	0.35861322
	Business/Prof. Dev. Courses			-0.37386281	0.17614113
	Meet/Interact with Loan Group			0.20879068	0.34740623
Importance	Loan Group Meetings			-0.40157772	0.15502759
	Meetings with Lender	-0.6264797	0.25068977	-0.53565569	0.19569752
	Strict Repayment Periods	-0.0089057	0.97531439	-0.32744391	0.27386198
	Interest Payments	0.32818253	0.22339164	0.04887006	0.85670981
	Home/Property Colalteral	-0.5665224	0.14428505		
Business Impact	Loan Group Meetings			0.68169958	0.49681031
	Meetings with Lender	0.08341086	0.78006388	0.15564276	0.62652489
	Strict Repayment Periods	0.0945453	0.80099216	-0.24214568	0.4390452
	Interest Payments	-0.0583714	0.91273727	-0.00482847	0.98352139
	Home/Property Colalteral	0.44562261	0.20728598		