CHARLES UNIVERSITY IN PRAGUE

FACULTY OF SOCIAL SCIENCES

Institute of Economic Studies

Emerging Fintech for MFIs:
A Guide for the Latin American Microfinance Market

Master's Thesis

Author: Alison L. Maciejewski

Study Programme: International Economics and Political Studies (IEPS)

Supervisor: prof. Ing. Karel Janda M.A., Dr., Ph.D.

Academic Year: 2019/2020

Declaration of Authorship

1. The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

2. The author hereby declares that all the sources and literature used have been properly cited.

3. The author hereby declares that the thesis has not been used to obtain a different or the same degree.

Prague … **31 July 2020** **Alison Maciejewski**

Peace should be understood in a human way − in a broad social, political and economic way. Peace is threatened by unjust economic, social and political order, absence of democracy, environmental degradation and absence of human rights.

Poverty is the absence of all human rights. The frustrations, hostility and anger generated by abject poverty cannot sustain peace in any society. For building stable peace we must find ways to provide opportunities for people to live decent lives.

Muhammad Yunus

Nobel Lecture, Oslo 2006

Acknowledgements

I thank the following microfinance institutions and service providers for their confidence in my research and sharing generously from their professional experience: Tuluni International, Bancamía, Opportunity International, Villalobos & Asociados, AGAPE, Instituto Nacional de Economía Popular y Solidaria (IEPS) of Ecuador, Pedro Fardella, FinAgro of Colombia, Gremio Nacional de Emprendimientos Sostenibles del Peru (GENES), the Rural Finance Initiative at Chemonics International, USAID, Grupo Gold S.A., and the United States Peace Corps.

I would like to thank Dr. Karel Janda for his supervision and direction as well as Dr. Vilém Semerák for his clarity of process in this work.

Thanks to Tony Mata for her idealism and leadership in the early days of my non-profit field work. Thanks to Becky Gazca for her mentorship in progressive and community-focused efforts for over a decade.

Last but not least, thank you Stacy Williams for all the emotional and intellectual support.

Bibliographic Annotation

Maciejewski, Alison. *Emerging Fintech for MFIs: A Guide for the Latin American Microfinance Market*. Prague: Charles University, Faculty of Social Sciences, Institute of Economic Studies, 2020. 56 pages.

Supervisor: prof. Ing. Karel Janda M.A., Dr., Ph.D.

Abstract

This thesis focuses on the viability of financial technology implementation in microfinance programming in Latin America based on the perception of microfinance service providers. This paper highlights the practice of offering microfinance loans to low-income entrepreneurs coupled with financial education stipulations. After introducing emerging financial technology as an educational tool, the paper reviews relevant characteristics of the regional development field, the role of culture in tech adoption, and current technology trends in Latin America. Using the microeconomics of technology adoption, this paper synthesizes an implementation framework for microfinance lenders based on strategic goals and best practices. Data is collected using semi-structured interviews to assess the perceived barriers to adoption. The final part of the thesis uses a qualitative research analysis to characterize the perceptions of service providers and programming decision-makers in Latin America on the topic of financial technology adoption. The analysis finds that microfinance service providers in Latin America feel positive about financial technology tools but perceive them as costly and beyond the use capacity of their clients. With caution aimed at client-focused development of programming, financial technology implementation is concluded viable at all levels of MFI stratification.

Název práce

Rozvíjející se Fintech pro MFI: Průvodce po latinskoamerickém trhu mikrofinancování

Keywords

digital inclusion, education technology, finance technology, financial education, fintech, Latin America, MFI, microfinance, technology

Abbreviations

$	U.S. Dollar (currency unit)
DSL	digital subscriber line
e-banking	electronic banking
fintech	financial technology
FiOS	fiber optic networks and equivalents
ICT	information and communications technology
IDB	Inter-American Development Bank
IMF	International Monetary Fund
KPI	key performance indicator
LAC	Latin America and the Caribbean
m-banking	mobile banking
MFI	microfinance institution
micro-entrepreneur	entrepreneur recipient of MFI services (loan client)
MSME	micro, small, and medium enterprise
NGO	non-governmental organization (non-profit)
OECD	Organisation for Economic Co-Operation and Development
PYME	pequeña y mediana empresa (small and medium enterprise)
RFP	request for proposal
SGB	small and/or growing business
SME	small and medium enterprise
T1	T1 high speed internet circuit
USAID	United States Agency for International Development

Table of Contents

List of Figures

1. Introduction

Mobile technology is pervasive in modern times. Most business people in the world walk around with a veritable computer in their pocket on a daily basis. Though the description of a perpetually-connected digital entrepreneur conjures up images of financial jet-setters in New York, Seoul, London, Tokyo, or Shanghai, the same is true of rural residents all over Latin America. With small business ventures becoming the focus of modern foreign aid efforts, there is little research to explain just how emerging technology can be leveraged to benefit small business owners in developing countries. The aim of my thesis is to investigate whether financial technology or "fintech" is a viable option to supplement or replace traditional financial education tools in microfinance institution programming in Latin America.

1.1 Overview

Microfinance is an umbrella term that includes a range of financial services offered to low-income people considered “unbankable” or unqualified for commercial loans (Bayulgen, 2008, p. 526). Microfinance institutions (MFIs) mitigate the risk of lending to these clients by offering small *micro* versions of traditional banking products (Sainz-Fernandez, Torre-Olmo, & Lopez-Gutierrez, 2018). These include “microcredit...microsavings, transfer of remittances, microinsurance, and more” (Berger, Goldmark, & Miller-Sanabria, 2006, p. 3). Most microloans are less than USD 1,500 (Foroohar & Ramirez, 2010).

The high-risk mini-loan structure was formalized by Bangladeshi economist Muhammad Yunus in the early 1970s. The Grameen "village" Bank model made waves in economic development circles because despite steeper-than-average interest rates of up to 15%, the payback rate of microloan borrowers remains high. Grameen's payback rate since 1983 is 98%, a full 8% higher than the U.S. commercial banking average (Foroohar & Ramirez, 2010). The Grameen Bank eventually won Dr. Yunus a Nobel Peace Prize in economics in 2006 (Sainz-Fernandez, Torre-Olmo, & Lopez-Gutierrez, 2018).

After global acknowledgement, Latin America embraced formal microfinance funding in the 1980s. With the Cold War, U.S. foreign aid efforts in Latin America were focused on fostering capitalism to compete with left-wing economic stabilization efforts

from economist Raul Prebisch's Import-Substitution-Industrialization (ISI model) state intervention policies in Argentina to Fidel Castro's revolution in Cuba (Cabral, 2017). Micro lending caught on with regional aid organizations and soon became a primary focus of international development efforts in the region (World Bank, 2011).

In 1984 Bolivia was one of the first two countries in the world to enter into a structural adjustment program that included microfinance with the International Monetary Fund (IMF), an organization of 189 countries that drives global economic cooperation (Dornberger & Fromm, 2005). Since, the concept of microfinance has gone from an “obscure development experiment” to serving more than 4 million clients in Latin America (Berger, Goldmark, & Miller-Sanabria, 2006). More than half (54.7%) of the world's MFIs serve populations in Latin America, though large country penetration is "extremely low when compared to smaller nations [Bolivia, Nicaragua, El Salvador, and Paraguay]" (Berger, Goldmark, & Miller-Sanabria, 2006, p. 202). Microfinance is now a multibillion-dollar industry and the prevailing format for economic aid to Asia (Bayulgen, 2008), Africa (Mpokosa, 2009), and Latin America (Berger, Goldmark, & Miller-Sanabria, 2006).

Fintech is defined as a spectrum of emerging technologies used to host services between financial institutions and consumers. Fintech is an umbrella term including applications that leverage the use of smartphones for mobile banking, investing, borrowing, financial management, electronic payments, and more. In some cases fintech is used by traditional financial institutions to deliver digital services to customers seeking the convenience and speed of mobile access. In other cases, startup fintech companies compete directly with traditional banking organizations. For the duration of this paper, the term *fintech* can be substituted with the phrase 'consumer financial management apps' and the content will remain accurate and well-understood.

1.2 The Problem of Low Fintech Adoption

Fintech has not been widely incorporated into microfinance programming. Financial technology is thriving in emerging global financial markets including Latin America. An IMF working paper authored by Berkmen, Beaton, Gershenson, Ishi, Kim, & Kopp (2019) documenting fintech adoption in Latin America focuses on fintech's multiple applications in the market, its rapid growth in the commercial sector, and its appearance on the agenda of Latin American policy makers. Though fintech allows non-

commercial banks to deliver a wider spectrum of "financial products for unbanked and underserved customers" (Berkmen, Beaton, Gershenson, Ishi, Kim, & Kopp, 2019, p. 10), it has not caught on in the aid industry. There is pervasive fintech adoption by commercial financial institutions in Latin America (Machiavello, 2017), but MFIs in this region have not followed the trend.

Background and justification. The microfinance field is such that it is slow to incorporate innovative tools. A majority of MFIs in Latin America are non-governmental organizations (NGOs) and public institutions. NGOs and government services alike tend to resist adopting insights from more conventional economic models (Foster & Rosenzweig, 2010). The existing trend of being sluggish with new technology has led to the problem of low fintech adoption.

Tech adoption describes the choice to acquire or use a technology that is newly invented or newly available to the market (Hall & Khan, 2002). *Fintech adoption* applies specifically to financial technology. Heavy reliance on MFI-based aid could explain the Latin American development field's hesitation to take cues from the commercial banking industry.

Phenomenon of interest. Fintech is a "particularly valuable instrument" for MFIs in Latin America because it can deliver services for a large population of highly-dispersed, low-income people (Machiavello, 2017, p. 213). The setting for delayed fintech adoption is compounded by the relatively recent introduction of wireless technologies in Latin America. Though fintech startups got an initial foothold in 2012 (Berkmen, Beaton, Gershenson, Ishi, Kim, & Kopp, 2019), rapid diffusion in Latin America was hampered by geographical constraints and the high-cost of physical broadband networks. Fintech relies on high-speed internet access but that developing countries in Latin America joined the wireless revolution comparatively late. Even tech progressives like Chile were excluded from fixed broadband. It wasn't until 2017 that satellite broadband reached majority penetration levels in the country due to pressure from the OECD (Sarmiento, 2018). During the time of wireless technology growth, mobile devices in turn became affordable. Now in Latin America we see a "high diffusion of mobile and smart-phones...among low-income people" (Machiavello, 2017, p. 213). Since micro-economic determinants like those described above provide the most significant reasons for technology diffusion within a single economic system (Hall

& Khan, 2002, p. 28), the probable causes for delayed fintech adoption in MFIs include slow reaction to market changes and cost.

Deficiencies in evidence. Current research does not address the viability of fintech as an MFI client-facing tool. There is a "paucity of studies carefully documenting the returns to inputs and technologies that are alleged to be underutilized" (Foster & Rosenzweig, 2010). Without clear evidence of what the perceived obstacles are nor how to overcome them, MFIs might not have the leeway to pursue the experimental use of fintech. If research supports fintech as viable, MFIs can move towards adoption. If research does not support viability, MFIs can continue to overlook fintech without risking the opportunity cost to their mission. The intention of this thesis is to assess the programmatic feasibility of fintech in the Latin American MFI market. The hypothesis of the researcher is that financial technology apps are perceived as costly and too high-tech for microfinance clients to use. It is expected that the qualitative analysis will show that no-cost and low-cost fintech options are worth adopting as supplementary or replacement programming when compared to what is currently used.

1.3 Unique Contribution Summary

Methodology. The purpose of this study is to properly characterize how fintech is perceived, study its experimental use as a financial education component with borrowers, and clarify any obstacles to fintech adoption in the MFI field in Latin America. The primary research of the study reveals how fintech is perceived by MFI service providers in Latin America. The analysis is based on qualitative research from select Latin American organizations. Based on the findings, this study characterizes the main obstacles to fintech adoption from the perspective of programming decision-makers and service providers.

Audience. This study is addressed to stakeholders in strategic planning in Latin America. Results will also be interesting to innovative MFI program directors that need evidence-based research to gain support before venturing into fintech adoption.

Research site. The research site is a select group of MFI service providers in Latin America, with a focus on microfinance institutions that receive foreign funding or have an "international presence" of some kind (Waters, 2017, p. 338). Research participants are service providers and MFI stakeholders who have experience in programmatic administration.

Value added. This study is one of the first to present qualitative findings on perceptions towards fintech adoption as a microfinance education tool in Latin America; it further presents a model incorporating meaningful variables for adopting fintech as MFI programming in the region. The unique contribution of this analysis delineates the potential for fintech at various strata of MFI programming.

Foster & Rosenzweig (2010, p. 2) studied the microeconomics of technology adoption, stating that "poorer countries can catch up with richer countries...through technological diffusion". The central phenomenon to be explored is whether fintech can be exploited in this field. This thesis addresses whether perceived constraints on fintech adoption for programming allocation in MFI programming aligns with reality. The conclusions drawn from this analysis have the potential to influence internal strategic planning in individual institutions and program funding opportunities.

1.4 Structure

The thesis is structured as follows. First, the literature review will explore the microeconomics of fintech adoption. It will introduce the historical context behind MFI programming best practices in Latin America. Using secondary research to synthesize the body of existing findings, it will explain how fintech adoption in Latin America has progressed, what has worked, and why. This literature is used to define a Latin American framework for fintech adoption. The theoretical context is outlined.

The following portion of this paper researches pertinent questions regarding the programmatic viability of adopting fintech as a financial education tool for loan clients. At the outset, the qualitative research conducted seeks to understand prevailing attitudes towards fintech adoption by MFI service providers. Real practices are elicited from research subjects.

In the final chapters the results of the analysis will be introduced. Actual perceptions and practices of fintech will be inductively characterized based on MFI service provider responses. A discussion will address the broader context of fintech adoption in the region. The outcomes of the analysis will be linked to programmatic realities, discussing possible implications for MFI strategic planning.

2. Microfinance Programming in Latin America

2.1 Introduction

This section will outline a Latin American cultural lens in regards to the microeconomics of fintech adoption by MFIs. The focus is on determining what behaviors and decisions account for successful adoption among microloan clients in Latin American countries. Before fintech can be accepted as a programming element, it must be clear that it aligns with programming criteria and adoption behavior. A review of the available literature follows. Synthesized, this secondary research reveals a Latin American framework in which fintech programming with specific attributes are predicted to have a successful adoption.

2.2 Theoretical Lens

The theoretical perspective grounding the study revolves around technology diffusion and group decision-making. Rogers' (2003) theory of Diffusion of Innovations formulates how technology spreads over time, going from being viewed as a risky adoption to full acceptance. Rogers' defined categories of adopters in a population over time—"innovators", "early adopters", "early majority", "late majority", and "laggards" (Rogers, 2003, p. 191)—are useful for conceptualizing the ideas addressed in this paper. Rogers' theory also addresses the limits of technology awareness: "Knowing about an innovation is quite different from using it. Most individuals know about many innovations that they have not adopted" (Rogers, 2003, p. 174). This is a central theme.

These theories have been applied alongside theories of behavioral economics. Charness and Sutter (2012, p. 158) are clear that "groups are at least an element in most decisions" and that "many important economic decisions...are made after some consultations with others, even if they are not explicitly part of a group decision-making process." In the context of group identity and group decision-making tied to economic incentives, we look at how cultural and social factors have affected the decisions of populations in Latin America to adopt technologies related to economic development efforts. In some research cases there is evidence of strategic experimentation. In other cases outside intervention has facilitated the adoption process. Regardless, there is a "pervasive finding that more educated agents adopt new technologies first" (Foster & Rosenzweig, 2010). The history of education and exposure to new technologies in Latin

America and the path of technology adoption follows below. Further discussion of the theoretical lens is interspersed within the historical context.

2.3 Historical Context

That cultural relevance has been a crucial factor of success in microfinance programming is supported by historical contexts. In applicable situations, studies on fintech adoption related to the development fields of South Asia and Africa are utilized to approximate behaviors, practices, and predictions.

Asset-based vs. deficit-based foreign aid. The traditional iteration of foreign aid began in the 19th century when so-called developed countries gave money to less-developed countries. By 1920, colonial powers like Germany, France, and Britain were providing regular aid to their colonies in Africa, Latin America, and Asia (Phillips, 2013). Though economic development projects and transportation infrastructure were considered charity work, they ultimately increased the exploitation of resources from colonial territories. After independence, the idea remained that historically-exploited countries should "catch up" (Phillips, 2013) to more developed regions like Western Europe, Australia, Canada, and North America. Thus, traditional international aid is *deficit-based* or centered on the idea that some countries lack economic development. In Africa, a continent that receives 33% of the world's foreign aid (OECD, 2016), Zambian economist Dambisa Moyo is outspoken about how traditional foreign aid is neo-colonialist: It's unsustainable, promotes dependency, and perpetuates a negative image of Africa (Moyo, 2009). The claim can be applied to all forms of deficit-based foreign aid in the global south, including that of Latin America.

The advent of microfinance in the international aid field can be attributed to *postcolonial social theory.* Theories beginning with Frantz Fanon's decolonization concept and running through Edward Said, Gayatrik Spivak, Homi Bhabha, and Gurminder Bhambra, it is a deconstructionist school of thought that attempts to reveal suppressed narratives. It does this by acknowledging the historical supremacy of colonial discourse. It seeks to legitimize viewpoints indigenous to the global south and validate realities from non-Western European origins (Nicholls). With deficit-based foreign aid tied to historical colonial dynamics, microfinance brings a different ideology to economic development efforts in former colonized territories.

Asset-based foreign aid, instead of focusing on what a country is lacking, aims to support pre-existing assets native in the recipient territory. Microfinance is asset-based because as a tenet of the ideology, local entrepreneurs are valuable assets while foreign powers are merely a funding source. The emphasis on empowerment rather than foreign "saviors" (Moyo, 2009) makes microfinance a postcolonial form of aid.

Short-term microloans from non-commercial banking institutions are native to the 'developing' world. Terminology describing *rotating savings and credit associations* or "*ROSCAs"* (Bouman, 1983, p. 17) have existed under 200 indigenous names that capture the same group lending concept (Abramsky, 2018). Called a *susu* in West Africa, *partnerhand* in the Caribbean, *hui* in China, and *tanda* in Latin America, these terms all denote a small-group savings club with informal peer-to-peer banking services (Bouman, 1983). Records of non-Western financial aid schemes date as far back as the *tanomoshi* from 12th and 13th century Japan (Odo, 2018). ROSCAs pre-date Western European economic science by 500 years (ScrepantiI & Zamagni, 1993) and remain a common form of microfinance to this day. As mentioned previously, the formalized version of microfinance as an alternative to traditional banking was also birthed in the developing world. The trail-blazing Grameen "village" Bank of economist Muhammad Yunus hails from Bangladesh.

Though today's microcredit funding sources still originate from wealthy nations (Sainz-Fernandez, Torre-Olmo, & Lopez-Gutierrez, 2018), the practices have been accepted as culturally relevant to the formerly colonized countries of Latin America. Since the microfinance boom of the 1980s, the economic development field has seen a shift in the global discourse whereby a postcolonial approach recognizes asset-based aid as beneficial in the geopolitics of development. Thus, empirical evidence from Latin America has supported the triumph of microfinance aid as the new convention in the fight against global poverty (Servin, Lensink, & VandenBerg, July 2012).

The potential of fintech. Berkmen, Beaton, Gershenson, Ishi, Kim, & Kopp (2019, p. 10) researched the fintech adoption of mobile money management applications for "unbanked and underserved customers" in Sub-Saharan Africa and South Asia. Berkmen et al. found that 46% of fintech startups in those regions focused on assistance for small and medium enterprises (SMEs) in which client data collected digitally via fintech apps improved on traditional forms of risk assessment. Berkmen et al. conclude that "it is low income and emerging market economies who can benefit

disproportionally from fintech innovations" (Berkmen, Beaton, Gershenson, Ishi, Kim, & Kopp, 2019, p. 45). Finally, the study reports that less financially developed countries often catch up via "technological leapfrogging" or skipping intermediary tech adoption in favor of cutting-edge technology (Berkmen, Beaton, Gershenson, Ishi, Kim, & Kopp, 2019, p. 46).

Hall & Khan (2002) found that information technology is particularly subject to network effects, a concept describing a direct relationship between the accessibility of technology and a complimentary good. Applied to MFI programming, this study confirms that wider availability of MFI services (e.g. loans) should spur the adoption of related innovative technology. This study also describes tech leapfrogging is a phenomenon of developing countries.

Vishwanath & Goldhaber (2003) studied technology itself for clues that influence late tech adoption. This study surveyed late adopters of mobile phones and analyzed their attitudes using diffusion theory and the Technology Adoption Model (TAM). The research revealed that consumers are willing to adopt tech despite the level of complexity once they perceive the product as "compatible and observable" (Vishwanath & Goldhaber, 2003, p. 567). Also, the analysis found that owning other, similar tech made the biggest positive impact on late tech adoption.

Brătăşanu (2017, p. 86) studied the competitive dynamics of the financial services industries, asserting that current financial systems exist in a "disruptive innovation phase". The study finds that fintech as a disruptive element changes the microenterprise loan market. The study predicts that as the technology advances, fintech usage by MFIs will directly impact their market share of small business lending clients.

Gabor & Brooks (2017) also examined financial inclusion of the international development field in the context of digital innovation. The study focuses on the convergence of fintech companies, international development organizations, philanthropic bodies, and state institutions. The study provides a precedent for applying behavioral economic theory to catalyze customer/financial institution engagement.

Heinze & Heinze (2018) studied the extent of tech adoption in organizations by surveying 1,000 doctors in the United States. The conclusions of this research reveal that organizations engaged in tech adoption are perceived as more innovative and

cohesive. This reveals a positive association with tech adoption both internally by service providers and externally by peers and competing organizations.

The role of financial education stipulations. Research shows that positive results for MFIs and clients stem from microfinance programming with the "capacity to innovate" and "effectively handle risk management" (Berger, Goldmark, & Miller-Sanabria, 2006, p. 152). One common form of risk management is the inclusion of financial education stipulations for entrepreneurs that precede or coincide with granting loans. "Financial education has been almost universally offered by microlenders" (Berger, Goldmark, & Miller-Sanabria, 2006, pp. 196-197). This includes orientations on credit, how to obtain a loan, and what borrowers can expect from financial institutions. It also includes intermediate financial education on savings, asset building, types of banking, financial calculators, and bill paying. The most advanced courses address money management for individuals, households, and businesses including technical assistance with financial projections (Berger, Goldmark, & Miller-Sanabria, 2006).

The first record of financial education being used in Latin America is from a microfinance project in Brazil called "Projeto UNO" which ran from 1972-1979 (Berger, Goldmark, & Miller-Sanabria, 2006, p. 223). Older programs focused on basic finances and managing business income and expenses for clients. New financial literacy programs take into account sophisticated cash flow mixtures common among Latin American micro-entrepreneurs (Berger, Goldmark, & Miller-Sanabria, 2006). MFIs that find it "inappropriate" (Berger, Goldmark, & Miller-Sanabria, 2006, p. 224) to offer in-house financial education services due to a conflict of interest distribute referrals to other sources of financial education. Those referral agencies then educate clients. The completion of internal or external financial education requirements is commonly used by MFIs as a risk management tool to increase the payback rate of borrowers and pre-screen loan applications from clients (Berger, Goldmark, & Miller-Sanabria, 2006). For microloan clients facing unfamiliar financial decisions and the sudden access to funding, it's an indispensable part of MFI programming.

Santos, Sequeira, & Ferreira-Lopez (2017, p. 979) studied the implications of "skill-complementary technological adoption" on income inequality, or how technology can increase job skills. This study looked at the difference between older Information and Communications Technologies (ICT) vs. modern ICT usage. The results were that

avoiding newer technology for learning skills tends to increase income inequality. Though the patterns are shown to be less apparent in 'developing' countries, the researchers recommend that these results be applied to programming design and schemes to incentivize tech adoption.

Manta (2018, p. 78) studied the specific elements of emerging fintech applications and their adaptations to the context of global finance. The study defines *robo-advice* as services "replacing face-to face investment advice with online, automated guidance and execution". The study considers how technical assistance can go digital and if it impacts effectiveness. The study concludes that it's a cost-efficient way to reduce gaps in financial education.

Linking culture with fintech adoption. García-Urrea & Chikhani (2012) studied 524 teachers across 8 Latin American countries to explore perceptions about using ICT to educate students. This study revealed that teachers have a positive outlook towards using technology in education, but specified that tech tools were welcomed when they had elements appealing to the "social factors of...subjective culture" (García-Urrea & Chikhani, 2012, p. 19). These cultural or "external conditions" related to the ICT's functionality in regards to shared norms and values of the group of reference (García-Urrea & Chikhani, 2012, p. 21). The study concluded that cultural relevance of tech is a demand condition for adoption.

Baptista & Oliveira (2015, p. 418) studied the role of mobile banking in developing countries and the "almost unexplored" research area of acceptance studies. Using the extended unified theory of acceptance and use of technology (UTAUT2) of Venkatesh, Thong, and Xu (2012) with cultural moderators from Hofstede, the research showed that collectivism was a significant cultural moderator of mobile banking acceptance in Africa. Due to the importance of cultural factors, this study calls for further refinement of acceptance models taking culture into account. It advises practitioners to construct a detailed model of audience culture to successfully implement new technology with a high level of acceptance by the target users.

Gunawan (2019) used an earlier UTAUT model to analyze the readiness of micro, small, and medium enterprises (MSMEs) in Indonesia for using electronic money or e-money fintech. The study concluded that Indonesian micro-entrepreneurs,

including low-revenue "street vendors" (Gunawan, Sinaga, & WP, 2019, p. 318), were ready for tech adoption.

Sánchez-Torres, Canada, Sandoval, & Alzate (2018) carried out one of the first studies ever to specifically address tech adoption best practices for electronic banking or e-banking adoption in Latin America. The study sheds light on how fintech adoption relies on cultural relevance. Researchers examined Colombia's introduction to e-banking and which factors had a positive impact on consumer adoption of the emerging technology. Results under the UTAUT model were that effort expectancy, performance expectancy, and trust were the three central elements to fintech adoption. Overt government support had no significant impact, leading researchers to conclude that financial institutions must build consumer trust before widespread adoption can be successful.

An interesting finding is that fintech's ability to provide necessary solutions was concluded to not be a significant factor in consumer adoption. Trust and peer approval played a more important role for Colombians. In accordance, this paper will document the functionality of fintech but will not make efforts to prove the utility of any specific technologies.

Carballo & Dalle-Nogare (2019) studied fintech adoption and its impact on financial inclusion by comparing populations in Mexico, Chile, and Peru. The study includes mobile financial apps such as portals that give clients access to microfinance delivery such as virtual money exchange and electronic payments. The findings summarize that the positive results of fintech delivery and financial inclusion are distinct to each country. The study warns against using a homogenous approach from country to country, but reassures that digitization of MFI services has an overall positive impact.

Research from Lee, Choi, Kim, & Hong (2007, p. 41) introduced the concept of "*culture-technology fit* based on the cultural lens model," or a filter that interprets features of a new technology by cultural means for tech adoption. This study explains that users' cultural profiles determine how a person views a technology. Lee et al. allow that cultural profiles can be extended to create a general framework of "trait-technology fit" (Lee, Choi, Kim, & Hong, 2007, p. 41) that can predict adoption success for various information technology products.

Linking cultural dimensions with online learning. Gómez-Rey, Barbera, & Fernández-Navarro (2016) researched the impact of cultural dimensions on online learning using the Hofstede cultural model to study online university education in Mexico as compared to three non-Latin American countries. The study finds that online learners are grouped according to their national culture's autonomy level and recommends culturally adaptive instruction.

Lim (2004, p. 863) differentiated six motivation types including "reinforcement, course relevance, interest, self-efficacy, affect, and learner control" while studying the online learning motivations of university students from the United States and Korea. This study found that cultural orientation most defines the motivation types of online learners from different countries.

Arpaci (2015) investigated mobile learning adoption and the impact of culture by surveying 190 college students in Turkey and 163 college students in Canada. Results showed a strong relationship between adoption behavior and culture as well as major pattern differences between the two countries. Arpaci characterizes Canadian culture as "individualistic, low uncertainty avoidance, and low power distance" while Turkish culture is "collectivist, high uncertainty avoidance, and high power distance culture". The findings conclude that Turkish student tech adoption was significantly affected by social influence while Canadian adoption was not. The research recommends that the findings be used to develop "effective blended learning strategies" and that instructors "be sensitive to the cultural differences for a successful adoption" (Arpaci, 2015, p. 709).

Lee, Trimi, & Kim (2013) researched how mobile phone adoption is impacted by cultural differences using Hofstede's cultural dimensions. Studying the United States and Korea, the study found that Type II populations (collectivistic cultures like Korea) have a later phase of tech adoption, skipping the initial adoption but ramping up during the development period. At this point, Type II societies show a much higher rate of tech adoption than Type I societies (individualistic cultures like the U.S.). The study concludes that in a Type II society people convene decision-making and tech adoption behaviors as a community, relying on subjective reactions to innovation rather than objective first-person investigation.

Choden (2019) studied ICT diffusion as explained by national culture using the Schwartz model of cultural dimensions. This study used data from 73 countries to record polarizing cultural dimensionns. Embeddedness is defined as an emphasis on group solidarity, family security, and traditional order, is found to "emphasizes group activity over individual ones" and to "introduce delay in the adoption decision" (Choden, Bagchi, Udo, Kirs, & Frankwick, 2019, p. 248). The result of the study was that the embeddedness trait factor had the most significant impact on diffusion levels.

Accessibility as a marker for tech adoption. *Broadband* is the term for high-speed internet service. It is the current standard as defined by the OECD and Inter-American Development Bank or IDB (2106). *Fixed broadband* is high speed data transmission via fixed modes of delivery such as T1, cable, DSL and FiOS or fiber optics. *Wireless broadband* is high speed data transmission delivered via wireless technology, typically accessed on mobile devices such as smartphones, tablets, and iPads. *Smartphones* are mobile phones with internet navigation capabilities and operating systems that support *apps* or mobile applications. Fintech relies on smartphones as a vehicle of delivery. In order for fintech adoption to be feasible, microfinance clients in Latin America must have two things: smartphones and wireless broadband access.

Broadband access is a performance indicator of economic success followed closely by the Organisation for Economic Co-Operation and Development (OECD), a global economic development body. Since its founding in 1960, the OECD has worked to evaluate member states and compare them to the global standards for progress. Three of Latin America's most populous countries are members of the OECD: Chile, Colombia, and Mexico (OECD, 2016). The IDB works alongside the OECD to set goals and track progress for ICT related benchmarking. Together, they report annually on broadband coverage as well as speed and quality of service across Latin America. The OECD and IDB report (2016) explains that although fixed broadband coverage in Latin America remains low due to geographic obstacles, wireless broadband acts as a substitute rather than a complement, as has been typical in the 'developed' world. The advent of wireless broadband coverage in the region has caused a trend of reduced prices for mobile devices, affordable access, and therefore tech adoption at a "rapid pace" (OECD and IDB , 2016, p. 143).

Latin American and Caribbean (LAC) countries of the OECD as well as Costa Rica, Brazil, and Suriname have recorded significant advances in broadband use and availability in the short timespan between 2010 and 2015 (OECD and IDB , 2016). The OECD and IDB report from 2016 records high average increases in broadband access as well as ICT skills for mainland Latin American countries (OECD and IDB , 2016). Overall, mobile broadband communication is "ubiquitous in the LAC region" and a preferred medium for ICT use (OECD and IDB , 2016, p. 66).

The country of Chile is as case study to understand Latin America's recent boom in broadband infrastructure. Chile became an OECD member in 2010 (Member Countries, 2018). Broadband access was already on the OECD's agenda and Chile was a laggard in adoption according to key performance indicators (OECD, June 2012). Using policy instruments from regulation to financial incentives to improve, Chile's total broadband coverage (measured by individual subscriptions) jumped from 22% to 86% in the span of four years from 2012 to 2016 (OECD, 2017).

As of 2017 Chile was ranked 23rd of 37 member countries (OECD, 2017) with the second fastest rate of mobile broadband growth in the OECD (Sarmiento, 2018). That is a 400% increase in mobile broadband coverage in five short years. In other words: widespread tech adoption. The OECD and IDB report (2016, p. 72) describes this type of rapid development as "an important tool for tackling inequality and bridging income gaps" and notes that it has been patterned across Latin America.

Hall & Khan define (2002, p. 10). "trade openness" as a learning characteristic of developing countries in which rapid technology exposure is "generally coupled with a high level of knowledge transfer and this knowledge spillover in turn enhances adoption of computer technology".

Waters (2017, p. 334) defined two types of tech adoption by companies in Latin America and the Caribbean (LAC): *Initial technology adoption* is "the first adoption of a technology by an agent" while *intensification of technology use* is defined as "the subsequent extent of technology adoption by the agent". Two novel determinants specific to internet use in Latin America are "informal sector competition" and "regional influence" (Waters, 2017, p. 346). The former applies specifically to large firms in capital cities and is, thus, not applicable to a broad MFI context. The latter encompasses

a positive relationship between tech adoption and regional use with an economic component.

Furthermore, according to Waters (2017) initial adoption is most affected by national development variables. In the case of fintech apps this refers to mobile device and wireless broadband access, which have both been addressed above as sufficiently improved (albeit recently). Intensification, on the other hand, is distinctly affected mainly by "industrial intensity of use, foreign ownership, and financial obstacles" (Waters, 2017, p. 335). Foreign ownership reportedly increases intensification because companies with an "international presence" (Waters, 2017, p. 338) can plausibly manage new technologies better than organizations based historically out of Latin America.

2.4 State of Knowledge

From the MFI's point of view, successful programming serves the mission, is economically sustainable for the institution to provide, and supports collecting repayment. This includes efforts that optimize client relations and expands reach to funders for sustainable operation (Machiavello, 2017).

From the loan recipient's point of view, successful programming is helpful for the business and acceptable as a stipulation of the loan. Both parties are interested in programming that supports a successful business venture, contributing to the client's ability to repay the loan (Sainz-Fernandez, Torre-Olmo, & Lopez-Gutierrez, 2018).

Fintech as an emerging technology offers a range of potential in the Latin American development field, most obviously as a tool to mitigate loan risk (Berger, Goldmark, & Miller-Sanabria, 2006). Technology has always been leveraged in the financial services sector, but fintech as a cutting-edge client-facing tool is disrupting the sector and "challenging traditional operators' business models" (Machiavello, 2017, p. 212). The literature suggests that MFIs with an international presence are likely to find success in fintech implementation. Though other factors are significant, accessibility is continually proven to be a strong marker for tech adoption in Latin America (Waters, 2017). There is a clear economic connection between lenders and their borrowers. The literature suggests a positive influence on fintech implementation in this case (Waters, 2017).

The literature supports the assumption that most MFI loan clients own a smartphone, have wireless internet access, and have previous experience with apps. This includes micro-entrepreneurs in the lowest income populations as well as those living in rural areas of Latin America. Speaking to the viability of access, Latin America has made recent and impressive progress in this area (OECD and IDB , 2016). Furthermore, if Latin American countries are more closely aligned as collectivist societies (like Turkey and Korea) in their cultural characteristics, MFIs can best foster community-wide adoption (Lee, Trimi, & Kim, 2013) by leveraging social influence (Arpaci, 2015) among their clients.

The literature supports the concept that culture holds a place of prominence when it comes to tech adoption for educational purposes. Much like the history with foreign aid models (Moyo, 2009), ICT tools were described as appealing when they coincided with Latin American culture (García-Urrea & Chikhani, 2012). Researchers warn that before implementing new technologies, MFIs must consider cultural factors such as language preferences, technology literacy, and familiarity with delivery channels (Berger, Goldmark, & Miller-Sanabria, 2006). The body of literature supports a link between successful online learning and cultural adaptations (Gómez-Rey, Barbera, & Fernández-Navarro, 2016) (Lee, Trimi, & Kim, 2013).

For Latin American micro-entrepreneurs, recent adoption (OECD and IDB , 2016) as well as "technological leapfrogging" are defining characteristics of fintech adoption behavior (Berkmen, Beaton, Gershenson, Ishi, Kim, & Kopp, 2019). Difficulty level is unimportant among fintech "laggards" (Rogers, 2003, p. 204) as long as the tech is accessible and compatible with previously-owned technologies (Vishwanath & Goldhaber, 2003). The literature confirms that the trend of rapid tech adoption is present across Latin America and the Caribbean (Hall & Khan, 2002).

Even the "most developed microfinance markets, such as Bolivia, Paraguay, and Nicaragua" need to improve their institutional efficiency using "high-tech solutions" to remain productive towards the mission of global economic empowerment (Berger, Goldmark, & Miller-Sanabria, 2006, p. 203). The literature supports a secondary benefit of fintech adoption beyond positive client services relationships. MFIs that utilize innovative technology can also improve their organizational reputation to attract funders, qualified employees, and future clients for sustainability purposes (Heinze & Heinze, 2018). Not adopting fintech can contribute to higher income inequality for

clients (Santos, Sequeira, & Ferreira-Lopez, 2017). In fact, the support for fintech implementation in Latin American MFIs is so compelling that ignoring it is not likely a permanent choice but rather best understood as a decision to defer (Hall & Khan, 2002).

With cultural fit being an indispensable aspect of tech adoption, any decision by an MFI in Latin America to implement fintech warrants the understanding of a "trait-technology fit" framework (Lee, Choi, Kim, & Hong, 2007, p. 41). As synthesized by the literature review, the fintech adoption framework of Latin American microfinance clients could be described by the following characteristics:

- accepting of postcolonial (asset-based) practices
- regularly accessing broadband internet via smart devices
- adopting at a rapid pace, even "technological leapfrogging"
- placing a high importance on cultural relevance and functionality

The implications are that Latin American MFIs can follow these fintech adoption guidelines as a general rule, though individual institutions are encouraged to map the specific needs of their clients (Carballo & Dalle-Nogare, 2019).

2.5 Limitations of the Literature

To the best of our knowledge, the body of literature does not specifically address fintech or app-based technology used in financial education in Latin American MFIs. The majority of research that addresses fintech in Latin America and MFI involvement is aimed at the following topics:

- Industrialization technology such as tractors, GPS, and mechanization for business efficiency (Foster & Rosenzweig, 2010)
- National policy encouraging ICT diffusion in the general population (Lechman, 2015)
- Regulation models for data security on fintech (Machiavello, 2017)
- Older ICT adoption by MFIs such as email (McCoy, Everard, & Jones, 2005), ATMs, smart cards, personal digital assistants (PDAs), interactive voice response technology, and biometric technology (Berger, Goldmark, & Miller-Sanabria, 2006)

The literature does not include a research-based characterization of the how fintech is perceived by MFI service providers. Research tells us that the use of financial technology apps to provide services to customers has been growing at commercial financial institutions and big banks in Latin America. We know that non-profits and microfinance institutions have not followed the trend, but we don't know the reason for such a drastic difference. There is no quantitative or qualitative research to explain the perceptions of MFI programming decision-makers or service providers on the topic.

Further research needed. As an emerging technology, further research is needed to extend the current body of knowledge explaining why fintech is not being adopted. The goal is to understand the perceptions of MFI service providers and programming decision-makers on the topic.

The primary research aims to answer the question articulated by the literature: Why haven't MFIs in Latin America adopted fintech for financial education purposes in the way that the traditional banking sector has? The research to follow will seek understanding by collecting and analyzing data on the general perception of fintech adoption in MFIs in Latin America.

2.6 Unique Contribution

This study intends to fill in the research gaps mentioned above. It will extend the theoretical research conclusions of microfinance tech adoption to cover the specifics of fintech, MFIs, and Latin America. It will also provide primary research to identify reasons for low fintech adoption in Latin American MFIs. Combined, the findings will address the mission-related significance of fintech adoption on the global scale. As an addition to the body of existing literature, this thesis addresses emerging app-based fintech which has not been studied within the scope of financial education by MFI service providers in Latin America. The qualitative research of this study will serve as a foundation for further research and recommendations towards increased success in fintech implementation in the region's development field.

2.7 Research Questions

My thesis will assess the following general research questions.

- What are the reasons for lagging fintech adoption in Latin American MFIs?
    - What is the perception of fintech by MFI service providers?

        - What are some positives and negatives of fintech as a training tool?
        - What role does technology play in the ability to use fintech?
        - What role does cost play?
    - What do MFI service providers say about the potential for fintech adoption?
        - If fintech were considered to supplement or replace current financial education programming, would it be easy or difficult?

3. Research Methodology

The methodology of the research employs semi-structured interviews for data collection and a qualitative approach to analyze the pertinent data collected.

3.1 Aim of the Study

The purpose of this study is to properly characterize how fintech is perceived in Latin America by MFI service providers, discover if it is used experimentally as a financial education component with borrowers, and theorize the obstacles preventing the adoption of fintech as viable programming via data from service providers.

3.2 Qualitative Research Approach

The primary research of this study takes a qualitative rather than quantitative approach. This approach was chosen because the problem of non-adoption in the MFI field in Latin America remains undefined. Before addressing how to apply theoretical models to the problem, there must be clarity as to what the main obstacles are. If the question of cost is keeping MFIs from fintech adoption, a cost benefit analysis could successfully add to the body of research. If digital inclusion is the main issue preventing tech adoption, theories of tech diffusion applied to the microfinance sector can provide answers. If the technical capacity of MFI staff or clients is the main obstacle, theories of training and capacity building would make sense. Without knowing, it is difficult to proceed along a path of further research. Using a qualitative research approach, this study provides a jumping-off point for follow-up research to appropriately address the problem of non-adoption in the specified field.

The study employs a qualitative approach in which the researcher collected data from MFI service providers and inductively approached the data provided to address the

research questions. The strategy discovers new data that successfully characterizes how fintech is perceived by MFI service providers in Latin America.

As an emerging technology, the incorporation of fintech for financial education purposes in MFIs in Latin America has not yet attracted a large amount of academic interest or data. Few studies have addressed the perceptions of service providers towards this type of fintech use. Berger et al., (2006), Machiavello (2017), and Berkmen et al. (2019) highlight the contrast between the high level of fintech adoption of commercial banks in the region and low adoption by microfinance institutions. The evidence suggests that the views from MFI professionals may be unknown because these service providers have yet to be approached by researchers on the topic and are yet to have been given an academic platform to offer an explanation. In this context, MFI service providers (i.e. program managers, mission directors, education managers, and financial service staff) were recruited to the study. The design of the study and the method selected reflect an effort for those unrepresented voices in existing research findings to thoroughly share their insight and perspectives on the phenomenon.

3.3 Data Collection

Participants. The subjects of research are service providers at MFIs based in Latin America. Because it is impossible to capture responses from every MFI programming staff member in all of Latin America, it was decided that a census sample of randomly selected MFIs would provide a sample that sufficiently overcomes bias. It was assumed that a census sample within various institutions would promise the inclusion of staff known to have various levels of client access, experiences, and points of view regarding fintech.

As Morse (1989) points out random sampling is a bit of a myth: "For qualitative purposes, the potential informants within a population do not have an equal amount of knowledge or equivalent experiences...although those in qualitative research are inclined to retain as many subjects as possible in their study (to improve the 'response rate')" (Morse, 1989, p. 141). Thus, the MFI participants were restricted to represent the following criteria:

- located or having a regional headquarters in Latin America
- having an "international presence" (Waters, 2017)
- having an existing financial education component of programming

- microcredit and business loan services

Within that pool, the respondents were randomly selected. This does not represent the full spectrum of MFIs in Latin America, but it was expected that this selection would provide ample representation of the sample. The participants selected by the researcher had only one criterion of consideration for contribution to the validity of research findings: The individual must have held a position in charge of MFI programming or programming oversight in some capacity (COO, Program Director, Entrepreneur Training, Technical Assistance, Client Services, etc.). It is possible that MFI service providers who work outside of programming departments such as finance or loan officers and administrative staff may have a different perception than service providers. It is also possible that staff of commercial banks may hold different points of view from this sample.

In order to reduce potential bias that soliciting within one single MFI would introduce, multiple MFIs were recruited to the study and MFI service staff from all three sectors was recruited. All sites were chosen based on clientele of economically vulnerable populations to ensure the data existed within the same or similar directives. This ensured that the responses regarding differences in adoption trends between the sectors would remain clear. This also ensured that consensus or diversion between the MFI programs would be possible and likely to produce useful findings.

Method. There were multiple advantages to using a semi-structured interview as the data collection method. First and foremost, it is well suited to the exploration of perceptions, attitudes, and motives (Richardson, Dohrenwend, & Klein, 1965). Second, it allows the researcher to observe non-verbal cues during subject response, which is informative when discussing sensitive issues such as poor industry performance (Gordon, 1975). Third, it guards against response contamination by visually assuring that subjects don't receive assistance in answering questions (Bailey, 1987). Finally, it improves comparability by allowing the researcher to extend the interview until all questions receive a full response (Bailey, 1987).

The appeal of personal interviewing technique is widely recognized for having a better average return than written survey or interview responses which suffer from low respondent confidence (Bailey, 1987) achieving upwards of 70% response rate (Sellitz

& Kidder, 1981). Live interviews are also shown to improve participation rates among those who might be uninterested or even avoid a written questionnaire (Gordon, 1975).

Initial contact with each MFI service provider included in the sample was made online. Some participants received a personal email explaining the purpose of the research project and introducing the researcher. Others received a short introductory message on LinkedIn, a professional social networking platform. The initial note to new LinkedIn connections has a limit of 300 characters including spaces. Once accepted, a full explanation followed. The researcher was unable to send a brief questionnaire or secondary data gathering tool to non-respondents due to LinkedIn policy, which restricts follow-up messages to members that have no prior connection. A contact telephone number, WhatsApp mobile chat app profile, and email were provided. All participants requested to know more project details before agreeing to participate. Most were interested in clarifying the topic of research as well as whether their name, organization, and specific responses would be labeled. Potential respondents at a low level of service in MFIs expressed hesitation at recorded commentary and how it may reflect on their institution. Potential respondents at a senior management level expressed hesitation at how recorded responses may reflect on professional status. Due to initial feedback, the researcher decided that anonymity of respondents was important for valid data collection. The researcher created a system in which respondents tracked given a number that corresponds to their video recordings as well as their transcribed comments during the interview. A combination of messages on LinkedIn, email, and WhatsApp messages were used to arrange, cancel, and re-arrange interviews. LinkedIn messaging proved the most popular communication medium for respondents after initial contact was made.

Each sample group member was approached by the researcher to discuss the project, answer questions, and arrange interviews. Email and phone were used for a less accurate initial contact. In most cases, a letter was sent to the institution's main informational contact via their website or a message was left on the general phone line. Non-respondents who were contacted by email and by phone did not reject participation or provide any response to initial or secondary contact. Zero participants resulted from phone messages (n=0). One participant (n=1) resulted from email contact, aided by a LinkedIn referral.

LinkedIn was a useful platform to accurately filter for the research profile. The platform enforces an undisclosed search limit which was reached in the course of the research. The researcher then leveraged membership in a LinkedIn-based group called Microfinance Professionals. At the time of this study the group had 19,151 members worldwide. After filtering for location (Latin America) and type of institution, 50 individuals were approached at random. It is assumed the LinkedIn search results algorithm had an affect of skewing the top results towards more active members on the platform. This was expected to have a positive impact on response rate.

Non-Respondents. Interest and confidence in the project was low among potential respondents at the time of research. Though many Latin American countries had voluntary and mandatory movement restrictions on residents during the months of research, it is unknown if restricted office access during COVID-19 played a part in the low interest. It is unknown if messages and emails were received and discarded, ignored, or never received. Of 50 potential participants contacted (n=50), only 13 responded (n=13) while one refused to participate (n=1).

The low level of personal contact but rapid speed of real-time response had a few affects on potential participants. First, potential participants who shared microfinance group membership showed a faster response rate than the general search. Second, potential participants who requested more information showed a warmer acceptance rate. Third, MFI service providers who received email or phone messages did not respond, despite having time to ask questions or consider the project over the span of many days. In these cases the researcher was unable to discuss with non-respondents their reasons for not wishing to participate.

Some MFI service providers expressed concern their inclusion in the study was a misunderstanding. They needed reassurance that their professional experience and organization fit the research profile and therefore any input would be relevant and valued. Potential respondents who had not specifically worked with technology were hesitant to be interviewed. Some expressed a low level of technology familiarity as a concern. These concerns turned out to be a case of under-valuing their own exposure and knowledge of the topic of fintech. The only non-respondent who contacted the researcher cited that their "info might be out of date" which could be interpreted as low confidence in the intellectual satisfaction gained from participating (Morse, 1989; Nay-Brock, 1984). Gordon's (1975) concern that low importance of a research topic leads to

inaccurate or incomplete answers did not seem to apply. For the remainder of the sample group, respondents expressed enthusiastic interest in the topic.

Many, if not all, of these MFI service providers would likely not have participated in the study without rapid and thorough responses by the researcher via web-based platforms. It is unlikely that all of the participants would have completed a written questionnaire without multiple concerns laid to rest about the risk of exposure to their institution. Emails and phone calls went unanswered. The encouragement and support of the researcher was crucial for every response.

3.2.1 Semi-Structured Interview

The data collection structure selected for this research was the semi-structured interview via Zoom, a free web-based video chat platform. Semi-structured interviews are ideal for exploring perceptions and opinions, especially on sensitive issues (Nay-Brock, 1984) such as technology non-adoption in the MFI field in Latin America. This data collection means was important for clarifying answers and probing for sensitive information. Video were chosen for two reasons.

1. The geographic locations of MFI staff members spanned Central and South America.
2. The research was carried out at the height of the COVID-19 pandemic, early summer 2020

International travel bans restricted movement during the time of the study. The researcher was unable to hold in-person interviews or consider air travel. Many MFI service providers in Latin America were unable to enter offices and wherever possible, worked from home. The typical setting for semi-structured interviews is face-to-face. Video chat was a globally accepted substitute in academic and professional sectors during this time. Having a simulated face-to-face experience made it more likely for respondents to share honest perceptions and produce an unrestrained flow of information. Recorded video chats include the ability to assess non-verbal communication and scrutinize the appearance of comfort during interactions between respondents and the researcher (Dobbert, 1982). These factors align with the collection of "good" or valid and reliable information (Dobbert, 1982), making it an appropriate substitute medium for face-to-face research.

Gordon (1975) states that standardized interview question sequences are aimed at ensuring that distinct answers among research respondents can be attributed to the "differences among the respondents rather than in the questions asked". This follows the concept of comparability due to standardized stimuli (Smith, 1975; Abrahamson, 1983; Mann, 1985) and standardized vocabulary of respondent sample groups (Denzin, 1989; Nay-Brock, 1984). By contrast, a semi-structured interview schedule allows data collection with non-standardized industry vocabulary, which varies from location to location and person to person. Validity and reliability of data does not necessarily depend on sameness of wording or repetition but rather upon conveying meanings that are equivalent (Denzin, 1989). This can be applied to language differences.

Language differences. In the case of MFI service providers in Latin America, a difference in preferred language across the sector is evident. Due to the "international presence" aspect (Waters, 2017), MFI staff members in Latin America are hired from two pools: local Spanish-speaking and foreign English-speaking populations. Standardized formal interviews make less allowances, while the semi-structured format frees the interviewer to adapt to language differences, using vocabulary that addresses both English and Spanish interviews, allows common local industry vocabulary, and validates differences in professional vocabulary usage between countries. The semi-structured interview technique best served the research purposes.

The advantage when surveying the study sample group was confirmed by a relatively high number of respondents (n=11) whose English was limited or expressed a preference for Spanish. It may be the case that the language difference between respondents corresponds to a difference in perceptions or experiences. Thus employing a technique that allows the exploration of this factor further secures the validity of the final results by avoiding language barriers in the sample group. The flexibility inherent in the semi-structured interview method ensured that careful wording in both languages would sufficiently produce valid and reliable results in data collection.

Clarifications. The Lazarsfeld (1954) argument in sociological research regarding question construction breaks significance into three groups: specification (individual focus of each question), division (wording and sequence of interview questions), and tacit assumption (picking up on the intended meaning of a respondents' answers). Lazarsfeld's question groups come into play when words and phrases used by the respondents have elements of ambiguity.

Respondents commonly used phrases during the interviews such as 'the coverage is good' or 'everyone has a phone'. These phrases can be interpreted in various ways. The 'coverage' can refer to broadband or cellular, free or paid services. 'Good' can refer to a percentage of penetration or merely an improvement over time. 'Everyone' can refer to the national population, all clients, all staff members or otherwise. 'Phones' can mean landlines, cell phones, or smartphones. These distinctions all have functional significance to the study topic. To properly understand the meaning of the data shared by respondents, the freedom of a semi-structured interview allowed the researcher to probe unclear statements and arrive at essential meanings in accordance to research aims.

Probing. The flexibility of the semi-structured interview allowed the researcher to decide to probe or clarify meaning rather than sticking to a standardized word-for-word script (Smith, 1975; Abrahamson, 1983; Mann, 1985). Probing off-script provides reliable data by allowing researchers to explore sensitive issues (Nay-Brock, 1984) and further elicit information for a complete response and reduction in inconsistencies (Gordon, 1975; Bailey, 1987).

Patton (1990) stresses that the interactive nature of semi-structured interviews establishes rapport between interviewer and respondent, mitigating socially desirable answers. Going into data collection, the researcher acknowledged that the topic was likely to elicit socially desirable answers from professionals in the industry. The concept of demand characteristics states that particularly in non-laboratory settings research participants have an awareness of what a researcher is investigating and may attempt, subconsciously or consciously, to provide a more desirable, less honest response (McCambridge, Bruin, & Witton, 2012). Bailey (1987) discusses how demand characteristics can be further exaggerated by differences in age, gender, ethnicity, socio-economic status, and education level between the interviewer and respondent. The researcher as the sole interviewer made every attempt in terms of presentation and vocabulary to put respondents at ease. The researcher shared with respondents her four years of professional experience in the microfinance field to allow for significant industry jargon as well as acronyms for institutions and ideologies, as is recommended by the methodology (Denzin, 1989). This ensured that all efforts were made to reduce potential intimidation on the part of the respondent or interviewer (Bailey, 1987). Initial interactions were capitalized upon to break down social barriers, increase rapport, and

encourage comfort in respondents (Oppenheim, 1992). Following Opennheim's (1992) recommendations for eliciting unrestricted communication, resondents were consulted about the language they preferred to hold the interview in.

Some respondents agreed to interview despite remaining unsure as to their contribution. Some truly felt they had little technology exposure in relation to their MFI training work, saying things such as, "My experience is a little dated" (Respondent3, 2020). In those cases the interviewer/researcher appealed to common MFI mission motivations as well as brief explanations of methodology during the interview. These attempts were aimed at eliciting accurate and full answers from respondents (Gordon, 1975). Though impossible to overcome every issue of evasion or refusal to answer, probing efforts were made to obtain data with the highest validity possible and to fulfill a complete sample data set.

Video recordings. The use of video recordings ensures that the contents of each interview are available for verification while the process can be replicated identically. Patton (1990, p. 279) states that validity and quality of data collection in semi-structured interviews is "largely dependent on the interviewer". Thus, video recordings provide a review of the actual performance of both the interviewer and respondents which can be observed, judged, and gleaned for insight and subtleties. Video recordings of data collection ensure that the information is accurate, complete, and valid. It reduces instances of interviewer error, incorrect recording of data, and eliminates the possibility to invent/skew responses or represent data that were not explicitly given. One respondent (n=1) declined live video in favor of an audio recording. Regardless, the interviewer/researcher was captured on video throughout.

Data collection tools. Denzin (1989) warns that faulty design in data collection tools can distort results. After a data collection method was chosen the initial phase of research design began. Standard semi-structured interview schedules were reviewed from methodological literature. An original instrument was needed to meet sufficient standardization and comparability. The focus was to adequately capture previously unexpressed impressions from respondents. The development emphasized that the tool would elicit complete and fully-realized perceptions though perhaps unvoiced before.

An original instrument was created based on Barriball & While (1994) semi-structured interview methodology. The influencing literature outlined the measures used by a research team studying perceptions of continuing education among practicing

nurses. Though different industries, the methodology and research design closely resembled the study needs in two ways:

1. demonstrates a successful exploration of abstract perceptions from practitioners in a field with disparate locations
2. displays a strong need to overcome threats to validity due to research topic novelty

A semi-structured interview schedule was developed in both English and Spanish by the researcher (see Appendix 1 and Appendix 2). The instrument was informed by a comprehensive review of qualitative data collection literature referenced by the influencing methodology (except in cases that specifically addressed nursing). The main areas of interest were delineated by the literature review and resulting research questions. Using the reference literature, these were broken down into 5 sections of relevance which were connected directly to the stated research questions. Thus the reasoning for inclusion was clear prior to the interview schedule's pilot.

Pilot phase. The first draft of the interview schedule was put to trial according to methodology recommended by Mann (1985). An international NGO program manager ran the dry-run of the instrument, providing valuable feedback as to length and duration. Next, two MFI service providers who work with Latin American clients facilitated the pilot testing on the instrument. One pilot was held in English while another was held in Spanish. Their feedback regarding ease, comfort, and fullness of response was used to finalize the interview schedule. General criticisms were brought forward and ambiguities were eliminated. The researcher consulted with a group of experts to assess the inclusion or exclusion of each question along with the structural presentation therin. Great care was taken to adjust both the English and Spanish language schedules according to commentary by both sets of pilot feedback. These arrangements were invaluable to the success of the instrument.

The final draft was evaluated by experts under the conditions expected by the main field of study. Again, MFI service providers who work with Latin American clientele were used to appraise the ability of the final pilot draft to elicit the perceptions targeted by the data collection. It was validated that the final draft interview schedule in both English and Spanish was likely to:

1. elicit responses from respondents during the course of the interview

2. prompt respondents to detail their impressions and perceptions regarding the use of fintech for financial education purposes, including differences in attitudes related to their role in the organization

The performance of the researcher as the interviewer was also validated under the rigors of field conditions in both languages. The interviewer trained to adjust question sequence and make field decisions about how best to capture accurate data from respondents while maintaining standardization. As the sole interviewer, the researcher had prior understanding of the interview schedule as well as the threats to bias necessary to avoid during interviews. Self-evaluation was conducted using various recording devices. It was decided that the combined audio/video function in Zoom were ideal due to platform integration and unlikely to interfere with the respondent/interviewer dynamic. This was deemed more important than secondary recordings. All recordings (n=13) were successful.

It was concluded that the interview schedule as run during the final pilot phase sufficiently captured the intended data, was ordered such that respondents would feel natural regarding the progression of the interview, would not result in unexplored areas of study corresponding to the research questions, and would avoid confusion.

Triangulation. It was expected according to data informed by geographic location and the literature review that service providers outside of Latin America would differ in impressions than those in the field. Language barrier may or may not play a larger perceived role in tech avoidance in the United States than in Latin America, where programming is likely English-based. The two sets of pilot feedback and final pilot answers were recorded for triangulation purposes (See Appendix 3) to establish the efficiency of the final pilot draft.

Using the pilot phase provided the researcher/interviewer with valuable experience. It improved the comparability of responses due to solidifying the repetitive process of data collection. Interviewer drift was avoided by using a single interviewer. Interviewer fatigue was avoided due to the interviewer, as the researcher, having a strong motivation towards accurate results. Language barriers were highly anticipated and prepared for. When Spanish-language requests arose in the main study, it was a fluid transition. This further ensured validity and reliability. Thus the interview schedule was deemed efficient for exploring how fintech is perceived in Latin America by MFI

service providers, discover if it is used experimentally as a financial education component with borrowers, and theorize the obstacles preventing the adoption of fintech as viable programming via data from service providers.

Procedures. The procedure for data collection during the main study was carried out according to the following outline.

1. Schedule the interview
    a. Confirm 30-minute interview slot in respondent's local time zone
    b. Create a 40-minute video chat event on the Zoom platform
    c. Send a link confirming interview time and preferred language
    d. Re-schedule as needed
2. Prepare for the interview
    a. Set up a computer with a combined microphone/audio headset
    b. Open the interview schedule in the appropriate language
    c. Open the Zoom video chat platform
    d. Check audio and video functions 5 minutes ahead
3. Conduct the interview
    a. Admit the respondent to the Zoom chat
    b. Ensure respondent audio and video functionality
    c. Confirm demographic details
    d. Begin recording
4. Follow the interview schedule, taking notes throughout
5. Post-Interview procedure
    a. Convert video and audio, save on secure cloud drive
    b. Type hand-written notes
    c. Transcribe comments and quotes from video re-play
    d. Translate Spanish responses into English
    e. Take note of any non-verbal communication during the interview

3.6 Data Analysis

The data collected was analyzed in accordance with qualitative methodology. Perceptions were linked to the stated general research questions.

- Reasons for lagging fintech adoption in Latin American MFIs
- General perception of fintech by MFI service providers

- Advantages/ disadvantages of fintech as a training tool
- The role that technology and cost play in the ability to use fintech
- The ease/difficulty of fintech adoption for financial education *at some level*

Participant observation was carried out according to the semi-structured qualitative analysis recommendations of Bariball & While (1994) along with coinciding qualitative methodologies. Responses were analyzed qualitatively for patterns and themes as developed by notes, transcripts, and translated texts from the data collection process. Attention was paid to patterns according to respondents' country of service (see Figure 1), work sector (see Figure 2: Respondent Sector of MFI Work), language of preference (see Figure 3) and role within the MFI organizational structure (see Figure 4). No strong segmentation was detected, except where specifically mentioned.

3.7 Ethical Considerations

The ethics of the study are kept intact by preserving the anonymity of respondents. Full video recordings and coded response documentation are maintained on a secure cloud drive with versioning functionality. The accuracy of the data collection as stated is ethical and verifiable. The trustworthiness of the study is ensured by presenting all research respondents with an identical semi-structured interview schedule that elicits complete impressions and allows for response comparability. The validity of the findings was checked for accuracy by participating respondents during interviews. Findings were triangulated with MFI service providers who work with Latin American clients in the United States. Triangulation feedback is corroborating evidence that the interpretation of this study should be trusted.

Limitations. A major constraint of the study is due to the timeframe in which it was carried out. Most stages of research planning, data collection, data analysis, and findings were conducted during the height of the global COVID-19 pandemic from May to July 2020. As a result of quarantine, research complications arose. Originally slated as a study of the needs of underserved female borrowers based on loan client feedback, it became impossible to coordinate with microfinance loan recipients in Latin America. Many entrepreneurs were under quarantine restrictions. All were affected economically. Participating in a research project understandably became low priority and subjects fell out of contact with the researcher.

In some cases MFI service providers did not have adequate remote access to work systems. As salaried workers, some previously committed MFI staff was required to work remotely during the pandemic, remaining available for research. A decision was made to broaden the research parameters, removing gender considerations and pivot the study from client tech adoption to the general perspective of MFI service providers instead. The field being studied remained the same. The resulting sample group size was smaller than expected. Though 13/14 or ~93% of potential respondents who showed evidence of receiving the pivoted research contact message did eventually take part in the data collection process, initial contact had a poor response rate of 12/50 or 26%. Consequently, the study was limited to select organizations that functioned under home office conditions with access to communication networks. Regardless, the level of expertise on the topic was deep. Two participants reported 21 and 30 years of experience in the field respectively, while all thirteen (n=13) reported over 5 years in the industry.

The issue of poor response eliminated the potential for quantitative results, the possibility to collect significant financial data from respondents' associated MFIs, and the possibility for a case study of any magnitude. Though anticipated during the process of pivoting the study, no solutions were presented to adequately increase the sample group size once pandemic restrictions were implemented in Latin America. Outreach to prior contacts was tabled. Thus, the findings were ultimately restricted to qualitative analysis.

4. Findings

The following are findings as collected by semi-structured interview methodology. With 9 questions in the interview schedule and 13 respondents, an estimated 106/117 or 90+% of the questions received a complete response.

4.1 Overview of Findings

At the time of this study, the sample group of respondents worked in programming for MFIs, third-party program contractors, financial inclusion projects, group savings (Grameen model) projects, and MFI volunteer coordination. Respondents held various nationalities and worked for MFIs in the following seven countries:

Colombia, Peru, Nicaragua, Guatemala, Ecuador, Dominican Republic, and Bolivia (see Figure 1). Their work placement spanned the public, private, and NGO/civic sectors (see Figure 2). 11 out of 13 respondents chose Spanish as their language of preference for the interview (see Figure 3). Respondents ranged from executive directors to technical assistance staff members with a direct service role (see Figure 4). Typical responses are selected below.

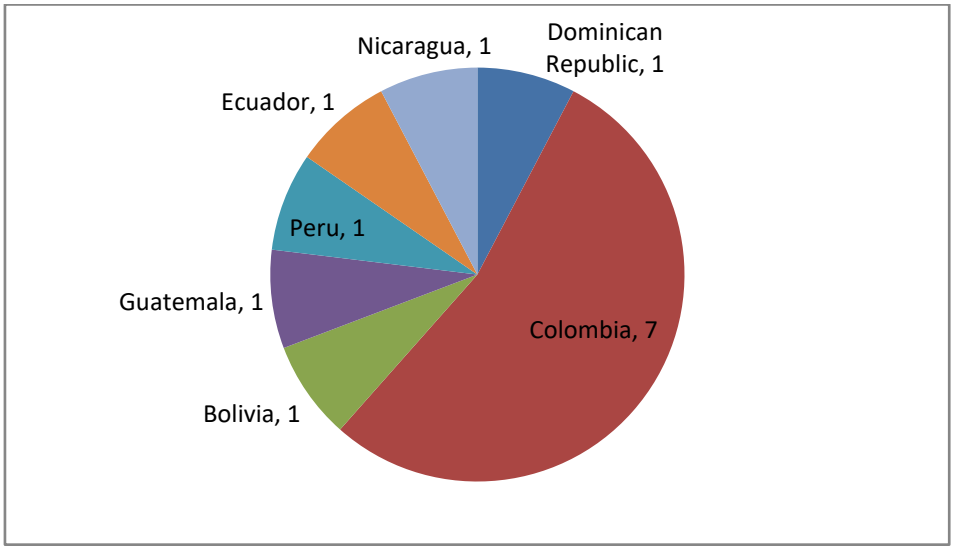

Figure 1: Respondent Country of MFI Service

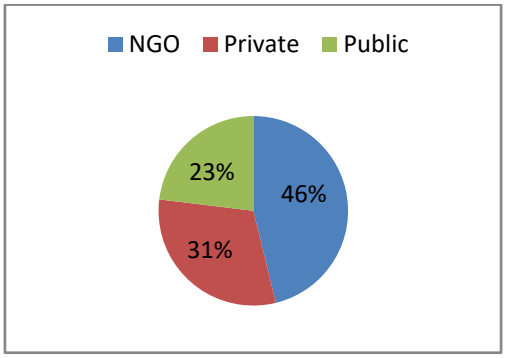

Figure 2: Respondent Sector of MFI Work

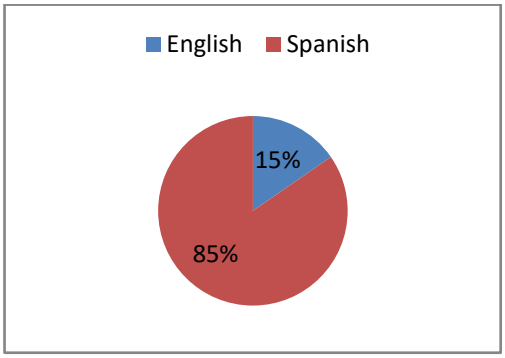

Figure 3: Respondent Language of Preference

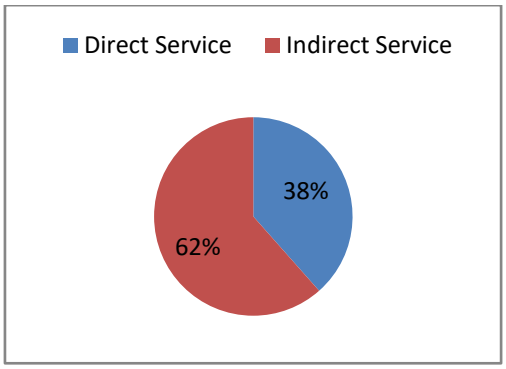

Figure 4: Respondent Proximity to Clients

Current financial education programming. Respondents reported that financial education at small MFIs is low-tech.

- "Majority [of the trainings] were on paper. Very few of the clients worked with computers" (Respondent1, 2020).
- "There are rural zones where the use of practical exercises, activities, games, paper, flipcharts, it helps a lot...that functions well when the level of education is low" (Respondent7, 2020).

Broadband access. Respondents reported that broadband access remains low in rural and low-income urban areas where MFIs provide services.

- "Anywhere really in Latin America, coverage around major cities is fine. But then you get out 50-100 miles [~80-160 km] and it's not as accessible" (Respondent3, 2020).

Smartphone ownership. Respondents said that smartphone ownership is limited.

- "The majority of people have cell phones. However that doesn't mean they are smartphones. Nowadays it's more difficult to find what we call *una flechita* or a basic mobile phone. You hardly can find those anymore. It's forcing people to buy smartphones" (Respondent2, 2020).

Advantages of fintech for MFIs. Respondents report increased operational efficiency.

- "The biggest advantage is that it makes operations more efficient. I can bring in more clients to a [digital] training by offering it to everybody independent of where they are located. It's more accessible" (Respondent10, 2020)

Advantages for microloan clients. Respondents report that digital financial literacy via fintech offers convenience.

- "At dinnertime or in the evening I could dedicate a peaceful time to watch it. That is very feasible" (Respondent5, 2020)
- "It would be more accessible to more people just because they don't have to drive two hours to the bank branch" (Respondent3, 2020).

Disadvantages of fintech. Respondents reported the loss of personal contact and decreased motivation as disadvantages of fintech-based education.

- "The disadvantages of any training online is that it's not tailored for that person so that one-on-one conversation...you can't necessarily do on a standard online training. However if you were to have somebody talking to them in person, through Zoom, that might be ok" (Respondent3, 2020).
- "If it's not a requirement and they invite you to watch, normally the audience doesn't show up" (Respondent5, 2020).

Difficulty of adoption. Respondents were asked to characterize the difficulty of adopting fintech programming. Answers varied.

- "It could be easy. I mean, it's definitely easy. The issue is the cost that the client has to take on" (Respondent5, 2020).
- "It depends on the sophistication of the MFI. I have worked with the smallest MFIs in the region and also the largest. The smallest don't even have their own systems. They aren't even thinking of offering education by technological means" (Respondent2, 2020).

The definition of *fintech*. Although the term *fintech* was defined by the interviewer and respondents acknowledged numerous examples of commercially available low- and no-cost apps (see Appendix 1 and Appendix 2), there was confusion.

- "I define fintech as tech companies that offer financial services" (Respondent13, 2020).

MFI tech adoption. Respondents acknowledge a reputation for embracing technology in the industry, which brought up feelings of hesitation and lessons learned.

- "The MFIs at one point in Latin America were on the cutting edge of technology. Back in the late 90s early 2000s they were the ones experimenting with tablets and phones" (Respondent3, 2020).
- "There are organizations that have believed that fintech can enter the picture and they are going to cover all the functionality that they previously had before technology. It's an error. You will always have a percentage of your population that will never migrate to digital" (Respondent4, 2020).

Grassroots fintech use. 13/13 or 100% of respondents reported innovative fintech use in the field, especially leveraging free social media apps.

- "One volunteer worked with cacao grower co-ops in the Dominican Republic. She was looking to use some of that technology as a follow-up project with the cacao grower associations. She was exploring the possibility" (Respondent1, 2020).
- "We are the ones working with the little guys...I think that Facebook and WhatsApp are the key because they are free. There is not a single Colombian who doesn't have those apps" (Respondent12, 2020).

Lagging fintech adoption. Respondents were introduced to literature stating that traditional banks in Latin America are adopting fintech, while MFIs are not. When asked to offer an explanation, respondents confirmed, blaming funding constraints.

- "Funding...It's much easier for traditional banks...The MFI has to have a long-term vision to begin to implement that kind of project. It's not going to happen from one year to the next" (Respondent2, 2020).
- "I do believe our bank partners probably are utilizing it more...[MFIs] just don't have the same budgets that banks have" (Respondent3, 2020).

Other factors. Respondents mentioned age but did not agree about the impact on demand for fintech adoption.

- "Younger people here are pretty quick to use these applications, but they're not the ones getting microloans" (Respondent1, 2020).
- "We have more young entrepreneurs that aren't going to go to our office. Microfinance institutions are opening up more and more to using digital means. The market is imposing it" (Respondent6, 2020).

4.2 Discussion

The major findings of the qualitative analysis are discussed below. Outcomes of the analysis are linked with revealed perceptions and realities in the field, discussing themes and patterns in the findings.

How fintech is perceived in Latin America. Generally, respondents express a positive outlook towards the utility of fintech for financial education purposes within their institution. "I think it could have applications. I could see where it could help" (Respondent1, 2020). Whether by interest or client demand, respondents agree that a measure of fin tech adoption is inevitable. "The digital era that we are in has challenged us. We have to do business in a new way" (Respondent6, 2020). Despite embracing tech, fintech is not perceived as within reach for all MFI clients.

Main obstacles. When discussing digital transformations, respondents shared themes around a need for caution. Respondents who work in direct service with the most vulnerable populations expressed the most hesitancy towards rapid fintech adoption. In a field aimed at economic empowerment, the risk of alienating vulnerable populations was vocalized. "There are other components [to microfinance] that are not purely financial, like empowerment and encouragement" (Respondent12, 2020). MFI service providers welcomed fintech insofar as it provides efficiency, but did not want fintech at the cost of the financial inclusion mission. "[MFI service] can transform into something complemented by technology. The challenge is to achieve these two elements, the human and the technological" (Respondent6, 2020). Overall, respondents agreed that the main obstacles preventing the adoption of fintech as viable programming are cost and limitations on client technology capacity. The identification of one, if not both, was shared by all respondents.

The roles of technology and cost. Multiple respondents mentioned that microfinance clients in Latin America do not have the technology access that the literature suggests. Without broadband access and smartphone ownership, fintech is inaccessible. Respondents refuted high statistics, saying, "In Peru there are statistics from 2013 that there are 1.5 cell phones per person in the country...but it is understood that a certain population has one phone for work and another personal phone. So the reality is lower" (Respondent8, 2020). It is impossible to say how much of a discrepancy exists between the literature and reality. The perception of low smartphone

ownership is shared by many respondents who have regular contact with microloan clients in Latin American countries. Above all else, cost is the reason that smartphones with data plans are out of reach according to MFI service providers' general impressions.

4.3 Meanings and Understandings

The interpretations of the findings are further discussed by summarizing and linking the revealed perceptions of MFI service providers to reality.

Proprietary apps. Responses regarding the feasibility of fintech adoption went directly to the idea of building e-banking apps for loan disbursement. Phrases alluding to building an app were not used by the interviewer but brought up by respondents in 12/13 or 92% of interviews. "It's a huge cost. Sometimes people ask, "Can't MFIs can solve all their operating cost problems by using an app?" Well they can, but it's a big initial investment that they sometimes can't come up with" (Respondent2, 2020). Correctly characterized this as a costly endeavor, proprietary apps were not the subject of the study. This could be explained in two ways. First, there are competing definitions of *fintech* in Latin America (it can refer to start-up companies or financial technology itself) which could not be overcome. Second, large-scale MFIs in Latin America have found significant traction via banking apps. "I know that Bancamía has one, Bancompartir has one, Banco de la Mujer has one, and all these apps are designed with transaction modules and also financial education modules" (Respondent6, 2020). Only one (n=1) respondent mentioned commercially-available apps unprompted. "[MFIs] would probably benefit more from pre-made applications rather than doing that in-house" (Respondent3, 2020). The intense draw to proprietary apps may reveal an expression of perceived client demand. It is speculated that market competitors provide cutting-edge fintech to attract customers, so smaller MFIs may feel the pressure.

Grassroots fintech use. Every MFI from the most innovative to the least tech-forward program reported experimentation with digital finance. Most instances were chat apps used to disseminate digital financial curricula rather than pure fintech apps. There were text prompts (Respondent3, 2020), a digital finance library (Respondent6, 2020), and a mobile chat bot for financial education (Respondent4, 2020). The focus of these use cases reveals a trend: skirting data usage to keep client costs low. WhatsApp and Facebook are the only free, widely-available apps in Latin America which do not

require data. They serve as the main mode of digital information sharing for MFIs. Public programs also leverage free social media use. ""By way of social networks like Facebook and Instagram, we send [clients] information about credit lines and additionally we send messages of financial education. We are piloting the idea" (Respondent11, 2020). One of the larger private MFIs in Colombia has a successful proprietary app but is piloting a platform that feels more familiar. "We have seen that for clients this format is much more intuitive for them because they are habitual users of Messenger or WhatsApp chat apps" (Respondent13, 2020).

COVID-19 pandemic as an accelerator of digital transformation. Many respondents had commentary about the impact that the current global pandemic is having on digital migration. There were reports of pandemic-related government assistance for low cost internet plans in Colombia (Respondent6, 2020), repurposed MFI funds to "help develop the local broadband network" (Respondent3, 2020), and accelerated adoption of technology for communications in Guatemala (Respondent7, 2020). Respondents repeatedly characterized the current tech adoption environment as accelerated. "In these times of coronavirus, of COVID-19 in the world, we have had to adapt to progress because the world has demanded it" (Respondent4, 2020).

Commercial blind spot. Interestingly, all but one (n=1) respondent were aware of the term fintech as defined by the interviewer (see Appendix 1). Every respondent reported using low- and no-cost commercial fintech apps in their personal life. 0/13 or 0% of respondents adopted these apps as financial education tools in their institutions. It appears to be a blind spot. Since commercially available finance apps are not considered financial education tools, it was difficult for service providers to consider their potential. The study makes it clear that strong efforts would be required to re-imagine their use among MFI service providers.

Fintech regulation in Colombia. 7/7 or 100% of respondents in Colombia brought up fintech regulations. "They've made the laws really restrictive around the size and the capital requirements [of fintech]. A 'Venmo' couldn't come into Colombia so it makes it challenging" (Respondent3, 2020). Respondents from Bolivia, Peru, Nicaragua, Guatemala, and the Dominican Republic did not name regulation as an obstacle to fintech adoption. A respondent in Ecuador did (Respondent9, 2020). It is unknown of it is isolated to certain countries or true for all of Latin America. This finding eliminated a deliverable of the research project (see Appendix 4). The

significance aligns with Carballo & Dalle-Nogare (2019) regarding the limitations of making generalizations about the Latin American microfinance market.

4.4 Implications of the Study

Understanding how MFI service providers perceive fintech and its role as a financial education tool allows stakeholders to better address the problem.

Stratification. The main take away from the findings is that the levels of fintech adoption amongst MFIs in Latin America are perceived as stratified. The ability to adopt fintech revolves around institution size, financial services offered, and the demographics of the clients served. By extrapolating the respondent perceptions, here is a sliding scale demonstrating informal categories of fintech adoption. Note: There are outliers.

LOW ↓ HIGH	Financial Institution	Financial Education Programming	Lending/Finance Methods	Level of Fintech Adoption	Fintech Tools	Cost of Digital Tools
	Small MFI	Non-digital materials	Group savings	None	N/A	N/A
	Medium MFI Mixed	Digital materials in addition to current materials	Group lending	Supplementary	WhatsApp Facebook Digital Library	Free
	Small cooperative Small foundation Innovative others	Digital materials working alongside current materials	Productive lending SME/PYME lending	Complementary	Low-cost apps No-cost apps Commercial apps	Low
	Large MFI Commercial bank Foundation Larger cooperative Large foundation	All digital materials	Commercial business lending Individual lending	Full Replacement	Proprietary app	High

Figure 5: Level of Fintech Adoption Scale

The findings reveal that innovative MFIs have proceeded with the grassroots use of fintech. In these situations, the perception is that implementation scenarios have been successful. The study concludes that although fintech adoption is embraced by MFI service providers as advantageous, it's not without hesitation.

5. Conclusions

As a result of the synthesized literature review and the research carried out, five conclusions can be drawn that offer interesting contributions to the field of microfinance and fintech adoption study in Latin America.

5.1 Main Contributions

Framework for fintech adoption in Latin America. This study outlines a framework for fintech adoption in Latin American MFIs based on existing literature and past tech adoption patterns.

Research results. Using a semi-structured interview for data collection and qualitative analysis, the research identifies the perceived obstacles preventing widespread adoption of commercial fintech as a programming tool. Analysis finds that microfinance service providers perceive fintech as costly and beyond the reach of their clients. Part of the cost perception can be resolved by addressing the preoccupation with building proprietary apps. Still, the costs associated with tech adoption efforts cannot be underestimated and require further economic analysis.

Contradictions in perception. It is concluded that there exists a discrepancy between the statistical literature on technology penetration in Latin America as compared to the perception of reality from microfinance service providers. The study draws into question an alternate reality for the most vulnerable and rural microloan clients and demands further investigation.

Grassroots use. This study finds evidence of the grassroots use of financial technology apps in the Latin American microfinance field at all levels.

Outlook on viability. The potential to implement mobile fintech as a financial education tool within existing microfinance programming in Latin American countries is concluded to be viable. With in-house assessments of client demographics as a prominent focus, fintech can be considered by individual microfinance institutions in Latin America.

The conclusions found in this thesis are addressed to stakeholders in strategic planning such as MFI board members, executive-level managers, and funding decision-makers. These conclusions imply that at least one of the perceived obstacles to fintech

adoption may be unwarranted. The findings are relevant so long as they can be applied to the specific demographic of MFI outlined in the study.

5.2 Direction for Future Research

There is the potential to build upon the presented findings and extend the implications with additional studies. Here are a few directions for potential research on this topic in the future.

Case study. A case study introducing one or more fintech platforms as programming tools produce reproducible outcomes for MFIs in Latin America. Studying the outcomes, mission-tangential impacts, or a cost-benefit analysis would go a long way towards increasing the practical impact of this study.

Under adoption. Foster and Rosenzweig (2010, p. 4) define *under-adoption* as "a situation in which there are substantial unrealized gains to the use of a new technology or expansion of input use". An extension of this research to answer these questions can be used to overcome ambiguous measurement issues and break down net gain to the agent as a result.

Fintech regulation. Further research into fintech regulation in Colombia as compared to other countries in the region would provide more answers about lagging adoption.

6. Summary

This intent of this thesis is to assess the programmatic viability of adopting fintech as an MFI client-facing tool. Previous research does not adequately combine the best practices of MFI programming with the potential found in digital financial education. Microfinance service providers participated in a research project aimed at characterizing how fintech is perceived in Latin America. Employing qualitative analysis methods, this study finds grassroots use of financial technology in current programming at all levels of microfinance institutional programming. The analysis reveals that service providers perceive the wider implementation of financial technology tools as welcome but costly and beyond the use capacity of economically vulnerable clients. One element of the cost perception regarding a demand for proprietary apps can be dismissed. Another element of perceived cost, namely the expense of digital

transformation, is a reality. The inconsistencies between regional technology penetration statistics and perceptions about real client access remain. For the specific profile of microfinance institutions addressed by this study, fintech is concluded to be a viable education tool for implementation in Latin America as long as service providers assess their borrowers' technology access.

References

Abrahamson, M. (1983). *Social Research Methods.* Englewood Cliffs, New Jersey: Prentice Hall.

Abramsky, S. (2018, September 09). Newcomers Savings and Loan. *New York Times* , p. CY4.

Acorns Grow Incorporated. (2020). *Google Play App Store.* Retrieved from https://play.google.com/store/apps/details?id=com.acorns.android&hl=es_419

Arpaci, I. (2015). A comparative study of the effects of cultural differences on the adoption of mobile learning. *British Journal of Educational Technology* , 699-712.

Bailey, K. (1987). *Methods of Social Research.* New York: The Free Press.

Baptista, G., & Oliveira, T. (2015). Understanding mobile banking The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior* , 418-430.

Bariball, L., & While, A. (1994). Collecting data using a semi-structured interview: a discussion paper. *Journal of Advanced Nursing* , 328-335.

Bayulgen, O. (2008). Muhammad Yunus, Grameen Bank and the Nobel Peace Prize: What Political Science Can Contribute to and Learn From the Study of Microcredit. *International Studies Review* .

BBVA. (2018, October 31). *Fintech.* Retrieved July 17, 2019, from BBVA Communications: https://www.bbva.com/es/acorns-app-te-ayuda-invertir-centimos-te-sobran-cafe/

Bedecarrats, F., Bastiaensen, J., & Doligez, F. (2012). Co-Optation, Cooperation or Competition? Microfinance and the New Left in Bolivia, Ecuador, and Nicaragua. *Third World Quarterly , 33*, pp. 143-161.

Berger, M., Goldmark, L., & Miller-Sanabria, T. (2006). *An Inside View of Latin American Microfinance.* Washington, D.C.: Inter-American Development Bank.

Berger, M., Goldmark, L., & Miller-Sanabria, T. (2006). *Boom de las Microfinanzas: El Modelo Latinoamericano Visto Desde Adentro.* Washington, DC: Inter-American Development Bank.

Berkmen, P., Beaton, K., Gershenson, D., Ishi, K., Kim, M., & Kopp, E. (2019). *Fintech in Latin America and the Caribbean: Stocktaking.* IMF Working Papers.

Bouman, F. J. (1983). Indigenous Savings & Credit Societies in the Developing World. *Rural Financial Markets in the Developing World* .

Brătăşanu, V. (2017). Digital innovation the new paradigm for financial services industry. *Theoretical and Applied Economics, Bucharest University* .

Cabral, K. (2017). Exploiting Latin American Microfinance Deregulation: One Borrower at a Time. *Brooklyn Journal of Corporate, Financial & Commercial Law* .

Carballo, I. E., & Dalle-Nogare, F. (2019). Fintech e inclusión financiera: los casos de México, Chile y Perú. *Revista CEA* , 11-34.

Charness, G., & Sutter, M. (2012). Groups Make Better Self-Interested. *Journal of Economic Perspectives* , 157-176.

Choden, K., Bagchi, K. K., Udo, G. J., Kirs, P. J., & Frankwick, G. (2019). The Influence of Cultural Values on Information and Communication Technology (ICT) Diffusion Levels: A Cross-National Study. *Journal of Global Information Technology Management* , 243-256.

Denzin, N. (1989). *The Research Act: A Theoretical Introduction to Sociological Methods.* Englewood Cliffs, New Jersey: Prentice Hall.

Dobbert, M. L. (1982). *Ethnographic Research.* New York: Praeger.

Dornberger, U., & Fromm, I. (2005). Bolivian Strategy for Poverty Reduction. *Small Enterprise Promotion and Training (SEPT)* , 57-73.

Foroohar, R., & Ramirez, J. (2010). It's Payback Time. *Newsweek* .

Foster, A. D., & Rozenweig, M. R. (2010). *Microeconomics of Technology Adoption.* New Haven: Economic Growth Center, Yale University.

Foster, A., & Rosenzweig, M. (2010). *Microeconomics of Technology Adoption.* New Haven, CT: Economic Growth Center, Yale University.

Gabor, D., & Brooks, S. (2017). The digital revolution in financial inclusion: international development in the fintech era. *New Political Economy, 22:4* , 423-436.

García-Urrea, S., & Chikhani, A. (2012). Percepciones que tienen los docentes de América Latina sobre las tecnologías de la información y la comunicación. *Revista Q* .

Gómez-Rey, P., Barbera, E., & Fernández-Navarro, F. (2016). The Impact of Cultural Dimensions on Online Learning. *Educational Technology & Society* , 225-238.

Gordon, R. (1975). *Interviewing: Strategy, Techniques and Tactics.* Illinois: Dorsey Press.

Gunawan, H., Sinaga, B. L., & WP, S. P. (2019). Assessment of the Readiness of Micro, Small and Medium Enterprises in Using E-Money Using the Unified Theory of Acceptance and Use of Technology (UTAUT) Method. *Procedia Computer Science* , 316-323.

Hall, B. H., & Khan, B. (2002). Adoption of New Technology. *New Economy Handbook* .

Heinze, K., & Heinze, J. (2018). Individual innovation adoption and the role of organizational culture. *Review of Managerial Science* , 561–586.

Lazarsfeld, P. (1954). *The Art of Asking Why: Three Principles Underlying the Formulation of Questionnaires.* New York: Holt, Rinehart and Winston.

Lechman, E. (2015). *ICT Diffusion in Developing Countries: Towards a New Concept of Technological Takeoff.* Cham New York London: Springer International Publishing.

Lee, I., Choi, B., Kim, J., & Hong, S.-J. (2007). Culture-Technology Fit: Effects of Cultural Charactheristics on the Post-Adoption Beliefs of Mobile Internet Users. *International Journal of Electronic Commerce* .

Lee, S.-G., Trimi, S., & Kim, C. (2013). The impact of cultural differences on technology adoption. *El Sevier Journal of World Business* , 20-29.

Lim, D. (2004). *Cross Cultural Differences in Online Learning Motivation.* Knoxville: University of Tennessee.

Machiavello, E. (2017). *Microfinace and Financial Inclusion: The Challenge of Regulating Alternative Forms of Finance.* New York, NY: Routledge.

Mann, P. (1985). *Methods of Social Investigation.* Oxford: Basil Blackwell.

Manta, O. (2018). Financial Technologies (FinTech) Instruments, Mechanisms, and Financial Products. *Internal Auditing & Risk Management* .

McCambridge, J., Bruin, M. d., & Witton, J. (2012). The Effects of Demand Characteristics on Research Participant Behaviours in Non-Laboratory Settings: A Systematic Review. *PLOS One* .

McCoy, S., Everard, A., & Jones, B. M. (2005). An Examination of the Technology Acceptance Model in Uruguay and the US: A Focus on Culture. *Journal of Global* , 27-45.

Member Countries. (2018). Retrieved November 04, 2018, from List of OECD Member countries - Ratification of the Convention on the OECD: http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm

Morse, J. (1989). Strategies for sampling. In J. Morse, *Qualitiative Nursing Research: A Contemporary Dialogue* (pp. 127-142). Rockville, Maryland: Aspen.

Moyo, D. (2009). *Dead Aid: Why Aid Is Not Working and How There Is a Better Way for Africa.* New York: Farrar, Straus, and Giroux.

Mpokosa, C. (2009). *My Disappointment with 'Dead Aid' as an African*. Retrieved December 06, 2018, from Oxfam International: https://blogs.oxfam.org/en/blog/09-06-10-disappointment-dead-aid-african

Nay-Brock. (1984). A comparison of the questionnaire and interviewing techniques in the colleciton of sociological data. *Australian Journal of Advanced Nursing* , 14-23.

Nicholls, T. (n.d.). *Frantz Fanon.* Retrieved November 27, 2019, from The Internet Encyclopedia of Philosophy: https://www.iep.utm.edu/

Odo, F. (2018, October). Voices from the Canefields: Folksongs from Japanese Immigrant Workers in Hawai'i. *OUP USA* , pp. 34-35.

OECD. (2017, December). Retrieved from OECD Broadband Portal Reports: http://www.oecd.org/internet/broadband/broadband-statistics-update.htm

OECD. (2016). *Aid Statistics at a Glance.* OECD.

OECD and IDB . (2016). *Broadband Policies for Latin America and the Caribbean: A Digital Economy.* Paris: OECD Publishing.

OECD. (June 2012). Retrieved from OECD Broadband Portal Reports: http://www.oecd.org/sti/broadband/

Oppenheim, A. (1992). *Questionnaire Design, Interviewing and Attitude Measurement.* London: Pinter.

Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods.* Newbury Park, CA: Sage.

Phillips, K. (2013, December 17). *The history of foreign aid.* Retrieved November 29, 2019, from Relief Web: https://reliefweb.int/report/world/history-foreign-aid

Respondent1. (2020, July 22). Video interview. (A. Maciejewski, Interviewer)

Respondent10. (2020, July 28). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent11. (2020, July 28). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent12. (2020, July 29). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent13. (2020, July 30). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent2. (2020, July 23). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent3. (2020, July 27). Video interview. (A. Maciejewski, Interviewer)

Respondent4. (2020, July 27). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent5. (2020, July 27). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent6. (2020, July 28). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent7. (2020, July 28). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent8. (2020, July 28). Video interview, translation. (A. Maciejewski, Interviewer)

Respondent9. (2020, July 28). Video interview, translation. (A. Maciejewski, Interviewer)

Richardson, S., Dohrenwend, B., & Klein, D. (1965). *Interviewing: Its Forms and Functions.* New York: Basic Books.

Rogers, E. (2003). *Diffusion of Innovations.* New York: Free Press.

Sainz-Fernandez, I., Torre-Olmo, B., & Lopez-Gutierrez, C. (2018). Development of the Financial Sector and Growth of Microfinance Institutions: The Moderating Effect of Economic Growth. (MDPI).

Sánchez-Torres, J., Canada, F.-J., Sandoval, A., & Alzate, J.-A. (2018). E-banking in Colombia: factors favouring its acceptance, online trust and government support. *International Journal of Bank Marketing* , 170-183.

Santos, M., Sequeira, T. N., & Ferreira-Lopez, A. (2017). Income Inequality and Technological Adoption. *Journal of Economic Issues* .

Sarmiento, T. (2018, June 28). Chile has second highest mobile broadband growth in OECD. *Business News Americas* .

ScrepantiI, E., & Zamagni, S. (1993). *An Outline of the History of Economic Thought.* Oxford: Clarendon Press.

Sellitz, C., & Kidder, L. (1981). *Sellitz, Wrightsman and Cook's Research Methods in Social Relations.* New York: Rinehart and Winston.

Servin, R., Lensink, R., & VandenBerg, M. V. (July 2012). Ownership and technical efficiency of microfinance institutions: Empirical evidence from Latin America.

Smith, H. (1975). *Strategies of Social Research: Methodological Imagination.* London: Prentice Hall International.

Vishwanath, A., & Goldhaber, G. (2003). An examination of the factors contributing to adoption decisions among late-diffused technology products. *SAGE Publications: New Media & Society* , 547-572.

Waters, J. (2017). Determinants of initial technology adoption and intensification evidence from Latin America and the Caribbean. *Economics of Innovation and New Technology* , 334-352.

World Bank. (2011, December 09). Accion International Partner Profile. *News About World Bank Small and Medium Enterprise Initiatives , 2* (3).

Appendices

Appendix no. 1: Semi-Structured Interview Schedule - English, May 2020 (text)

Appendix no. 2: Semi-Structured Interview Schedule - Spanish, May 2020 (text)

Appendix no. 3: Research Pilot Phase & Intervewer Training (notes)

Appendix no. 4: Sample of Abandoned Guide (entry)

Appendix 1

Semi-Structured Interview Schedule - English, May 2020 (text)

Semi-Structured Interview Script & Questions	Notes
Thank you for participating in this research. I will ask you general questions about your financial education programs and your impressions about mobile financial apps. Your answers will be anonymous in my report. This interview should take 30 minutes and will be recorded for note-taking and data review. If it is helpful to refer me to your annual report for more precise information, please feel free. What I am most looking for is the true perception about technology use for microfinance clients from the point of view of somebody who works in the field.	
A. Warm-Up Questions 1. Can you describe your professional experience and the activities of the microfinance institute you work with? 2. Define the term *fintech:* A construction of two words "financial technology" FIN-TECH is a spectrum of emerging technologies for services between financial institutions and consumers. It includes any mobile application for mobile banking, digital wallet, financial management, learning finances, business accounting, and more. Examples **a.** Personal budgeting: Dinerio/Ubank/Mint/ZaveApp **b.** Online money transfer: Transferwise/Venmo **c.** Digital transactions between bank accounts: RecargaPay/GooglePay/ApplePay/PayPal/Conekta/PayClip/Dapp **d.** Accounting: Quickbooks/QuieroQuitar e. 'aplicaciones móviles de gestión financiera' 3. Do you use any apps like this (personal, professional)? 4. Do the borrower clients use this kind of app?	
B. Exploration of Present Aspects 5. In what form do you offer financial education (in-person workshops, chats, etc.)? 6. What is the teaching format (paper, computers, WhatsApp, etc.)?	
C. Exploration of future aspects 7. If you wanted to use fintech to supplement or replace your financial education programming, would it be easy or difficult (technology, cost)? 8. What are the advantages and disadvantages of using (more) fintech? a. from the perspective of the organization b. from the perspective of the clients	
Finishing Questions 9. Theory: Academic studies tell us that the use of finance apps has been growing at commercial banks in Latin America. Non-profits and small microfinance institutions are not following the same trend. How would you explain this situation? 10. Acknowledgement and leave-taking	
• Inconsistencies? Example? Meaning? Evidence? Details?	

Source: Researcher

Appendix 2

Semi-Structured Interview Schedule - Spanish, May 2020 (text)

Entrevista semi-estructurada: Guión y preguntas	Notas
Gracias por participar en la investigación. Voy a hacerle preguntas generales sobre programas de educación financiera y sus percepciones sobre las aplicaciones móviles financieras. Sus respuestas serán anónimas en mi informe. Esta entrevista debe durar 30 minutos y se graba para tomar notas y revisar bien los datos. Si es útil referirme a su reporte anual para información más detallada, no dude en hacerlo. Lo que más busco es una percepción verdadera sobre el uso de tecnologías para clientes de microfinanzas desde el punto de vista de alguien que tiene un conocimiento al trabajo.	
A: Preguntas de conocimiento 1. ¿Me puede describir su experiencia profesional y las actividades de la institución de microfinanzas con que trabaja? **2.** Definir el término *fintech*: Se construye de dos palabras en inglés "financial technology" o tecnología financiera. FIN-TECH es un espectro de tecnologías emergentes para servicios entre institución financiera y consumidor. Incluye cualquier aplicación móvil de bancaria, billetera digital, gestión financiera, aprendizaje de finanzas, contabilidad y más. Ejemplos: **a.** Presupuestos personales: Dinerio/Ubank/Mint/ZaveApp **b.** Transferencias de dinero en línea: Transferwise/Venmo **c.** Transacciones digitales entre cuentas bancarias: RecargaPay/GooglePay/ApplePay/PayPal/Conekta/PayClip/Dapp **d.** Contabilidad: Quickbooks/QuieroQuitar **e.** 'aplicaciones móviles de gestión financiera' 3. ¿Usted utiliza alguna aplicación parecida en su vida (personal, profesional)? 4. ¿Los clientes prestatarios usan alguna aplicación parecida?	
B: Exploración de los aspectos actuales. 5. ¿De qué forma ofrecen capacitación financiera (taller presencial, charlas, etc.)? 6. De que se basa la enseñanza (papel, computador, WhatasApp, etc.)?	
C: Exploración de aspectos futuros. 7. Si quisiera usar fintech para complementar o reemplazar su programación de educación financiera, ¿sería fácil o difícil (tecnología, costo)? 8. ¿Cuáles son las ventajas y desventajas de usar (más) el fintech? a. desde perspectiva de la organización b. desde perspectiva de los clientes	
D: Preguntas finales 9. Teoría: Los estudios académicos nos cuenta que el uso de aplicaciones financieras ha ido creciendo en los bancos comerciales de América Latina. Las instituciones sin fines de lucro y microfinancieras pequeñas no siguen la misma tendencia. ¿Cómo explicaría esta situacion? 10. Reconocimiento y despedida	
• Inconsistencias? ¿Ejemplo? ¿Sentido? ¿Evidencia? Detalles?	

Source: Researcher

Appendix 3

Research Pilot Phase (notes)

Dry Run: An NGO service provider who worked with Latin American clients in the United States facilitated a dry-run to provide initial feedback on length and duration.

Pilot & Development: Two MFI service providers who work with Latin American clients in the United States facilitated a pilot if the instrument. Their feedback regarding ease, comfort, and fullness of response was used to finalize the interview schedule.

PP1 - Spanish	PP2 - English
Section A • no comillas, evita "más o menos", evita "uh" • enlace más usado que > link • clarifica definiciones en inglés y español mejor	*Section A* • no comment
Section B • clarificar la definición – repetir 3x	*Section B* • everything clear
Section C • reorganizar section C/D	*Section C* • aware of some apps – examples of business access
Secion D • clarificar punto de vista: organizacion/cliente	*Secion D* • no comment
Section E • terminamos temprano • WhatsApp no funciona para grabar	*Section E* • Zoom will record for 40 minutes maximum

Triangulation: Two MFI service providers who work with Latin American clients in the United States completed the finalized interview schedule. Their responses were used as corroborating evidence that the interpretation of this study should be trusted.

Section A • sin comentarios	*Section A* • no comment
Section B • Simpe/Simpay? financial transaction app used in Costa Rica • Venmo financial transactions person to person used in US by Latinx community • Apps – uso personal • No hay uso profesional aparte que WhatsApp para comunicación y horarios de empleados pero no en cuanto a finanzas	*Section B* • "building economies from within" • keep businesses in neighborhood viable • focus on Latinx community • entrepreneur training • e-banking – TCF bank, photo deposit of checks in real time • Salesforce, email, Square mobile point-of-sale, international user security generation
Section C • BRC – referencia al reporte anual/sitio web	*Section C* • no comments
Secion D • No. • Difícil • 1) Costo 2) Entrenamiento (organización>sistema>clientes) 3) difícil sistemáticamente por el ingreso de tiempo en algo no conocido • cambiar el sistema cuesta mucho para la organización y los clientes • Ventaja: actualizarnos • Desventaja: resistencia al cambio para las personas que sean empleados o clientes • "Todo el mundo tiene smartphone desde lo más rico hasta lo más pobre...tiene teléfono con apps y todo"	*Secion D* • entrepreneur training is evolving – 16 week classes • combo – paper, PeachTree, business use increased over 2nd/3rd business growth stages • Quickbooks on computer • new migration to SalesForce • Fintech – No • Easy • -client education, language barriers, access to technology and devices • +built-in to make oiur work easier, wireless printing, etc. for efficiency
Section E • "Fondos." NGO no es como empresa comercial, y además en una crisis en que estamos ahora con lo del COVID, las orgs non-proft prefieren ingresar fondos a programas más practicas como recursos y clases para niños y no para comprar* un app. La tecnología no se ve como algo necesario sino como un lujo o algo de diversión. No es necesario para la misión.	*Section E* • "everybody has a new phone" • "access" – clarified as device ownership • disparity of tech access – may be different due to clientele and location • lack of environmental preservation < $ for cell phone towers, better coverage vs. weighing health affects • WhatsApp

Source: Researcher, modeled on (Bariball & While, 1994) *methodology*

Appendix 4

Sample of Abandoned Guide (entry)

The question of whether low- and no-cost fintech apps are subject to gate-keeping in the Latin American market was not presented by the literature review. Bolivian regulation sources concluded that despite messaging to the contrary, regulatory policies remain loose "to strike a balance between social objectives and the market." (World Bank, 2011, p. 143).

The planned '2020 App Guide: Emerging Fintech for MFIs' was expected to provide basic software documentation for 10 fintech apps currently available in the Latin American market. With the discovery of Columbia's unique regulatory framework regarding fintech entry, it was decided by the researcher to eliminate the app guide. Without extensive research into the regulations of each country, it would be impossible to claim that any ten fintech apps are recommendable or even available in the region. Regulation was not addressed in the literature review or methodology for data collection. Here is a sample entry.

Acorns is touted in Spanish by Banco Bilbao Vizcaya Argentaria, S.A. (BBVA), the parent bank of Bancamía in Colombia, as "the app that helps you invest even the spare change from your coffee" (BBVA, 2018).

App: Acorns
Classification: Investment, Financial Education
Summary: Acorns is a user-friendly personal investment app focused on savings and educating the user on the basics of personal financial management.
Cost: $3/month personal, $5/month family
Users: 7 million
Benefits

- Spanish-language
- Real-time spending tracking
- Easy-to-read graphics

Main Features

- Personal retirement savings function
- In-app access to articles & videos from financial experts
- Integrates with mobile banking
- Spare Change feature allows users to round up on purchases to create a separate investment fund (optional)

Evaluation:

- No group subscription
- No reporting features
- Potentially cost-prohibitive

(Acorns Grow Incorporated, 2020)