

Language Barriers As A Limitation To Achieving Financial Inclusion Through Fintech In India

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ABSTRACT

Government policies have been imposed in recent years to create an interconnected financial system to increase financial inclusion in India, using financial technology (FinTech) as a crucial tool in achieving these goals. While partial progress has been made with increased availability of basic financial services, India still has hundreds of millions unbanked – the question as to why has yet to be answered. With over 120 local languages in India, communication barriers that have been shown to have detrimental effects in other industries could exist in financial industries as well; many don't speak the major languages FinTech is typically developed in and can be excluded from economic participation. Below are results of my survey conducted among Indian financial executives to determine the prevalence of language barriers in FinTech in India, the harmful effects of these language barriers, and potential solutions to the issue. A survey method and data analysis of the responses were performed. It was determined that language barriers prevail in India and adversely impacts the effectiveness of FinTech in increasing financial inclusion, with 87.5% of respondents agreeing that language barriers do limit its benefits. Furthermore, the results indicated a majority of respondents proposed new translation or voice-recognition features as the primary tool for closing language gaps. My findings indicate that the variety of local languages in India do inhibit use of FinTech, and a potential solution that would allow hundreds of millions more to participate in the economy would revolve around voice-recognition services to bridge these barriers.

Introduction

India has a gross domestic product (GDP), a measure of the value of everything the nation produces, generally indicative of a country's economic production capabilities, of over 2.66 trillion USD, ranking it top ten in the world (WorldBank, 2020). The nation's per capita GDP, or average per person, with its massive population, however, places it consistently among the developing countries (WorldBank, 2020). Despite the overall production levels of the country being among the highest in the world, many issues plague the locals on an individual level, with much of the wealth being congested among the elite leaving many impoverished. One of the causes of this limited economic growth is the large unbanked population, those who do not have access to adequate financial services, in the nation. India has over 20% of its population over the age of fifteen unbanked, which means that over 250 million people are not participating in the economy (WorldBank, 2017). Economic participation is necessary to boost economic growth and increase GDP. Economic participation has been shown to increase GDP, close the wealth gap, and cause overall betterment of the national economy, as reported by the United Nations. Thus, those not participating in the economy involuntarily serve as a barrier from further economic growth, particularly in a developing nation like India.

In recent years, financial technology (FinTech) has been effective in allowing these formerly unbanked populations to participate in the economy both in India and across the globe. Due to tools such as mobile banking, automated teller machines, and digital lending, financial services have been able to reach more people through their mobile devices, thereby increasing financial inclusion, which is the opportunity to access affordable appropriate financial services and participate in the economy (Bansal, 2014). Thus, people in remote, often

rural, areas have now slowly been incorporated into the economy, now being able to participate through their mobile devices. Technology has been instrumental in increasing financial inclusion, thereby increasing economic participation and boosting both individual financial status and economic growth for the country as a whole (Garg and Agrawal, 2014). India has seen an increase in financial inclusion paralleling economic growth in recent years, as the banked population has increased drastically from 35.2% in 2011 to nearly 80% in 2017 – a strong association between the development of the nation and the development of financial inclusion through tech has been established (WorldBank, 2017).

However, despite these successes, India still hasn't eliminated its unbanked population entirely: it remains in the hundreds of millions. This begs the question of why FinTech has not been entirely successful in reducing the unbanked demographic. India is faced with a unique issue that could truly limit the extent to which financial technology can be used to increase financial inclusion: language barriers. With over 120 local languages, technology not being available in many of these local languages prevents many from being included in the economy using FinTech, as the technology is often not readily available in their first languages (Narayan, 2013). Technological development typically occurs in one of the major global languages to allow greater reach, thus meaning technology remains inaccessible to those who do not speak one of the major languages that these developments are conducted in. Unfortunately, there remains a large portion of the population that continues to be excluded from advanced economic participation despite the successes that have been seen. This issue does have significant implications, affecting hundreds of millions locally in India, as well as globally in India's trading partners and the political and economic landscape of the world as a whole. Given the size of India's economy and the drastic potential impact that further growth of the nation can have, it is important to analyze the extent to which this issue exists and present potential solutions.

Literature Review

In order to understand the issue of language barriers limiting technology's use as a means for increasing financial inclusion in India and propose potential solutions, the existing literature and research should be analyzed to determine what is already known. In my literature review, there were very few papers that addressed the language barriers that prevail in the business world, particularly in India, and how these have impacted and will continue to impact the expansion of financial inclusion through FinTech. Studies that address the benefits of FinTech in increasing financial inclusion as well as limitations that language barriers can pose in other industries, however, do exist and can be analyzed to determine the existing perspectives.

Technology as A Tool to Increase Financial Inclusion

In recent years, many efforts have been made to create a more interconnected financial system to increase financial inclusion, using technology as a crucial tool in achieving these goals. Bansal's study concluded the various effects that technology can have and can continue to have, considering "ICT [information and communication technology] ... as [a] driving force for achieving more sustainable and inclusive economic structure," and "[m]obile banking and ATM..." as "promising options for achieving financial inclusion," (Bansal, 2014). This study suggests that mobile banking can be an effective method to increase financial inclusion and reach rural areas of India, through ICT and ATMs. D'Souza affirms Bansal's claim that FinTech can help reach unbanked populations and increase financial inclusion, discussing in his study how "the mobile phone [is] now seen as a catalyst in realising such aspirations," (D'Souza, 2018). However, these studies are limited in that they fail to address the shortcomings of FinTech as a tool to increase financial inclusion, not addressing illiteracy in the major languages due to language barriers as a potential limitation.

Ozili's study's conclusions parallel those of the other authors' assertions, analyzing how FinTech has led to an increase in financial inclusion. However, the paper instead addresses limitations and potential downsides that technology's role can have, contrasting the other authors. Ozili regards the pros – including expansion of financial services, boosting GDP, reducing the bad/fake money – and cons – including digital data security breaches, fee-based platforms, and reliance on internet connectivity. Ozili's content analysis highlights many shortcomings and concerns of the FinTech revolution, addressing it in a manner that D'Souza and Bansal do not. He brings to light many criticisms, including “concerns about data security,” an “underestimation of the risks,” of mobile banking, how “[d]ifferences in income level can lead to disproportionate benefits of financial inclusion across the population,” and challenges that the business model poses (Ozili, 2018). Cortina and Schumker mirror Ozili's sentiment in her findings, and even questions if technology can be harmful to global banking and the risks that it can bring. However, both ultimately come to the conclusion that digital finance can be used in developing nations and improves financial inclusion in “emerging and advanced economies” despite posing potential limitations, and true growth will be evident and plausible once these criticisms are addressed (Ozili, 2018). While, Ozili, Cortina and Schumker discuss the limitations of digital financing, providing another perspective as opposed to the general positive outlook on FinTech's use, language barriers as a limitation are not addressed.

Language Barriers In Other Indian Industries

The existence of such language barriers and impact it can have on an industry are emphasized in Narayan's paper, asserting that the language barriers in India that arise from the multitude of local languages spoken. He discusses the existence and prevalence of said barriers, particularly in the education and the medical field, as well as the political efforts made to remedy and overcome these barriers. Narayan's research highlights the “22 major languages,” among the multitude of minor languages spoken in India alone, as he found that “[e]ach state has numerous minority groups whose mother-tongue may differ from the official language of the state,” posing a pressing challenge in being able to effectively communicate with said minority groups (Narayan, 2013). Narayan states that doctors can encounter 4-5 different languages daily, and with an “absence of an adequate vocabulary for technical terms,” and the lack of fluency in other languages among the health workers themselves create large-scale issues (Narayan, 2013). Narayan further details the lack of attention the language barriers have received and the limited government policies to remedy such shortcomings.

Pandharipande's study of minority languages in India agrees with Narayan's conclusions, detailing the 18 “scheduled languages”, along with the 96 “non-scheduled”, or minority, languages (Pandharipande, 2002). There is a “lack of educational facilities such as textbooks, teachers, schools...” in these languages, indicating a lack of attention to addressing the large population of those that speak these languages (Pandharipande, 2002). While these studies are greatly applicable to understand the prevalence of such language barriers and the detrimental impact it can have on the medical industry, they do not address the impacts that it can have in the financial technology and economic industries, which is what I aimed to consider in my study.

Thus, my paper is unique in combining these two aspects and gaps in the literature that I observed. My study aimed to determine the prevalence of these language barriers in the financial industry, particularly in the FinTech space, how these language barriers can limit the reach of Fintech in expanding financial conclusion, and proposing potential solutions. My initial hypothesis suggested that financial barriers arising from the many local languages would serve as a hindrance of the positive uses of FinTech in achieving financial inclusion.

Methods

In order to test my hypothesis, a survey and case study method was employed. Survey studies are lists of questions aimed at getting certain data from certain groups of people. It collects data from a pool of respondents and

can be used to draw conclusions. In particular, I aimed to utilize survey interviews to answer my research question. The research was aimed at focusing on gaining information from a select group of Indian executives in the financial or technological industries. I aimed to gather information from the executives regarding their opinions on the questions that I asked, particularly pertaining to the extent to which language barriers in India limit the growth of financial technology and financial inclusion, as well as potential solutions and the solution's effectiveness. The goal of these questions was to gauge the extent to which language barriers in India are a gap to true economic growth, gather some potential solutions, and understand the effectiveness of the cumulative solution following analysis of their responses.

Interviews

In order to garner data regarding the prevalence of language barriers, the effects they have on FinTech as a tool for increasing financial inclusion, and the effectiveness of my proposed solution, I conducted interviews for the first part of the study. These interviews served as the primary means of gathering data that I could later analyze. Survey interviews utilize interviews and literature reviews to gather information on the subjects of the interviews' stances or opinions regarding the questions asked, which was perfect for my research in which I aimed to target my research questions to gauge the interviewee's view on the extent to which language barriers limit the growth of financial inclusion through financial technology and the effectiveness of proposed solutions. As I needed to examine the extent of language barriers as a limitation and the effectiveness of potential solutions, survey interviews were employed as they aim to garner the interviewee's open-ended opinions on the subject. Survey interviews allow for opinionated responses with a relatively high response rate, also accurately measuring the subject's views and characteristics, which fit my limited time frame perfectly (Singleton and Straits, 2012). Thus, this method was the best fit for my desired research goal.

I also needed to select a target group for my survey interview. Eight business executives specializing or working out of India were selected. I had to ensure that the select interviewees were credible and directly involved in the Indian finance field. This ensured that the data was from credible sources that had sufficient information and experience to judge the detrimental effects that language barriers can have. Furthermore, with direct stakes in the field, the effectiveness of my proposed solutions could be accurately judged. Through online databases and personal connections, the select group were identified. After the group of interviewees was selected, the interviews were conducted digitally through the use of a computer. The interviewees signed a consent form that ensured that their identities would remain anonymous and statements could be redacted at any time, to fit the requirements of survey interviews.

I split my data collection into two sections in order to keep the questions and answers organized and tackle both aspects of my research question. With the goal of the first part being to gauge the extent to which the language barriers exist and garner potential proposed solutions, the questions asked were fairly open-ended. I utilized the structured interview protocol and posed the five questions pertaining to the topic:

1. What, in your view, is financial inclusion? Is it making and receiving payments or does it extend to having access to a basic suite of financial services (savings, investing, insurance, etc)?
2. What is the current state of financial inclusion in India as a whole? What is the current state of financial inclusion in the region that you are in?
3. What role has technology played in increasing financial inclusion in recent years?
4. What limitations still exist in financial inclusion in India?
5. With over 31 languages with over a million speakers and 120 total local languages in India, to what extent do language barriers act as a limitation of technology's use to increase financial inclusion?
6. What are some solutions to the issue of language barriers discussed above?

These questions were posed with the intent of gathering both context to the interviewee's claims, as well as to answer my first question pertaining to the limitations language barriers pose and some potential

solutions. Following this initial stage of data collection, I analyzed the data and arrived at a comprehensive solution based on the most common feedback from the interview subjects, which I posed to the same target group to gauge its effectiveness, asking “How effective would applications being available in local languages through mobile platforms be in increasing financial inclusion and closing the language barriers?”. I conducted a second round of interviews utilizing the data from the analysis after I generated a single solution using the initial response, and collected the responses for a final analysis on the effectiveness of this solution.

Data Analysis

After the initial interview with the five questions were conducted and responses were obtained, the focus of my research shifted into analyzing the data obtained. I was able to garner responses regarding the general background of financial inclusion in India, and, in particular, the existence of language barriers and the effects they can have, and the potential solutions. Based on the responses from the business executives, I analyzed and sought after common themes mentioned in the prevalence of language barriers in limiting FinTech’s benefits, with the goal of identifying common outlooks on the questions asked, such as if language barriers were a significant limiting factor and whether or not there was a most frequently-proposed solution. The data analysis was performed as it allowed me to find common themes in the open-ended responses (Thomas, 2010).

The responses and major themes mentioned were categorized and separated into different categories with similarities, which were then qualitatively analyzed to determine the most common opinions/themes. The analysis of common themes of these responses allowed me to arrive at a conclusion that answered the first aspect of my initial research question, able to gauge the extent to which language barriers prevail and limit true financial growth, as well as gathering data regarding the potential solutions. This stage of the analysis was useful in identifying common themes mentioned in their description of financial inclusion and language barriers. The overall goal of this methodology was to understand the opinions of the experienced persons in the business field regarding the prevalence of language barriers to answer the first aspect of my research question.

However, I also needed to analyze the proposed solutions, arrive at a single, all-encompassing solution, propose it back to the interviewees and garner information on their view of its effectiveness. Similar to my thematic analysis of the prevalence of language barriers, I searched for common themes in the proposed solutions from the executives as well. After analyzing the commonalities between the varying responses, I was able to compile a single conclusive solution that drew from the different executives’ outlooks, in this case an application that allows for translation to local languages through voice detection. This single solution was proposed back to the interviewees, and I conducted a second round of interviews to gauge the effectiveness of the proposed solution. Once this second stage of interviews was completed, the data was analyzed yet again, comparing common opinions to determine the consensus view on the effectiveness of the solution.

Results

The responses to the first set of interview questions were compiled below.

Table 1. What is financial inclusion?

Executive #	What, in your view, is financial inclusion? Is it making and receiving payments or does it extend to having access to a basic suite of financial services (savings, investing, insurance, etc)?
1	For small traders - it means the ability to receive payments quickly. With UPI, people don’t need ready cash to buy from vendors. For the lower middle class, it’s the access to home loans. Of course, saving is

	an important part.
2	Access to basic suite of financial services
3	Savings investing and insurance
4	Financial inclusion means that everyone irrespective of their social status has access to sound knowledge about financial investment and planning advice or resources or knowledge in a way they can comprehend and act upon to build their personal financial assets.
5	Having access to basic suite of financial services
6	Yes
7	It means ability to access most of the financial services products
8	Financial Inclusion is about making basic banking services - deposits, loans and payments - available to everyone. In many low income countries banks cater only to the urban population, the vast majority of those in rural areas do not have access to banks. They cannot maintain the minimum average balance which is prescribed by most banks. Profitability of bank branches in rural areas is low and therefore most banks are not interested in extending their reach to these areas. Financial inclusion starts with enabling payments e.g. Direct Benefit Transfer (DBT) from the Government to the low income families and expands to make small value savings, insurance and credit facilities available to them.

Table 2. What is the current state of financial inclusion locally?

Executive #	What is the current state of financial inclusion in India as a whole? What is the current state of financial inclusion in the region that you are in?
1	More people than ever before have bank accounts, most people receive e-payments. This is definitely a positive step.
2	Start of financial inclusion in India as a whole is low to moderate. Still significant percentage of the population, maybe 40 to 50%, are not financially included. In the region where I live, financial inclusion could be 60 to 60%. It is my guess. Not based on hard data.
3	Average only
4	Many people in the lower economic strata take on usurious loans from their local lenders or in many cases the big banks also. Given the definition of financial inclusion likely 50% of Indians are not part of the financial inclusion of equation at all.
5	It is not 100%
6	Seeing both extremes
7	Smaller towns (Tier II/III) and villages at best would have basic savings and fixed deposit products. Knowledge and access to MF, Equity, Derivatives, Insurance and other products were limited - as it's not viable to setup distributors for these products by each fundhouse in these regions. With the growth of mobile App based service providers reach has increased for access but not sure of knowledge access on

	these products
8	India has been one of the leaders in financial inclusion for the last few years from the time it started the JAM (Jandhan, Aadhaar and Mobile) programme. Until recently there was no national identity card or its equivalent in India and this proved to be a big hurdle for the poor in proving their identity during the Know Your Customer process at the time of account opening by banks. Aadhaar filled this gap in India. Aadhaar is a digital identity which is unique to every resident Indian. This has been rolled out across the country to over 1 billion Indians, Aadhaar is accepted as proof of identity across all banks and financial service providers in India. India has one of the highest penetration of mobile phones across all developing countries. E-Aadhaar is Aadhaar enabled on the mobile phone with biometric authentication. Jandhan Yojana is a program of the Indian Government under which the Government mandated banks to open zero minimum balance accounts to all citizens and ensured that Direct Benefit Transfer of subsidies to the poor are directly credited to these accounts. With the help of Aadhaar enabled mobile phones people can make instant payments, free of cost, to anyone directly from mobile phones without having to visit bank branches and/or fill tedious forms.

Table 3. What role has FinTech played in financial inclusion?

Executive #	What role has technology played in increasing financial inclusion in recent years?
1	UPI has been a big step forward. Also Jan Dhan accounts. Demonetisation also forced people to move towards cashless transactions.
2	Digital Payment gateways, Banking apps have improved financial inclusion
3	Huge
4	Tech Is probably the only way to make financial inclusion happen at the scale in which we need it to happen in India.
5	As an enabler
6	Online payment, easy enrolment, Online tracking
7	Big role - it has democratised access
8	Financial Technology (Fintech) has been the backbone of financial inclusion in recent years. Technology expanded the reach of banks to rural areas. Indian Government created low-cost P2P payments and inter-bank payments infrastructure, both of which are critical to start transactions. Behind all this is a biometric authentication, identification program, done country-wide, which is linked to bank accounts/payments and enables the opening of bank accounts. India created what is called as India Stack which is an open platform for digital transactions which includes the following - (a) consent layer - modern privacy protected layer for data sharing between service providers involved in the financial ecosystem (b) cashless layer - enabling electronic payments like GooglePay free of cost (c) paperless layer - involving electronic KYC, digital signatures, digital lockers for storing critical documents and (d) presence less layer - biometric authenti-

	<p>cation with open access removing the need for physical presence to initiate or conduct a financial transaction.</p>
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Table 4. What are limitations of financial inclusion?

Executive #	What limitations still exist in financial inclusion in India?
1	A big limitation is physical PDS. These should be abolished and direct benefit transfer should take place. Another is simpler. Many people don't make enough money, so inclusion doesn't make a big difference to them yet.
2	Political blockers . Mindset change to adopt digital mode , formal banking , specifically among rural population and those with lower literacy levels and those who still prefer cash to transact
3	Trust
4	Access is limited. Financial IQ is very poor in broad swaths of the society who don't have the resources to access such knowledge Even if they want to.
5	Financial literacy, awareness of the financial services
6	Lack of availability
7	Levels of poverty and meeting daily basic needs - keep many households live largely in cash economy - bank accounts and services are luxury
8	There are two main limitations - cybersecurity and cyber literacy. There are numerous reports of cyber-crimes and data breaches. Therefore several people especially those who are not tech savvy are not comfortable using technology for banking transactions. Technology is changing so rapidly that it is difficult for most people to keep themselves up to date with latest technological advancements.

Table 5. To what extent are language barriers a limitation?

Executive #	<p>With over 31 languages with over a million speakers and 120 total local languages in India, to what extent do language barriers act as a limitation of technology's use to increase financial inclusion?</p>
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1	More than language, financial literacy is a big problem. And financial stability. the lower strata doesn't understand that spending more than their incomes & taking loans at usurious rates is ruinous. Language barriers can compound this issue.
2	Today technology is available for faster translation between languages. User interfaces based on symbols, icons can remove language barriers to a large extent. Human centered design can help overcome language barriers, but there is still work to be done.
3	Language barriers do inhibit.
4	Financial inclusion is best addressed using the local vernacular language and not using bridge languages like English or Hindi.
5	Language might be a barrier in the beginning, but with the advent of voice technologies, it need not be a barrier
6	I don't think language is a barrier
7	Not sure if any of the apps are in local langs and Hindi. If not it's a big impediment for access
8	Most Indians have at least some basic knowledge of Hindi, English or one of the major regional languages which are supported by the leading Fintech applications. The fact that more than 1 billion people have mobile phones and bank accounts and more than a billion UPI transactions are performed every day means that language is not a major barrier for financial inclusion. However, it can limit more niche extensions of Fintech applications.

Table 6. What are potential solutions to the language barriers?

Executive #	What are some solutions to the issue of language barriers discussed above?
1	Perhaps, advertisements in vernacular in TV channels.
2	Included in response to previous question
3	NA
4	Tech is beyond reach due to insistence on English or Hindi. No one has the Human Resources to address this issue at scale.
5	Technology using voice
6	NA
7	Local Lang apps, local lang content on products and services
8	With Government's continued push and proliferation of innovative services there will be more adoption of fintech services and this in turn will provide a fillip to companies to provide local language solutions to further improve adoption and growth.

After this initial round of data collection, common themes were sought, particularly in the questions regarding the extent to which language barriers exist, as well as the question regarding the proposed solutions. I was able to determine common outlooks on the prevalence of language barriers as a limitation of financial inclusion, as well as determine the most frequently-proposed solution. This solution was then posed back to the same group of interviewees to gauge their view on the effectiveness of this solution. Below are the results of the second round of interviews following the initial data collection and analysis.

Table 7. Effectiveness of applications in local languages?

Executive #	How effective would applications being available in local languages through mobile platforms be in increasing financial inclusion and closing the language barriers?
1	I don't think the answer is an app. But yes, it will be of some help.
2	Making it simple and easy to use can increase financial inclusion. However political and cultural factors to be addressed in the local context , in a creative manner. We can learn from successes in Africa and Latin American countries as well
3	Ok
4	Applications in local languages in combination with human experts can work wonders.
5	It definitely will be much more effective than not having it at all
6	a few
7	Will definitely
8	Lack of local language solutions has not inhibited the adoption of mobile solutions until now. India has come a long way in digital technology and financial inclusion with almost one billion people already benefiting from these solutions. Language barrier is unlikely to become a big inhibitor all of a sudden. Having more local language solutions will definitely help in expanding the reach a little bit more but in my opinion it is not going to be significant.

Discussion

The most significant results to answering the initial aspect of my research goal were from Table 5 and Table 6. These responses revolved around the prevalence of language barriers in India in limiting technology's benefits and potential solutions to these issues, respectively. In order to gauge the general views, the responses were categorized into 'Yes' and 'No' for whether or not the interviewee believed that language barriers are a limitation for financial inclusion through FinTech, and categorized based on the type of solution proposed (i.e. 'Technology', 'Government Policies') for the proposed solutions. Following the categorization of the responses, the frequency of each category of response was recorded, and analyzed.

Limitations

Prior to discussing the conclusions drawn from the results, it is important to discuss potential limitations of the proposed method of research. The most significant limitation was the relatively small sample size given the limited time frame. While the group of interviewees were collected through connections and online databases, these executives were high-ranking and many were unable to find time to respond. Thus, the methodology was limited to eight executives that were able to respond to the interview in the limited time frame. Evidently, the outlook of these select respondents are not indicative of the views of the entire nation or even a majority of the Indian executives, yet are a view of a select pool of qualified executives. Another potential limitation of my study could be human error in mistakes I made in analyzing and categorizing responses, or mistakes the executives made in potentially misunderstanding a question posed.

Prevalence of Language Barriers as A Limitation of Fintech

According to the data from Table 5, 87.5% of the respondents agreed that language barriers do, to some extent, limit the benefits that FinTech has on increasing financial inclusion. The categorization of the responses revealed that seven of the eight executives did agree that language barriers would serve as some sort of barrier to financial inclusion through FinTech, classifying as a 'Yes'. This indicates that the common view is that language barriers do exist in the financial sector and do limit the effectiveness of FinTech in increasing financial inclusion. When provided with the context of the numerous languages spoken in India, an overwhelming majority of the interviewees did agree in their responses that language barriers would act as a limitation to some extent, and that while it may not be the most significant barrier, it does pose some limitations. For example, executive 5 responded that, "[l]anguage might be a barrier in the beginning...", and executive 7 responded that lack of availability of technology in local languages would serve as a "big impediment for access." Evidently, the results affirm that language barriers do limit access to financial services digitally.

Potential Solutions to The Language Barriers

Upon categorizing the data from Table 6, it was determined that there were three main types of solutions proposed — technology, governmental policies, and no solutions applicable. Of these potential solutions, the most frequently-proposed was some form of technology, proposed by 62.5% of the executives, followed by no solutions are applicable (25%) and government policies (12.5%). Based on the categorization and analysis, the cohesive solution appears to revolve around using applications to translate into local languages to help close these language barriers, executive 7 suggesting "local lang[uage] content on [financial] products and services". This cohesive solution was posed back to the same group of executives to determine their view on its effectiveness.

From the responses to the solution, seen in Table 8, 100% of the executives agreed that the application that translates into the minor languages allowing for financial education and financial transactions would help close these language barriers and expand the use of FinTech and financial inclusion. Executive 4 affirmed that "applications in local languages in combination with human experts can work wonders," and executive 5 confirmed that this proposed solution would "be much more effective than not having it at all." Thus, this seems to be an effective solution in closing these language gaps.

Conclusions

Evidently, language barriers do pose a threat to the use of FinTech tools as a means for increasing financial inclusion in India. The numerous local languages do inhibit the use of FinTech to increase financial inclusion,

unable to reach large numbers of people that do not speak one of the major languages, affirming my initial hypothesis. Furthermore, a solution to this issue would revolve around an application that allows for voice detection and translation into the local languages, helping remove these barriers and allowing for democratized access to these digital financial services. Said application would allow for both education of local populations as well as actually carrying out financial activities, boosting financial literacy and economic growth with more and more participating in the economy. Technology can aid in scaling this outreach to reach the far corners of the nation without necessarily having feet on-ground, serving as a major source of information dissemination. While it may take time to learn financial terms and services with a high degree of proficiency, voice-activated transactions could help bridge this gap faster and allow for progress to be made. Voice-activated services on mobile devices mandated by the government would allow those that speak local languages to directly communicate with the application, resulting in the ability to engage in financial activity in the local languages themselves. This application could serve as a solution for this long-ignored issue in the Indian financial field.

Implications and Future Research

These results affirm that the language barriers do exist and do adversely affect the use of FinTech in expanding financial services, at least to some extent. This indicates that there has been a barrier to further economic development in India. However, this research also proposes a solution that would help bridge this gap. If such a solution were to be implemented, the implications could be drastic. An increased number of formerly unbanked people could now have access to these financial services in their local languages, becoming more financially literate and actively participating in the economy, an opportunity not provided to them previously. This would not only better individual financial status of the Indians, not only the economy of India as a nation, but the global economy in all those nations affected by India's economic success.

Further research with a larger sample size, as well as expansion to other nations that have similar language issues would greatly benefit and build off of this study. Larger sample sizes could help negate the limitations that existed in my study and provide a more cohesive solution, representative of the view of even more people. Furthermore, future research similar to my study could be applied in other nations with many languages spoken in the borders, potentially creating a global infrastructure allowing for easy translation and communication between these minor languages. Actually creating the voice-recognition based application and testing its effectiveness in the field would additionally be important next steps to take. Testing and tweaking the application as well as studying the effects that it has on the unbanked population as well as the economy of the nation as a whole would be instrumental future research.

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