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The impact of disruptive Financial Technology (FinTech) on emerging markets with a focus on the interaction between incumbents and new firms: An in-depth analysis of the Indian FinTech market

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Introduction

Financial Technology (fintech) is described as the innovative technology that can either enhance or compete directly with financial services. Fintech has grown tremendously in the last few years due to the advancements in technology as well as the integration of financial services on a global scale. High levels of fintech activity can be seen in North America, Western Europe, as well as the Asia-Pacific region.

The range of applications for fintech services and products relate to digital payments, transaction processing applications, investor services, etc. This has furthermore been enhanced by the introduction of new technology such as blockchain, and the growth of cryptocurrencies. The growth of this sector will continue to play a defining role in financial services, especially in emerging markets. (Reserve Bank of India 2017)

Definition of Problem

The topic of study will explore financial technology in emerging markets with an examination of the relationships between new startup fintech firms and incumbent firms. In addition, the specific role of institutional voids on the dynamic relationship between the two sides will be analyzed in order to see if the erosion of such voids as emerging markets continue to develop enhances a collaborative and/or competitive space for fintech.

The aim of such analysis will be to provide insights regarding the most effective way of interaction between incumbents and startups. This will establish whether further erosion of institutional voids further facilitates Fintech activity in a specific market and the nature of such an industry with regards to foreign and domestic competitors. Furthermore, this will explore the opportunities for value creation and capture and the future trends for such interactions in an emerging market. (Reserve Bank of India 2017; Mohan and Ray 2017)

Research Framing

The study will focus on emerging economies due to a greater utilization of such technologies, as well as other macroeconomic and political conditions. In particular, the Indian market will be examined due to its large market size, demographic factors, economic growth, etc, and an analysis of the interaction between startup firms and incumbents. This is due to the fact that India is a large enough market to effectively study the challenges associated with emerging markets and the economic progress and development of India is a fairly modern phenomenon. While China is considered the largest market outside for FinTech and disruption outside of mature markets, the Indian market's growth phase characterizes it is a better example of an emerging economy faced with the challenges of disruption and responding to the challenges of institutional voids. (Mohan and Ray 2017; McWaters 2015)

China is also already at a stage in which FinTech firms have an almost similar customer base as traditional major banks, domestic and international incumbents included. The Chinese e-commerce market is already the world's largest, indicating that it is in a more mature stage as compared to the Indian market. Furthermore, the political nature of the Indian market better suites the principles of an emerging free market economy, factors which better facilitate the dissemination of disruption and innovation, and the appropriate government and market forces to such phenomenon.

The Indian market has also overtaken China in terms of growth rates. Furthermore, growth and the overall importance of specific sectors such as information technology in India shows greater complementarity with financial technology. This makes the data utilized in such examination more relevant with identifiable factors and trends for the FinTech industry. (Vij et al. 2017)

Incumbents are any institution, domestic or international, that is traditionally considered a key player in the provision of financial services. This includes firms such as banks, regulators, investment firms, insurance companies, etc. Global incumbents will focus on large multinationals from advanced economies and will encompass firms such as banks, insurance providers, etc. In addition, the study will examine multinational companies that are traditionally not key players in financial services. This includes large

technology and telecommunications companies in order to study and examine the effects of disruption and how non-traditional firms can capture value and exploit disruptions with regards to institutional voids. (Shinkle and Kriauciunas 2010; Shenkar and Xu 2002)

These voids are a determining characteristic of emerging markets and add numerous challenges in creating value for firms, as opposed to in developed markets. As emerging markets continue to develop, the impact and the very nature of such institutional voids also comes into question, with firms having to reposition their strategies and manage new challenges in the macroeconomic context. Empirical evidence would suggest that India, specifically the Indian government, has taken steps to address the challenges presented by institutional voids and have introduced measures to lower the impact of such voids. (Chakrabarty 2009; Lam et al. 2017)

Examples of institutional voids in the Indian market include corruption, lack of transparency, inefficiencies, a fairly underdeveloped capital market structure, and other demographic challenges such as poverty and illiteracy. This is also another reason for choosing the Indian market as more recent data regarding the erosion of institutional voids is available. (Shenkar and Xu 2002)

Analysis will be done by first developing an understanding of the Indian macroeconomy. This will examine time-series trends in economic development with a focus on significant milestones that have impacted economic growth and development. By doing so, a proper framework for understanding the conditions of an emerging market with its appropriate metrics can be developed for the purpose of analysis. Then, extensive research regarding the development of financial technology as an industry will provide insights regarding the nature of such an industry with developments over time and the subsequent impact on emerging markets.

This will identify potential areas of growth and opportunity for the FinTech industry and how firms can best capture value. The forces of disruption and innovation will then be applied to the FinTech industry. Disruption and innovation are unique factors which have significant impacts on industry frameworks and competition between firms. These factors shake up the foundation of firm capabilities and their ability to compete and

collaborate in various markets and require the simultaneous analysis of such phenomenon in conjunction with the market forces of emerging markets. Time-series information regarding trends in fintech investments and which sectors in particular generate value opportunities for leveraging disruption will then be identified. This will then be followed by a thorough analysis of the Indian start-up investment market with particular attention to investment deals that have taken place in the realm of FinTech, e-commerce, and other technology-based startups.

These deals illustrate the potential for collaboration both in the international and domestic contexts. The objective here is to identify whether there are trends shifting towards more international collaboration or whether such growth is largely driven by domestic market activity, and which type of deals have generated the most value. Consideration to value will be largely motivated by the impact of disruption and innovation on an emerging market and how these forces have complemented the growth of financial technology based on specific market conditions.

This will provide solutions regarding forecasts in future trends in financial technology and its relationship with emerging markets. Data regarding theoretical background and literature has been obtained from relevant management literary sources as well as data from sources such as The Reserve Bank of India. Economic data and firm-specific data has been obtained from resources such as Statista, CB Insights, as well as company reports. The majority of qualitative data regarding industry opinions and future forecasts were generated from Statista. This data was verified by confirming the underlying sources, which are compiled mostly of primary data focusing on industry expert opinions.

The data for the deal compilation has been obtained from Trak India, a prominent internet resource used by the technology industry in India to discuss trends and insights regarding the technology industry, Business intelligence platforms such as Bloomberg were also used to gather data regarding economic trends and forecasts. It should be noted also that there is very limited information available regarding future forecasts and developments in the financial technology sector. A large portion of these have been proposed primarily by consulting firms, which are focusing research on the phenomenon of digital disruption. However, results from such firms have largely been

excluded in the statistical analysis due to issues arising from the potential for confirmation bias and other factors which adversely impact the value of the data.

Industry Background

According to the Reserve Bank of India, Financial technology (fintech) consists of the companies that challenge the traditional business models of financial services firms and intermediaries. (Reserve Bank of India 2017) These companies offer products and services such as lending platforms, blockchain technology, mobile payments, etc. The driving factor behind fintech firms is technological innovation and digital transformation. Fintech firms are noted for the utilization of information technology and have introduced innovations that have improved efficiencies and have demonstrated cost advantages. Furthermore, fintech has provided the opportunity for the spread of financial inclusion through adoption of technology. (Reserve Bank of India 2017)

FinTech innovations can be characterized into five major areas. These areas are: Payments, Lending, Markets, Portfolio Management, and Analytics. Innovations in the area of payments aim to improve efficiency of transactions while making it easier for individuals to access financial services. These consist of mobile applications, digital currencies, and blockchain technology. Applications such as Apple Pay and Android Pay utilize existing payment infrastructure to facilitate payment services using mobile technology, allowing many who are outside of the traditional banking system to access payment services. Electronic payments are noted for their convenience and efficiency by reducing costs for vendors and lowering the need for physical currency. (McWaters 2015)This also improves the security of such transactions especially in emerging markets by improving transparency and documenting transactions with the aim of reducing issues such as fraud. (Reserve Bank of India 2017)

Digital currencies are usually denominated in their own units of account and are accessed and transacted through electronic means. These digital currencies are usually not attached to a fiat currency and are not denominated by a sovereign bank or backed by any sovereign currency. (Vij et al. 2017)However, despite this, digital currencies are accepted by users as a legal means of exchange. Some digital currencies such as bitcoin are well-known globally and are widely accepted as a method of payment.

While there are hundreds of traded digital currencies, they still make a small section of the market and the frequency of such trades are still quite minimal in relative to the broader currency market. It is still not yet known whether digital currencies will disrupt the overall traditional payment infrastructure as its use is still small and faces regulatory uncertainty due to its unregulated nature. (Reserve Bank of India 2017)

Blockchain technology is also a component of the payments sector. This is an innovative technology which acts as a distributed ledger in which transactions are stored and connected through networks. While this has been praised for its security and transparency in recording transactions, there is currently limited information regarding the potential for scaling this technology across global markets. Blockchain technology is also utilized in various industries due to its versatility and effectiveness at documentation.

As the growth of payments continues, traditional financial firms may lose their reputation as a trusted party in the payments process through the integration of the transaction process (ACI Universal Payments 2017). Many multinationals, including banks operating in India, have proposed the idea of developing a global-scale blockchain consortium. Firms such as Deutsche Bank, JP Morgan, Bank of America, among others have expressed interest in such developments, with many governments as well expressing interest in utilizing blockchain. (Reserve Bank of India 2017)

Fintech has also developed new and alternative methods and processes for lending of funds and the raising of capital. This has facilitated itself in many which, the most prominent of which is the growth and acceptance of peer-to-peer lending. This form of technology connects lenders and borrowers and increases the efficiency in accessing credit. This type of technology has grown tremendously, however, is still mainly used in the United States and China, rendering the use of such technology still minimal in the Indian market. Peer-to-Peer lending has also grown in the start-up and small business loan sector. (Vij et al. 2017) This type of technology deviates from traditional lending frameworks as it does a much better job of matching risk profiles of lenders and borrowers. (Bastld et al. 2016)

On a broader scale, internet-based solutions have also given to the rise of crowd funding, in which multiple investors can raise capital through an internet platform. This has the potential to reduce the profitability of financial institutions and diminishes the power of traditional financial institutions as more and more savers turn to alternative platforms. This also facilitates more individualized solutions to lending, further hindering the ability of traditional players such as banks to offer universal financial solutions in the market. However, this may also make it harder to determine customer creditworthiness due to the increasing competition and alternative offerings of fintech lending platforms. (Reserve Bank of India 2017)

Market intermediaries have also benefitted from the growth of fintech by using advances in technology to reduce information asymmetries and facilitate the efficiency of disseminating information to firms in financial services. This is evident in the growth of cloud computing, big data analytics, and artificial intelligence. Cloud computing has allowed the sharing of resources at a much more efficient rate and has allowed newer firms to establish infrastructure and reducing startup costs. Big data has paved the way for new sources of information and has allowed for better analysis and decision-making when analyzing data. (Bastld et al. 2016; Saal et al. 2017)

This has created its own market segment through the creation and pooling of data as a valuable resource which can be sold in the market. In addition, the growth and adoption of artificial intelligence has also increased in the financial services industry. This has allowed technology to facilitate high-level transactions and other functions through machine learning and mimicking of human interactions. Artificial intelligence has automated and optimized several functions in financial services through technological means. The impact of data analysis as a result of advancements in artificial intelligence and machine learning will facilitate growth in advisory services for data analysis and the market will become more sensitive to information response and regulatory uncertainty. (Reserve Bank of India 2017)

In addition, the competitive landscape of investment and portfolio management has changed drastically due to fintech. Automated systems have provided optimal solutions to enhancing portfolio management techniques in the Indian market. This has been attributed to the growth of robo-advisors and e-trading. Robo-advisory has reduced the

need for human capital in portfolio management and has reduced costs. This is done through sophisticated algorithms which develop tools for allocating capital and tailoring specific solutions for individual clients.

This flattens the investment management ecosphere as investment firms will no longer need to make large scale investments in financial infrastructure. (World Economic Forum 2018; World Bank Group 2017) Furthermore, the proliferation of electronic trading has increased the number of participants in financial services and has drastically changed the liquidity of the market. This has placed a premium on access to information and has reduced trading costs significantly. Disruptions due to FinTech in portfolio and investment management will have numerous implications. (Reserve Bank of India 2017)

First, as incomes rise due to economic development, a sophisticated ecosphere for managing assets and wealth will be required. FinTech solutions to this will lower barriers to entry for consumers by greatly reducing investment thresholds and fees which are typically established by incumbents such as banks. This will dynamically change the environmental landscape of investment management. For example, wealth management is currently considered an exclusive service for high net-worth individuals. More sophisticated investment management tools, enhanced by technology, will broaden the scope and scale of demanding such services with a much broader customer base having access to such services. This will then generate a new customer base of mass market consumers who will want access to such services, something that has previously not been seen in investment management. (World Economic Forum 2018)

Costs will also drastically be reduced by utilizing automated technology. These technologies are believed to have a more accurate understanding of the current market and develops more personalized investment management solutions. This also improves financial inclusion and literacy by providing easily accessible information to users and enables investors with limited technical knowledge and investment infrastructure to conduct investment management activities, spurring greater competition among investment management firms to deliver value to customers. (World Economic Forum 2018)

Fintech is expected to disrupt consumer and personal banking and payments most drastically. The industry has grown at a steady pace year-over year. Annual venture capital backed fintech investments have steadily increased from 2013-2018. According to reports, the 2nd quarter of 2018 has generated a total of $26 Billion (USD) in financing, a tremendous increase from only $3.8 Billion (USD) in 2013. The number of deals has also grown steadily with 2018 witnessing 1476 fintech deals as opposed to only 588 in 2013. (CB Insights; Statista 2018)

Currently, North America still generates the largest number of Fintech deals and is the world's largest hub for Fintech, mostly centered in Silicon Valley. However, Asia and Africa have showcased the highest growth in global Fintech deals with a year-on-year growth of 46% and 133% respectively, while North America has declined by 7% and Europe has grown at a gradual pace of 4% year-on-year. FinTech disruption will impact different segments in financial services differently as well, based on the potential for disruption. VC investments in FinTech have also focused extensively on business-to-consumer markets. (Statista; CB Insights)

This can be attributed to lower switching costs for consumers rather than large organizations and multinationals. For large corporations, they are often embedded by rigidities in business models, contractual obligations, and large well-established networks for relationships with other stakeholders. There is still uncertainty regarding the dynamic relationship between Fintech startups and incumbent firms. It is believed that collaboration will be the dominant form of interaction as FinTech further develops. This can be attributed to the capabilities both incumbents and startups possess, with inew innovative firms needing expertise and assistance with meeting regulatory fulfillments, while incumbents need new sources of innovation and capability generation. (King and Tucci 2002; Leonard-Barton 1992)

According to Bloomberg, over 75% of executives working in FinTech identified their primary objective as wanting to collaborate with traditional firms, as opposed to competing directly. FinTech executives have also mentioned that potential partnerships with traditional firms are a critical determining factor for success. Capgemini 2016 has identified enabling factors for success for FinTech firms. These factors are: customer demand, barriers to entry, pace of technological evolution, and access to venture capital

funding. Apart from barriers to entry, it can be argued that the other factors discussed above show a positive trend over time.

Customer demand for new innovative solutions has increased, with optimism from consumers in emerging markets regarding such solutions. Furthermore, the pace of such technologies has strengthened over time, particularly in the light of new developments such as cryptocurrencies and blockchain technology. Venture capital funding is also on an upward trend, with 2018 showcasing the highest levels of investment activity in terms of frequency and volume to date. (Statista)

However, the global Fintech market also faces several challenges and uncertainty. While this has disrupted the traditional financial services space and has introduced numerous benefits and improvements to existing methods, there are still several unanswered questions regarding the scope and scale of Fintech. As Fintech becomes more internationalized and integrated with global financial services, firms and national economies will need to address new regulatory concerns from users and investors and how to initiate optimal controls in financial services. FinTech will dynamically change the nature of firms in financial services with respect to several aspects. Incumbents will be forced to consider levels of innovation in market entry strategies as well as day-to-day operations. (World Bank Group 2017)

Previously, the financial services sector has not been exposed to the shocks and adverse reactions in the technology sector. This is evident as the majority of the financial system has not been greatly impacted by phenomenon such as the dot-com bubble. (ACI Universal Payments 2017) However the growing links between technology and finance will mean that the industry will be vulnerable to disruption in the tech sector, with government regulation playing a key factor in the ability of firms to shield themselves from such external shocks. (Saal et al. 2017) Furthermore, this changes the talent market in financial services and forces companies to become more versatile and possible reconsider brand awareness among current consumer bases.

Also, this level and pace of technological development in financial services has not previously been seen. This creates challenges as traditional business models may become drastically undermined, dynamically changing the risk profiles and

competencies of firms. This will require a proactive response from not only firms, but also from governments to effectively manage the forces of disruption, especially within the context of emerging markets. (Ma 2016)

Market Background

India is the world's second largest country in terms of population and is ranked third in terms of GDP when adjusted for purchasing power parity. India is currently the world's fastest growing major economy and is characterized as an emerging market. Since the commencement of liberalization of the Indian economy starting in 1991, the economy has grown at approximately seven percent per year. A lot of this growth is driven by strong growth in the service sector which makes up approximately 55% of Indian GDP and about 31% of the labor force. (Kale and Anand 2006) The information technology sector in particular has driven growth in the Indian economy.

IT currently composes more than seven percent of Indian GDP with business process outsourcing operations of multinationals driving foreign investment in India. India benefits from a young population with over 25% of the population currently between the ages of 0-14 and only approximately 5% of the population 65 and over. (Annapoorna and Bagalkoti 2015) The Indian Fintech sector is expected to continue to grow rapidly over the next few years and is expected to grow 170% by 2020. (Singh and Tandon)

The country is poised to become the most populated country in the world by the year 2024 and its economic prospects are further bolstered by a young population that has vastly improved with regards to literacy, proficiency in English, urbanization, and educational attainment. This has made India an attractive market over the last few years. Many economists have identified potential for India to become an emerging superpower with the country estimated to have the world's second largest economy by the year 2050. (Kale and Anand 2006) These growth factors have been very attractive for international investors.

Currently only around 4% of the market utilizes insurance services and 40% of the population currently does not have any access to traditional financial intermediaries such as banks. (Basu 2006; McWaters 2015) However, the majority of the population uses mobile technology to some extent, with high forecasted growth for internet penetration. Examples of prominent Indian FinTech companies include Flipkart, an e-commerce company which has conducted high-profile deals with multinationals such as Amazon, and Lending Kart, a small business lending firm which generated over $87 million (USD) in funding in just the first quarter of 2018. (Statista)

The majority of FinTech firms in India operate in the city of Bengaluru, which also serves as the country's technology center and is often referred to as the "Silicon Valley of India". This further highlights the complementarity and interdependency between financial services and the technology sector, with the latter serving as a high level catalyst for the proliferation and value generated by financial technology. (Mohan and Ray 2017)

The majority of transactions in India are still conducted using cash and the vast majority of small businesses, approximately 90%, currently do not use financial services. This will correspond to rapidly growing demand for access to some sort of financial services as a result of economic growth and financial inclusion, a perfect opportunity for disruptive forces and new entrants to capture value. FinTech users across the globe are characterized as being younger, more tech-driven, and affluent, when compared with the general population. This is also in line with the demographics of the Indian population, as the population is consisting more of a younger population, one that is more affluent and enticed by technology. (Mohan and Ray 2017; Reserve Bank of India 2017)

There is also uncertainty regarding the future development of FinTech in the Indian market. These uncertainties can also apply to other emerging and even developed markets. Research and empirical data has focused more on the benefits and disruptive factors of FinTech with an emphasis on opportunities for value appropriation. It is often argued that growing innovation will lead to disruption which forces firms to revamp their offerings and that increased competition and new entrants will improve product offerings for consumers. (Vij et al. 2017; Singh and Tandon) However, there is also the risk of increased heterogeneity in financial service market participants. New challenges

to digital platforms such as cyber security risks still have not been properly identified and studied.

Furthermore, growth in FinTech will lead to an increase in the complementarity and interdependencies between market players in financial services and market infrastructure. This can be seen for example, in the growth of banks and FinTech firms, as well as infrastructure such as more sophisticated information technology systems. External crises and impact of risks stemming from the information technology sector can strongly impact financial services, the effects of which have still not been seen. (Annapoorna and Bagalkoti 2015; Chandra 2005)

Secondary data regarding the share of financial institutions with current partnerships with fintech companies in 2017 show that advanced economies still lead in terms of overall partnerships. This data shows that approximately 64% of institutions in Australia and New Zealand have some form of partnerships currently with fintech companies. The United States and Canada come in second and third with 62% and 53% respectively. India comes in at fifth place with about 42% of financial institutions currently having partnerships with fintech opportunities. However, this is still lower than the global average of 42%. (Statista; CB Insights)

Current distribution of fintech investments in India is divided into the following segments: Payments/wallets, personal finance, Lending, B2B technology, and insurance. Payments/wallets received around 65% of investments for the era between 2015 and 2016. This accounts for the majority share of all fintech investments. Personal Finance is 2nd with around 15% of all investments, with lending B2B and insurance taking the remaining share. (Statista)

Qualitative data has identified various challenges faced by companies when working and interacting with Fintech. These challenges were identified as: IT compatibility, IT security, Regulatory uncertainty, difference in business models, difference in processes, required capital investments, and difference in knowledge/skills. Survey respondents had identified IT compatibility as the largest challenge, chosen by approximately 61% of respondents. Second was IT security chosen by approximately 50% of respondents, and regulatory uncertainty by 44% of respondents. This indicates that many firms are

uncertain about their current processes and the compatibility of existing business models in succeeding in the Indian market. The results of this can be found in the appendix under Figure 1.1.

This may be attributed to the lack of knowledge regarding operating in emerging economies such as India and the lack of established networks and resources to overcome such barriers. To develop further insights, secondary data in the form of qualitative surveys were also examined regarding the challenges faced by incumbents in the Indian market with regards to Fintech. (Statista)

These results identified difference in business models, regulatory uncertainty, and difference in processes as the primary challenges, further solidifying the idea that incumbents are struggling to compete effectively in emerging markets and exploit value offered by fintech. Difference in business models was chosen by around 47% of respondents as the primary challenge with regards to working with fintech companies. Respondents also identified as data analytics, mobile technology, and artificial intelligence as the most relevant technologies for investing in the Indian market. Data analytics was identified by 69% of respondents with mobile technology coming in second with 55% of respondents. These results can be further examined in the appendix under figure 1.2 (Statista)

This identifies the opportunity for exploiting new technologies in financial services and generating value from the demographics presented by the Indian market. Furthermore, respondents also identified the most relevant opportunities for fintech investments. In addition, from the customer perspective, respondents identified various activities as current operations conducted with fintech companies. These were identified as payments, funds transfer, personal finance, personal loans, student loans, insurance, wealth management, traditional accounts, and mortgage loans. Payments and fund transfers were identified as the most common and relevant activities, with 96% and 79% of respondents identifying these respectively. M&A data of the Indian market identified fintech deals composing roughly 7% of all M&A activity in 2016. This has shown high levels of correlation with e-commerce, another rapidly growing industry in India. The current eCommerce market in India is growing by approximately 40% per year and has gained the attention of several international players. (Statista)

A survey conducted in 2016 identified leveraging existing data, improving customer retention, and expanding products and services as the largest opportunities in the Indian market. It is important to note that in this survey cost reduction and addressing competition were identified as playing a much smaller role in identifying potential opportunities. Responding to competition was chosen by only 8% of respondents and approximately 24% of respondents identified cost reduction as the primary opportunity in Fintech. The emphasis on leveraging existing data and expansion indicates that the utilization of attractiveness of fintech opportunity is driven primarily by the prospects of exploiting disruptive technologies and develop such technologies, rather than simply enhancing existing frameworks and mechanisms. Survey respondents have also identified various innovation barriers regarding Fintech investments in India. These were identified as data storage, digital identity, Know Your Client metrics, new business models, cryptocurrencies, use of new technologies, and customer communications. Respondents identified data storage and digital identity as the largest barriers to innovation with 54% and 50% respectively. (Statista)

Literature Review

Institutional Voids

The literature discussed will cover the theories of institutional voids as well as disruption and collaboration. The idea behind institutional voids is crucial to framing the environmental landscape of emerging markets and the characteristics that differentiate such markets from developed economies. This is due to several factors from political stability to economic infrastructure and mechanisms. It is also believed that fintech has presented itself as a disruptive force in the market, as greater development and use of technology has manifested new opportunities for value creation. (Burki 2012)

The uncertainties relating to emerging markets often stem the lack of intermediaries that facilitate transactions adding to higher probability of failures. Emerging market banks have previously had a failure rate of approximately 25% with research showing an

increasingly correlated relationship between institutions and the outcome of firm performance. (Kalvet et al. 2013) Furthermore, due to the unique market factors of emerging economies, strategies that have previously been successful in developed markets cannot easily be replicated. Strategy research has also showed that when institutional voids are high, incumbents tend to develop a comparative advantage fairly quickly in comparison to newer firms due to the ability to engage in non-market actions. (Luo and Chung 2012)

Institutional theory also emphasizes the importance of reputation in a strategic framework. (Rindova et al. 2007) and (Lorenzi and Sorensen 2014) emphasize reputation in the context of asymmetric information and the expectations regarding a firm's attributes. Most research regarding reputation is centered around the resource-based view, which implies that resources which are valuable, rare, inimitable, and cannot be substituted are more suitable for generating a competitive advantage.

Reputation also holds great importance in characterizing firm performance in emerging markets due to the fact that there is great uncertainty that a firm can survive long-term and deliver on its promises. In this context, reputation is a construct that facilitates transactional confidence from stakeholders through the utilization of defensive and offensive mechanisms (Shinkle and Kriauciunas 2010). These mechanisms not only provide firms with the opportunity to exploit market opportunities, but to also capture new value in the market. This in turn manifests itself into increasing the quantity of transactions as confidence in firms to follow through on obligations increases over time. The perspectives surrounding reputation and the problems presented by institutions create a unique dilemma for firms when deciding on entry strategies for emerging markets. (Klepper 1996; King and Tucci 2002)

Literature regarding strategy and entry mode choice for firms in emerging markets integrate the institution perspective resource-based view. According to literature, alternative modes such as greenfield investment, acquisitions, and joint ventures provide firms with the ability to overcome the inefficiencies and voids with regards to both utilizing resources and managing institutional discrepancies (Khanna and Palepu 2010). According to (Meyer et al. 2007), institutions in the host market shape to a significant extent the strategies that firms pursue in foreign market entry. Previously, it was

believed that macro-level institutions such as regulatory frameworks played more of a background role in comparison to micro-level aspects such as market opportunity.

Regarding entry mode choices, it was previously discussed that firms pursue greenfield investments, acquisitions, and joint ventures. (Luo and Tung 2007)The latter two provide direct access to resources held by local firms in the host market. In contrast, greenfield investments allows entrants to obtain resource components that are crucial for success in local markets. (Ma 2016) These entry methods are shown to be distinct and have different objectives in terms of capturing value in the host market. Firm performance has also shown that these entry methods are often sequential with joint ventures taking precedent in contrast to acquisition or greenfield investment, with firm emphasis first deciding on partial ownership before moving to full ownership. (McCarthy and Puffer 2016)

Past research on entry modes and institutional voids has also focused on the importance to consider the phenomenons simultaneously. This will be discussed again later when applying this concept to the peculiarities of the Indian market. For example, acquisitions require a firm to manage the purchased business while a joint venture perpetuates coordination issues. The factor of efficiency then provides the environment for firms to decide on the most effective way to acquire resources based on transaction costs. (Pollavini 2010)

The literature also argues that these issues are multi-fold for multinational corporations as they must navigate various institutional contexts (Globerman et al. 2004). While foreign entrants need access to local resources in the host economies to overcome the issues presented by weak or non-existent institutions, these institutions themselves perpetuate a more difficult framework for access to resources and raises transaction costs. Markets with weak regulatory structures and weak enforcement of property rights force firms to pursue more network and relationship based strategies by using norms instead of litigation to enforce business contracts. Context-specific capabilities, examples of which include strategic and organizational flexibility may present the opportunity for increased competitiveness and volatility in emerging markets. These capabilities may include managing a local labor force, or the mechanisms that allow for the fostering of networks and relationships. (Raynard and Marquis 2015)

An important distinction must also be made between tangible and intangible assets. Asset specificity plays a significant role in explaining transaction costs and organization forms which states that the more firms invest in specific resources, the greater the interdependencies present. (Ushakova 2015)This may have an adverse impact on transaction costs or may cause firms to internalise their operations. Resource theory argues that these effects are more important when considering intangible assets due to the intricacies that are often involved. (Shenkar and Xu 2002)

This then ties into the idea of firms developing dynamic capabilities to navigate such voids. (King and Tucci 2002) define dynamic capabilities as organizational and strategic routines by which firms achieve new resource configurations as markets emerge. These capabilities can either constrain or enable the ability of a firm to change. This is due to various factors such as building capabilities through experience rather than through market transactions and developing tacit production and organizational knowledge (Foss and Langlois 1997). In turn, this allows a firm to integrate and configure new routines.

Managers attempting to develop these capabilities often face the challenge of choosing effective strategies in emerging markets and navigating institutional voids. According to (Khanna and Palepu 2010), an actionable framework provides managers with the ability to map the institutional context of such a market. This involves developing an understanding of the market structure of emerging markets. This is done by addressing key questions such as the efficacy of institutions, the adverse exposure of the firm's business model to these institutional voids, developing a competitive advantage based on the ability to navigating such voids, and the ability to profit from such markets by filling voids. This framework identifies multinational companies as having the opportunity to step up as intermediaries in emerging markets in order to create and capture value, while still facing strategic choices in terms of entry strategy. (Sudhir et al. 2015)

The first of these choices is the option to replicate or adapt. This decision is differentiated by the structure of the firm and whether the firm is from a mature or emerging market. Multinationals will have to determine whether the current business

model is viable for transfer into the local market based on prior knowledge in developed markets(Latif and Fu 2017). On the other hand, local companies seeking to expand globally can turn towards replicating business models of developed market multinationals while exploiting knowledge of the local economy to take advantage of institutional voids in the home market. (Pollavini 2010)

The second of the strategic choices is whether to compete alone or to collaborate. Firms from both emerging markets and developed markets each have their respective comparative advantages when competing in emerging markets. (Hoskisson et al. 2000) On one hand, multinationals have easier access to capital resources, human capital, as well as brand recognition. (Jaap et al. 2017) However, firm performance in emerging markets has not shown consistent results. Due to the uncertainty of emerging markets, local knowledge of the market is one of the most valuable assets a firm can possess and invest in. This presents a crucial decision for multinationals from developed markets as they must cho ose whether or not to collaborate with a local firm will create value and lower barriers to entry into the emerging market. However, collaboration also exposes the firm to the risk of potentially enabling the development of a local firm which may become a competitor(Hill and Rothaermel 2003). Local firms would be able to exploit the knowledge and credibility gained from partnering globally while having the local know-how to successfully navigating institutional voids.

In addition, there is the strategic choice of whether to accept or change the market context. For example, multinationals in mature markets have the option to try and sidestep institutional voids or fill the voids in emerging markets(Ansari and Krop) However, local firms have the ability on the other hand to operate in spite of such voids and can exploit the voids to create a barrier to entry, hindering the expansion of foreign competitors. Changing the market context itself may present opportunities for firms to step in as an intermediary which can fill institutional voids. (Gao et al. 2017)

Lastly, there is the strategic choice as whether to enter, wait, or exit. Firms must decide on a market timing entry strategy with regards to entering a specific emerging market, or pursuing opportunities elsewhere. This in turn follows with the idea of timing a market exit strategy. This strategic choice affects local companies and multinational differently. Multinationals have a clear advantage in market entry as they have the

capabilities to choose in which market to enter, if for example the barriers to entry and institutional voids pose a serious challenge. (Khanna and Palepu 2010)In contrast, local companies have an exit option in the sense that if a firm's capabilities do not create value in the home market, they will be able to exit the market early. It is important to note, however, that emerging market based local companies face a disadvantage in this as they often lack the necessary resources to expand globally shortly after their founding (Kennedy and Ngo). Furthermore, emerging-market based companies which serve different industries may pursue opportunities elsewhere by entering an industry in which institutional voids may further hinder multinationals from advanced economies.

Disruption

Theory and discussed literature regarding disruption will focus on the relationship between disruption and innovation in a technological context with emphasis on how technological development and discontinuity enables such forces in markets (Anderson and Tushman 1986) . Phenomenon such as digital disruption has become a crucial point of discussion in various industries. Developments in technology have created various market disruptions while fostering an environment of entrepreneurial innovation and new ways firms to manifest themselves in the market to create and capture value. These are considered significant market forces in developing new markets and providing new functionality, which disrupts the market status-quo. (Anderson and Tushman 1990)

However, prior research has not been able to establish an effective measure for measuring either disruptive forces or innovative forces. Prior research has focused significantly on the impact of radicalness and competency. Radicalness is technology based and is defined as the extent to which innovation advances the performance frontier faster than the existing technological trajectory (Gatignon et al. 2002). The competency-based view is the extent to which innovations build upon and reinforce existing competencies.

(Adner and Levinthal 2002) states that disruptive innovation is distinct from the two factors discussed previously. In the context of technology, disruptive innovations introduce a technology which may initially be inferior to incumbents but operate differently. These products may initially not serve the initial needs of the customer base

and may be viewed as highly niche products operating in niche markets. (Markides 2006) However, further technological development enhances the performance of the technology to a point which is sufficient for customers. Adner also argues that these products are initially low cost and low profit in comparison to the local market. (Christensen 1997) characterized such innovations as continuous variables which initially introduce a different set of features and attributes at a lower price to a new customer segment.

It is important to also note that the attraction of a new customer segment must be differentiated when considering whether a technology is disruptive or whether it is simply an early adoption strategy. (Govindarajan and Kpalle 2006) This can be differentiated by closely examining the customer base. Early adopters are typically more integrated as part of the social system and are less price sensitive compared to the customer base for disruptive technologies. Early adopters are more suited for radical innovation products as they are more in tune with the current market. In contrast, the customer segment for disruptive technologies are often not able to influence the rest of the market and are typically more price sensitive relative to early adopters. Furthermore, technologies which are considered radical innovations do not pose a serious threat for incumbents as early adopters will soon be able to influence the market. (Liversidge)

According to (Christensen and Raynor 2003) there are five reasons as to why disruptive innovations present challenges for incumbent firms. Firstly, at the time of product introduction, the market does not seem to value the attributes of the innovation. The innovation then does not match with customer expectations. The innovation is best suited in a niche market which may be difficult for incumbents to develop competencies in. Network effects, word-of-mouth, or opinion leadership is not present at a scalable level for the technology to reach a larger consumer base. (Danneels 2004) Furthermore, the disruptive product offers lower profit margins which may be ignored initially by incumbents who are inclined to serve larger and more attractive market segments. (Christensen and Raynor 2003) also introduced the idea of two different types of disruptions. New market disruptions create value and the facilitation of a new market segment while low-end disruptions deliver value to a more price-sensitive segment of the mainstream market.

Furthermore, due to the lack of clear empirical evidence, there is often confusion regarding the different kinds of innovation on the outcomes of firms (Gatignon et al. 2002). There is also the notion of creative destruction (Schumpeter) in which innovative technology destroys established business models and makes them obsolete. (Schumpeter 1942). This is based on the assumption that incumbents have the burden of rigidness at the core of their business model as well as legacy factors in resources, especially technology. (Leonard-Barton 1992) state that discontinuous innovation occurs when the existing business model structures which have traditionally provided a competitive advantage eventually limit the firm's ability to innovate, hindering the firm's ability to cope in the light of disruptive innovations. (Clark and Henderson 1990)

Sustaining innovations help incumbents by providing the existing customer segment with an improved attribute. This builds on established networks and do not change the overall strategic direction of the firm (Christensen and Rosenbloom 1995). An important element of these theories is also the notion of performance overshooting. (Christensen and Raynor 2003) argued that firm development of technology most often increases at a rate which is too fast for current customer demands and expectations. Once the performance is higher than what the demand in the market requires, customers will start to develop new attributes which are desired from firms. After satisfying the fundamental needs of customers, they are more likely to embrace disruptive innovations on the new features and attributes such as cost or reliability (Bouwer 2014). This is also argued in The Innovator's Solution (Christensen and Raynor 2003) that the trajectory of innovation is something incumbents improve upon and are most effective at utilizing sustaining innovations in a few well-established areas of value. (Christensen 2006)

However, there is disagreement regarding the effects of disruptive and sustaining technologies. (Schumpeter 1942) argues that creative destruction is crucial to economic progress because it removes obsolete capabilities and makes room for new entrants, effective changing the dynamic landscape. In contrast, (Christensen 1997) argues that incumbents do possess the resources and capabilities to effectively manage technological discontinuities, however, lack the values and modes of interaction to do so. It is also argued that one theory alone cannot explain the effects of such phenomenon and the ability of firms to respond.

The theories also ignore the idea of legacy costs, in which firms may have already invested resources into capabilities, hindering firm performance. (Christensen et al. 2016)There is also the factor of economies of scale in which changing economic conditions facilitated the increase in advantages stemming from scaling. This presents the challenge in gauging whether it was truly a disruptive force, or whether it was a normal and well-known economic process which benefitted a small number of well-positioned firms. There are also other external macroeconomic factors such as changes in demographics, pace and scope of technological development, all affecting the market structure while simultaneously blurring the impact of differential factors such as disruption. (Hage 1999)

(King and Baatartogtokh 2015) suggests that empirical evidence from firm performance has limitations on how firms should react to such factors. The literature argues that firms must carefully assess market forces to determine the potential attractiveness of entry and disagrees with (Christensen and Rosenbloom 1995) that firms must always fight to maintain control regardless of the industry forces. Firms must also consider potential synergies between existing and new businesses when expanding on existing capabilities in order to ensure stability of the incumbent business model and long-term strategic orientation. Furthermore, it is argued that firms should seek to cooperate in order to leverage strengths and develop synergies.

(Abernathy and Clark 1985)developed a list of major competitive components divided into technology/production factors and market/customer factors. The former determine firm capabilities. The second half of the table links the firm to the market and its respective customer segments. This is measured by the strength of the relationship with customers and the composition of the customer segment. A distinction is also made in the literature regarding the attributes the product offers and the knowledge required to use the product. (Helfat and Lieberman 2002)

The technology/production factors include: design, systems, skills, capital equipment, and knowledge base. Each factor is then given a range of impact of innovation. From a design perspective, the range of impact is determined by whether the product or service improves on an established design or offers a radically new design, rendering existing structures obsolete. (Lavie 2006) The range of impact is similar for the other factors in

the sense that it is measured by whether or not it sustains and enhances an existing structure, or if it requires the establishment of new mechanisms and adversely impacts the value of existing products and business models in place. (Maine and Garnsey 2006)

The market/customer factors include relationship with the customer base, customer applications, channels of distribution and service, customer knowledge, and modes of customer communication. (Tushman et al. 2006)For example, the range of impact of innovation for customer knowledge is whether it expands upon current customer knowledge of the product, or if it demands new knowledge from the customer and destroys the established customer experience, requiring new networks and modes of communication. This literature also introduces the concept of architectural innovation. This type of innovation not only creates new industries and opportunities but also reforms existing methods and guides subsequent development. (Utterback and Suarez 1993)

Methodology and Data

The data collected consists primarily of secondary data from company, industry, and macro-economic sources. This provides a snapshot of the current Indian financial system along with trends that have facilitated a rise in FinTech activities. Macro-economic data includes factors such as Foreign Direct Investment, MNC investment, as well as the role of economic regulations on the financial services industry and overall economy.

Trends in investments over time will provide further insights regarding the state of the FinTech sector. Furthermore, to illustrate some of the specific relationships between incumbents and FinTech, case study examples of some of the prominent deals and funding activities will be examined.

The research topic poses the question of whether the erosion of institutional voids in emerging markets provides a dynamic environment for capitalizing on disruptive technologies such as FinTech and how the nature of the relationship between incumbents and new firms changes as a result of this changing environment. Firstly, the erosion of institutional voids will be examined.

As discussed earlier, institutional voids are characterized as the lack of certain mechanisms which hinder efficiency and operational effectiveness. These are often present in emerging markets for various reasons such as political instability, economic underdevelopment, lack of resources, legal factors, among others. (Khanna and Palepu 2010) India, in particular, developed very high barriers to entry upon independence leading up to the early 1990s for foreign entrants. Under these past regulations, foreign companies were obligated to enter into a minority stake joint venture with a local company in order to operate in the Indian market. (Kogut 1988) (Annapoorna and Bagalkoti 2015) Although, this provided foreign companies with a partner that provided the "know-how" of functioning in the local market, several other regulations and an inefficient bureaucracy made India a relatively unattractive location for foreign investment. (Mohan and Ray 2017)

However, in the early 1990s, India pursued a policy of economic liberalization which gradually opened up the economy to foreign investment and competition. This in turn provided the country with above-average economic growth figures and is now one of the fastest-growing major economies in the world. The added influx of foreign capital has also improved the conditions of financial institutions in the country and the country has been gradually able to ease some of the red tape bureaucracy in the country while fostering growth. (Kale and Anand 2006)

This is evident in the growth of India's information technology sector which as become a global hub for business outsourcing processes for multinational firms. Foreign companies are now as of 2016 able to control 100% of their stake in a business venture. Data also shows that since economic liberalization post-1992, the amount of FDI into India has risen significantly. Interestingly, however, is the idea that the opening of India's economy to foreign investors has caused a gradual decrease in the number of joint ventures as a method of market entry. There appears to be a negative correlation between further liberalization of the economy and the utilization of joint ventures. (Kale and Anand 2006)

This can be explained by certain factors. For example, a driving factor for pursuing international joint ventures is the advantages that can be obtained due to resource

complementarity. However, as the Indian economy has become more integrated with the world economy many MNCs have also tried to globalize by reconfiguring value chains, establishing local subsidiaries, among other methods. (Kale and Anand 2006). Due to the notion that liberalization is a fairly new economic phenomenon in the Indian market, there is a likelihood for firms, foreign and domestic, to engage in what is called a "race to learn" to develop capabilities in the market.

This has had an adverse impact on the development of JVs as MNCs and local partners have pursued other forms of internationalization. Data has shown that joint ventures established during the pre-liberalization economic period were 87% more likely to be terminated than joint ventures established during the liberalization era. More specifically, joint ventures established in the years between 1991-96 were 32% more likely to be terminated than ones established after. (Kogut 1988; Kale and Anand 2006)

Although some of this can be attributed to the phenomenon of learning differentials discussed previously, this indicates a clear negative correlation between reducing institutional voids and JV investments. This has in turn paved the way for more direct investments and other types of international collaborations, such as partnerships, VC and PE investments, M&A activity, among others. Furthermore, local firms have also benefited from this "race to learn" by enhancing the organizational capabilities of firms such as local banks and investment firms. (Chandra 2005) When analyzing FDI equity inflow data, a positive linear trend is visible for all sectors including for financial services. The data shows period blips due to adverse external and internal economic and policy phenomenon, however, shows that capital is continuing to flow into the Indian market. (Lacoste and Opsahl 2017)

It has been stated that among the primary objectives of economic liberalization are to attract foreign investment and removing barriers to doing business in India. As part of improving local economic infrastructure, the government of India has embarked on an ambitious demonetization campaign starting in 2016 by removing large amount notes, 500 and 1000 rupee bills, from circulation in the market. (Rojas-Suarez 2010; Singh and Tandon)

There are numerous objectives for this initiative. On one hand India is negatively impacted by high levels of tax evasion with a very small percentage of the Indian population, including businesses, paying appropriate tax amounts. From a policy standpoint, demonetization was justified as a means of achieving effective and much needed tax reforms. In addition, demonetization was viewed also as a national security issue. It was believed that demonetization would curtail activities of criminal and terrorist organizations and hinder black market activities in the market while increasing financial transparency. (Mohan and Ray 2017)

Furthermore, it was believed that this initiative would also modernize and make the economy more efficient by encouraging the transition to a cashless economy which would greater facilitate the usage of FinTech activities such as digital transactions and usage of blockchain technology in documenting the usage of currency, further removing red tape and reducing bureaucracy and corruption. (Moler and Schueth) The impact of demonetization has shown mixed results and reactions from politicians, economists, as well as the general public. (Devi and Devi)

This is an example of a unique phenomenon as the implementation of such a policy shows government action in not only removing institutional voids, but to also provide a catalyst for further disruption in enhancing the digital economy. The initiative is also an example of the government's attempt at improving financial inclusion. One characteristic of an emerging market such as India, is a large percentage of the population residing in rural areas, often with lower levels of income. (Basu 2006) This demographic shows significant potential for financial inclusion and for the adoption of new financial technology. It becomes evident that demonetization did serve as a catalyst for the growth of mobile and digital payments and did facilitate the increase in fintech adoption. (Moler and Schueth; Mohan and Ray 2017)

This is exemplified in the growth of consumers using digital options which show a spike in the time period following demonetization. Components of mobile payments such as mobile banking, POS, pre-paid instruments, etc showed significant increase following the post-demonetization period. When considering specific technologies, mobile banking increased its user base by approximately one million users within the span of one month. The transfer of funds through electronic means increased by 24% in value

within a three month period following demonetization. (Devi and Devi) This segment reflected the largest increase among fintech sectors with forecasts indicating further growth in the next five years. It is expected that the financial inclusion measures will continue to draw in a larger consumer base that will utilize such services. This is evident also when conducting an analysis to test the correlation between growing financial inclusion and adoption of FinTech users.

However, there are several limitations to examining the link between financial inclusion and Fintech adoption. Demonetization is a fairly new policy measure and the immediate aftermath has already shown mixed results from the government, economic experts, and the general public. For example, although usage of digital payments did increase, the levels of such did start to level off months after demonetization bringing into question the viability of sustaining this is a long-term phenomenon and not just a short-term disruptive measure. (Devi and Devi; Moler and Schueth) Furthermore, prior to demonetization approximately only 1% of merchants offered a cashless payment option to consumers. It should be noted that the majority of merchants operated in what would be considered the informal sector. Although after demonetization, the number of merchants offering cashless payments increased, this raises the question of whether the initial number of cashless merchants is statistically too low to examine a direct impact. (Reserve Bank of India 2017; Devi and Devi)

In addition, there were several short-term adverse impacts on the Indian economy as a result of the initiative. During this period, industrial output decreased with primary growth sectors such as cement and steel refineries showing contractions in output. The informal sector also took a significant hit as unemployment increased with approximately 1.5 million jobs lost within a four month period. Furthermore, outlook for Indian GDP growth was decreased during the period of demonetization, with growth forecasts below 7% for the first time since 2011, while also having an adverse impact on the Indian securities market. (Devi and Devi; Moler and Schueth)

The initiative may have had the intention of improving national security measures, however, the implementation of the measure was considered by many to be too hastily pursued. Many consumers reported long lines and a general panic among consumers to get rid of old notes which would soon be worthless. Several ATMs ran out of money

with considerable strain on financial institutions, many of which were not prepared for such a sudden influx of first time users. (Sinha and Bansal)

The panic surrounding this shortage of cash resulted in approximately 100 deaths and also generated reports of several consumers using other means of trying to evade the demonetization process by turning towards trading for commodities such as gold and the failure to update old and outdated accounting practices. It is not yet possible to determine the complete impact on fintech which is also a relatively new industry with long-term forecasts lacking complete precise accuracy. (Devi and Devi; Moler and Schueth)The goals of demonetization are also multi-faceted with policy measures either having specific objectives or initiatives providing consequences which may not have been initially intended. Lastly, there are very few if any comparisons on a global scale to test this phenomenon. (Mohan and Ray 2017)

In addition to demonetization, the government of India has also introduced other measures to further the erosion of institutional voids and create an attractive environment for fintech firms. This not only includes the loosening of regulations on foreign investment, but also taking direct measures to facilitate growth.

Deal Data Compilation

A list of over 1500 investment deals for the Indian start up market was compiled. These reflect major start up deals and investments in the Indian market over a three year period starting in 2016 leading up to the present. The deals that were compiled are from various industries and sectors such as: Financial services (fintech), e-commerce, health, technology platforms, as well as food and beverage. The compilation also consists of the amount of funding that was raised by each investment with mention of all the parties that were involved such as the investors, where the startup is located, and what type of investment was provided for each.

Firstly, this was done in order to gauge the macro-economic conditions of the start-up market in the country and analyze trends over time. It also provides an indication of how large the fintech space is currently and how this has changed over time. In addition, the classification of investment types allows for greater insights into the interaction

between fintechs and other firms as well as identifying potential opportunities and areas of growth.

The idea behind this was to see if the inflow of capital being brought into fund fintech firms is generated by incumbent firms or not and the role of incumbent firms from more advanced markets. Furthermore, this provides an opportunity to gauge whether or not the impact of institutional voids can be studied in this phenomenon and whether this has had any significant impact on the funding activities of startup firms. For example, as the data includes funding activities for the year 2016, this provides the opportunity to gauge the after-effects of the demonetization process and whether or not this has further facilitated the growth of fintech companies, specifically in the digital payments space.

The companies selected were classified into different industry categories based on what would be deemed most appropriate in terms of primary business activities. When giving consideration to this data, it becomes apparent that the vast majority of deals involve either fintech, e-commerce, or other technology products. Out of the 1594 deals that took place within the mentioned years, approximately 182 were specific fintech related firms. 987 deals could be attributed to e-commerce technology, with another 300 deals attributed to technological products. In this data, a distinction should be made between fintech and e-commerce.

As discussed previously, the mentioned literature describes fintech as using technology to further facilitate financial activities. This involves payment and transaction services, access to banking and other financial institutions, and other financial services such as lending, money management, etc. In contrast, e-commerce provides an electronic platform for the exchange of goods and services in both B2B and B2C formats. Technology companies in this context refers to primarily to firms which operate in data analytics and software.

It should be noted that there is strong complementarity among fintech, e-commerce, and technology companies. This manifests itself in several ways. For example, the development of technologies such as artificial intelligence and improvements in analytics facilitates the growth of both fintech and e-commerce by providing much needed resources and the know-how for the development of new businesses in e-

commerce and fintech. Likewise, the growth of e-commerce and fintech provide a mutual benefit in terms of development of such markets and technologies. For example, if more and more consumers are using e-commerce platforms there is a likelihood that they will start to integrate digital payment and transaction options. Similarly, the further increase in fintech use and adoption would facilitate the need for more online and digital marketplaces for business activity.

Of all the investments listed, the methods of funding consisted of seed funding, private equity, and debt funding. Out of these, seed funding made up the majority of investments with 886 out of 1594 deals being funded by seed financing. Private equity investments added up to 705 deals with a remaining handful being funded through debt financing. For consideration of this data, large deals in both seed financing and private equity will be examined.

The type of investors range from venture capital and angel investors, institutional investors, multinational companies, local firms, among others. The value of investment injected into these startups ranges is given in US dollars and ranges from small investments such as 18,000USD to approximately 12 million USD. For the purpose of maintaining an appropriate scope for the investments being studied, only investments of over 100,000USD will be considered as lower amounts may be statistically insignificant to impact long-term financial viability. Furthermore, investments lower than 100,000USD are primarily from domestic seed and angel investors which do not fit the scope of the study as it does not cover incumbent firms such as banks and excludes the activities of multinationals.

The results show that the majority of fintech deals appear to be funded by domestic investors, however, the nature of such investors also appear to be changing. It should also be noted that although domestic investments comprise the majority of the deals, in terms of volume, the largest investments were from foreign firms. This can be attributed to various reasons. Foreign incumbents are often larger multinational corporations from more advanced economies.

This has allowed them to accumulate greater purchasing and bargaining power through larger amounts of capital and greater financial viability. These firms also have greater

knowledge regarding technology and are able to scale their operations globally. In contrast, local firms and investors often do not have the same level of capital strength and exposure to competing in international markets, making their purchasing and bargaining power weaker in light to global firms.

This may also be reflective of growing interest in the Indian market, with foreign incumbents willing to make large investments in what is considered to be an attractive market. Due to the growth of not only the overall Indian economy, but also of the disruptive growth of fintech, many foreign incumbents are optimistic on the opportunities presented by such investments in terms of creating and capturing value. The scale of foreign investments has also increased over time, with a greater frequency and volume of investments taking place closer towards 2018 as compared to the starting year of 2016. This provides the indication that although the majority of deals took place in 2016, foreign investments are increasing over time and willing to take on greater investments as compared to before, effectively making the fintech landscape more competitive.

Although expected firms such as venture capital funds and private equity groups are present among the investors, there also seems to be renewed interest in fintech investments from telecommunications companies, mobile providers, and technology groups. Important to note is that the majority of foreign players in the fintech landscape are non-traditional players in the financial services sector. Although there were investments made from incumbents such as Goldman Sachs and Sequoia Capital, these investments were often done through local subsidiaries which have interests in the Indian market. (McWaters 2015; Mohan and Ray 2017)

There was more activity from non-traditional players such as Amazon. There is also evidence of a large upswing in investment activity in the year 2016 compared to the two years after. This may be attributed to momentum in the market as a result of government policy and speculation. For example, 2016 marks the first year in which direct impact of initiatives such as “Make in India” can be examined, with further government action such as demonetization and loosening of business regulations on foreign investment. The results also show that the value of such deals has increased over time, with large

scale investments of amounts over $1 Billion (USD) evident in the investment ecosphere.

Statistical Results

Furthermore, a breakdown of transaction distributions is provided to show which sectors of fintech, specifically in the sector payments has shown the most growth. The data compares payment methods over the years 2013-2015 and summarizes share of transactions for ATM, cash, cheque, internet, POS, NEFT, ECS, and mobile. (Reserve Bank of India). As expected, the number of cash transactions decreases over the time period, from 26% to 20%. The highest share is through ATM transactions which remains stable around 50.5% of transactions. Transactions by cheque decreased from 12% to 9% over the same time period. In contrast, the number of transactions through internet, point of sale, and mobile payments have increased significantly. For example, internet transactions increased from 3% to 8% over the time period, with point of sales experiencing a 50% increase from 4% to 6%. Mobile transactions have also increased by an astonishing 100% over the same time period. (Devi and Devi; Moler and Schueth)

When conducting a statistical analysis, it is clear that these components were significantly impacted by the demonetization process. This is done by conducting a paired t-test analysis to show that the initiative was significant for financial inclusion as well as for fostering the growth of FinTech. The test is run by sampling different digital payment systems to determine whether or not a significant difference is present by comparing the means before and after demonetization. The null hypothesis in this case is the notion that demonetization has had a significant impact on the growth of financial technology being adopted by the public.

Results are given for the following payment systems: ATMs, mobile banking, POS, and NEFT. For all four variables, the corresponding p-values are lower than the alpha value of 0.05. This indicates that demonetization did have a significant impact on the usage of digital payment systems, with the demonetization process serving as a catalyst for higher growth. (Sinha and Bansal) The results also indicated that there was a significant upswing and movement from non-users to users. This is evident in the negative means

provided by the results of the t-test due to the post-demonetization mean being higher than the pre-demonetization means. (Moler and Schueth; Devi and Devi)

In addition, a series of further statistical tests were conducted to quantify the relationships between specific variables that impact the fintech market. This was done by conducting multiple two sample t-tests and regression analysis. The variables that were used include FDI data, transaction volume and value of various fintech metrics, as well as fintech funding activity. These variables were obtained from various data sources in order to ensure accuracy and relevance of the data being utilized. These were obtained primarily from Statista which composed the data sets by compiling results from various financial institutions such as FinTech firms, traditional banks, etc. Results were also obtained directly from the archives of the Reserve Bank of India.

The first test that was conducted was between FDI and vc investments in fintech. These two variables were chosen due to the notion that FDI is an economic indicator that demonstrates potential for international collaboration and foreign interest in local fintech firms. The data reflects investment data over the last five years, covering a time-frame from 2012-2016. For other variables, forecasts up to the year 2022 are given to reflect future trends and expected market activity for the next upcoming years. (Devi and Devi; Moler and Schueth)

The regression results between FDI and vc-fintech investment shows some important results for gauging the current potential for fintech collaboration. This test uses data from the years 2012-2016 and is composed of the total investment value for each respective year. Overall results between FDI and vc-fintech investments show a weak relationship. The R-squared value of the regression is approximately 0.0249 (2.49%) with a correlation coefficient of around 0.16. This indicates that the model at hand cannot fully explain the relationship between foreign investment and fintech activity. The results of this regression can be found in the appendix under figure 2.2. However, a breakdown of fintech activity into specific sectors yields more accurate results.

When conducting a regression of FDI with the total value of mobile payment transactions over the same time period is able to provide a more visible relationship between the factors. This provides an R-Squared value of approximately 52.75% with a

correlation coefficient of around 0.73. This reflects the idea that the forecasted increase in future FDI investments can correspond with greater amounts of mobile payment transactions, with an increase in fintech activity. A two sample t-test was also conducted to test the variables. (Devi and Devi; Moler and Schueth)

Using this test, the null hypothesis assumes that the two samples are derived from populations in which the means are normally distributed and the difference in means are equal to each other. It was also assumed that due to the various market factors that affect each variable that the variances are to be unequal. The t-test for FDI provided a t-stat value of -1.39 and a p value of 0.118. As the p-value is higher than alpha (0.05), the null hypothesis cannot be rejected. This assumes that the variables have to some extent a relationship with each other.

Similar tests were conducted for comparing FDI with mobile transactions, and vc fintech investments with value of transactions and number of transactions. Comparing the results of vc-fintech activity and number of transactions yields a p-value of 0.387, giving strong evidence that the null hypothesis cannot be rejected, which is once again the idea that the means are normally distributed and equal in difference of means for the yearly amounts of fintech investments and the number of digital transactions. This test is significant as it is an indication of determining the scope and scale of the fintech industry and the breadth of investments. Please refer to figure 2.2 in the appendix for further details regarding the analysis and its components.

Another test was concluded to test FDI with the value of mobile transactions. This was also done by conducting a t-test, providing a p-value of 0.106. This shows once again that the null hypothesis cannot be rejected and that the two samples can in fact draw similar conclusions regarding sample distribution and means. Finally, a regression examining the number of transactions using mobile payments with FDI was also conducted. This was done to compare the previous results between FDI and the value of transactions. It was mentioned previously that a significant relationship could not be established simply between FDI and vc-fintech activity, however, comparing one component of fintech such as the value of mobile transactions did yield results. This compares the frequency of such investments with an R-squared value of 0.48 and a correlation coefficient of 0.70.

This indicates that the model can explain within accuracy 48% of the results in the sample with a significant level of correlation. Considering the relationship of FDI with the components of fintech activity, seem to indicate that to an extent, further increase in FDI will correspond to greater breadth and scope of fintech activity in the Indian market. Another regression comparing the number of transactions and value of transactions was also conducted. This was to determine if whether the frequency and scale of such transactions were also correlated and whether they are increasing over the established time period. This is an indicator to gauge the overall economic scope of the fintech industry and whether investment activity is intensifying in this sector over time. The regression results show significant correlation. (Moler and Schueth; Devi and Devi)

The R-Squared value of 0.99 indicates that the model can explain 99% of the results with considerable fit and that the correlation coefficient of 0.99 indicates that the frequency of fintech investments with the scale of such investments are highly correlated over time. This demonstrates that as the number of transactions increase in the Indian market, the value of such transactions will also continue to increase, indicating potential for growth and further economic development in this sector. (Devi and Devi; Moler and Schueth)

As discussed previously, forecast values were also given for the fintech market in India, for forecasts up to the year 2022. These results were obtained from statista and provide results regarding transaction values, value growth, and value per user. These were broken down into the components: digital payments, alternative financing, personal finance, and alternative lending. The results show respective corresponding compounded annual growth rates of 19.7%, 29.4%, 32.8%, 71.8%, and 20.2%. This shows that the sectors that will most drive transaction value are alternative payments and personal finance, however, it should be noted that the overall volume of transactions are still dominated heavily by digital payments. The corresponding data can be found in the appendix labelled under figure 2.1. These provide illustrations regarding the trends of such sectors as well as a visualization of the comparisons with other sectors.

Alternative lending has shown year-over-year growth percentages of over 100% for the years 2017 and 2017 with above average yearly growth. In comparison, digital payments shows relatively lower levels of growth, indicating that this may be one of the more well-established components of fintech in the Indian market.

When comparing the transaction value per user, personal financing and alternative lending provide the highest value per user. This also corresponds with the highest compounded annual growth rates, as expected value per user for these two sectors are expected to grow 32.6% and 17% respectively, in comparison to 7.7% and 8.1% for digital payments and alternative financing respectively. Another variable, number of internet users, was also added into the dataset. This was done to determine the impact of demographic factors on facilitation and growth of fintech activity.

As previously mentioned, emerging markets are usually characterized as having younger populations that rely more on internet-based solutions and are more open to adopting digital methods of finance. Furthermore, the majority of India's population is fairly young, making them even more likely to utilize internet and mobile solutions. Data was collected regarding the number of internet users in millions for the years 2016-2022. The results have shown that there is an 8.17% compounded annual growth rate for the number of internet users, boosted by the young demographics which are becoming more urbanized and demanding of technology services. (Statista)

This also creates an environment for disruption as new business models are composed to respond to consumer needs and deliver financial solutions to a populace that has previously not had access to it. The data also shows that there is a significant increase in number of internet users between the years of 2016 and 2017, compared to the following years. The 2016-2017 yearly increase corresponded to approximately 12%, while falling gradually year-on-year reaching a growth rate of approximately 7% between the years 2021 and 2022. (Statista)

This may also be attributed to government actions aimed at decreasing institutional voids. For example, it was previously discussed that the demonetization initiatives significantly increased the number of mobile payments and transactions, with a greater demand for cashless solutions. This increase also appears to be more pronounced for the

fintech components, with above average growth in the immediate years after 2016, as compared to later. In addition, a series of two-sample t-tests were conducted between each of the components to determine the distribution of the samples themselves.

This tested the null hypothesis of whether the two samples have the same difference of means and are derived from the same population sample. This was done by comparing digital payments with lending, alternative vs personal lending, digital payments with alternative payments, personal finance with alternative financing, providing results for six different t-test values.

For all six tests, the corresponding p-values were less than 0.05, indicating that the null hypothesis in these cases can in fact be rejected. This indicates that the difference of means for the two samples is statistically significant. Subsequent regressions were also ran on each of the fintech components to test for correlations. In all the given regressions, the R-squared values were over 90% indicating that the model of fit shows a significant and correlative relationship between the different fintech components. This indicates that if for example, the number of digital payments is expected to increase over the next few years, other components such as alternative lending can also expect to increase. This provides the indication that the overall fintech market is poised for growth. The data can be examined in the appendix under Figure 3.1

The regression results between total fintech forecasts and number of mobile users appear to show a highly correlated and significant relationship. This test has provided an R-squared value of 0.994 and a correlation coefficient of 0.997, indicating that the variables are highly correlated and that the model is able to explain the best fit of distribution. Similarly, regressions were also ran to compare the relationship between number of internet users and the components of fintech growth discussed above. Each of the corresponding tests also provided R-squared results of approximately 99%, indicating that as the number of internet users continues to grow, fintech will continue to grow as a result in the Indian market. (Devi and Devi)

There has also been support from large financial institutions such as the Bombay Stock Exchange, currently the largest stock exchange in India. The group announced plans for a joint venture with Ebix, a global insurance software provider. Ebix is a supplier of e-

commerce services and is present in over 45 countries and is considered a leader in demand software as well as infrastructure services, as well as earning the rank of one of the fastest growing companies in the world. This joint venture aims to deploy a distribution exchange platform which will improve the efficiency of exchange related services and reduce transaction costs and will provide services encompassing the entirety of the financial cycle from relationship management, underwriting, to policy creation. (Bombay Stock Exchange, Ebix)

The Bombay Stock Exchange is currently the fastest stock exchange in the world and has grown tremendously with many strategic partnerships with leading financial institutions and providers and hopes that this collaboration will further utilize technology to a growing consumer base that will want greater access to financial services in terms of scope and in breadth. (Bombay Stock Exchange)

It is important to note here the value of intermediaries and other institutions on the impact of leveraging disruption to create value. Most literary and analytical focus on FinTech has been from the actions of firms such as banks and the relationship between the business and the end consumer. However, intermediaries such as central banks and other financial institutions as the one mentioned in the example above, indicate that disruption is a phenomenon which has a tremendous impact on the entire financial ecosystem. It can be argued that the Bombay Stock Exchange itself is experiencing a period of disruption in the face of radical innovation. (Ansari and Krop; Leonard-Barton 1992). This is due to the rapid pace of economic development and the demand for more sophisticated financial infrastructure to cope with the everchanging needs of the consumer and institutional markets.

As the demand for more comprehensive services continues in the Indian financial services sector, institutions such as the Bombay Stock Exchange must continue to leverage strategic partnerships and collaborate to develop new competencies and further improve the effectiveness of such services. This is a unique example of a leading and well-established institution collaborating with a disruptive technology through collaboration which is also aimed at improving processes across financial services, rather than allowing a firm to capture value in the market.

These initiatives are in line with the Indian government's initiatives of a "digital india" by removing regulatory and transactional inefficiencies by promoting technology and modernizing the country's financial infrastructure by supporting fintech initiatives. It should also be noted that although Ebix is a fairly new company its experience starting in the United States has allowed it to develop unique competencies and create channels for financial services and insurance providers operating in various institutional landscapes.

Case Study Examples

Four prominent investment deals in fintech from the last three years will be discussed in detail in order to provide greater insights regarding the fintech investment environment in the Indian market and how firms have specifically interacted and collaborated with each other. The selected deals will focus on the collaboration between local fintech firms as well as direct investments from foreign incumbents from advanced markets. This will dive closer into the value creation opportunities offered by such collaborations and how such interactions are to continue to develop in the future outlook for Fintech.

The specific examples selected are primarily direct venture capital investments from foreign incumbents into financing Indian based startups. The examples of foreign incumbents will include direct investments from traditional players in financial services such as banks, but also new players such as e-commerce platforms, technology firms, etc. This will demonstrate the dynamism in the fintech space, and the changing macroeconomic environment of investing in emerging markets. The original data was first compiled from the list of fintech deals. Specific data referring to individual companies were obtained from the respective company websites, as well as Statista.

Digit-Fairfax

Digit is an insurance company founded in Bengaluru, India in 2016. The company was founded by Kamesh Goyal, who had previously led Allianz's operations in the Indian market. The company's vision aims to simplify the process of purchasing and having

insurance by utilizing technology as a modern tool to deliver value to clients. The firm offers coverage in jewellery, mobile, travel, and auto insurance. Customers benefit from the customer's algorithm and digital platform which connects users with the company as fast as possible.

This allows the company to respond to user queries immediately and provides a customized experience for users, while also partnering with other local and international companies to increase the scale and scope of coverage. Furthermore, the novel business model of Digit makes it a unique player in the insurance space. Although the company is fairly new, the management of the firm benefits from the experience of its chairman, Kamesh Goyal, whose knowledge from Allianz provides the firm with the know-how of financial services and competitiveness. Digit has been able to raise more than $94 million USD in just its almost 3 years of operations.

Fairfax Financial is a Canadian financial holdings company with operations in insurance and investment management. The firm was founded in 1985 by Canadian businessman Prem Watsa. Fairfax Financial operates worldwide with subsidiaries located across North America, Europe, as well as Asia. The majority of the firm's subsidiaries are located in the United States, focusing on insurance claims management with over 5,000 employees. Fairfax's interests in Asia aim to not only diversify their presence, but to also capture value from the growth potential presented by emerging markets.

For example, currently only about 4% of India's population holds any sort of insurance coverage, with only 3% of those with insurance using online or digital channels. This represents a largely untapped market in which there is growing demand for insurance coverage. The growing demand can be attributed to demographic factors, such as a largely young populace with growing access to consumer goods and knowledge about the importance of insurance. The insurance market is believed to grow to a market value of $280 Billion (USD) by 2020, with premiums growing year-on-year by almost 18%.

The government has also introduced several policies and frameworks to facilitate the growth of insurance coverage. This has mostly been aimed at more vulnerable sectors of the population, such as rural farmers, while also introducing mechanisms to facilitate more direct investments into the insurance sector, such as increasing the percentage of

foreign direct investment to 49%. For example, the PMFBY initiative has provided insurance coverage to over 47.9 million farmers during the 2017-2018 period. Furthermore, the government has commenced its National Health Protection scheme, which has provided basic coverage to over 100 million families considered to be in a "vulnerable" position.

Meanwhile, the government has also taken direct action to facilitate investments in capital markets. The insurance and regulatory development of India has also introduced policy to increase IPO and equity financing mechanisms aimed at improving guidelines and investment criteria for insurance companies to increase eligible investors. This is also seen in market activity, as the number of M&A activities rose considerably in the insurance space over the last 2 years.

These government actions represent a slow and gradual erosion of institutional voids which has slowly opened up the market and has made it more attractive for investors. The demographic factors discussed previously will continue to provide a catalyst for growing demand for insurance products, providing ample market space and opportunity for firms to step in. Furthermore, the growing consumer base of young and more tech-savvy users provide a lucrative customer base for fintech related services. Currently, Digit claims that the overwhelming majority of its insurance claims are handled within 24 hours due to its technology-based platform. This has provided space for disruptive market forces as further growth in technology-related services will continue to entice customers who are looking for a modern alternative to accessing financial services with gaining synergies from further growth in fintech.

The direct investment of $45 Million (USD) from Fairfax not only provides access to capital, but also to the expertise and knowledge from a larger and more well-established firm, its largest investment to date. This provides a necessary boost to Digit's operations through which the firm can further expand in the Indian market. This also provides Fairfax the opportunity to capture value created by a new disruptive player, with an innovative and unique business model in the insurance space by leveraging technology capabilities. Further loosening of regulatory measures will also change the dynamic competitive landscape, allowing increased competition between traditional players and fintech firms.

Razorpay-Mastercard

Razorpay is a payments solutions company founded in 2013. The company aims to achieve frictionless transactions by providing online and digital solutions for merchants, users, and institutions. This is done by offering a dynamic dashboard and integrating various processes and mechanisms into a digitalized system which reduces frictions in the payment process. The company's product offerings include invoice and vendor services, generating virtual accounts, routing money flow and marketplace orientation, and providing a payment gateway for online vendors through API driven automation. Razorpay currently has over 100,000 clients and has received praise from various investors for its innovative payments solution and emphasis on integrating business processes.

MasterCard is a globally-known financial services company which is one of the early entrants and most well-established players in payment processing. The company is present in all major markets with its comprehensive product offerings. This includes its most well-known product, the MasterCard credit card, as well as payment systems which are developed in collaboration with other large firms. The firm has also taken an active interest in digitalization by forming key strategic partnerships with companies such as Apple, with the development of its mobile wallet feature, and has invested heavily in the utilization and integration of technologies such as artificial intelligence and machine learning. Furthermore, MasterCard has launched two initiatives aimed at increasing investments into fintech globally.

The firm has launched its accelerate program, a growth initiative aimed at discovering fintech startups with high growth potential and providing them with the expertise and resources offered by MasterCard. This includes access to advisors, data analytics, as well as strategic investments into firms, with the ultimate goal of increasing the scale and scope of fintech operations around the globe. In addition, MasterCard has launched in juxtaposition to its Accelerator program, the StartPath program.

This is a global partnership program which provides MasterCard resources to startups focused on technology and finance around the world by offering knowledge, access, and solutions to potential partners. The company has specified metrics for how it identifies

potential startups for the program. One of its metrics, is the concept that the potential startup demonstrate a disruptive business model, one in which a firm can develop a significantly strong competitive advantage in an early growth stage. Second, the firm at hand must demonstrate a sizeable market opportunity, with recently secured early-stage financing. Lastly, the team has to be well-established with strong technical expertise.

Razorpay is one of such companies which partnered with MasterCard's SmartPath program. The direct equity investment was MasterCard's first investment into India, and its second global investment to date. This investment allows Razorpay access to several crucial resources from MasterCard, such as the company's global risk and fraud expertise. Razorpay is seeking to integrate MasterCard's payment getaway service into its own operations in order to reduce the number of failed transactions and create an even greater frictionless payment process by leveraging the expertise and know-how of MasterCard.

Through this partnership, Razorpay is able to improve on its technological capabilities in the Indian market and scale its operations on a greater level, as demand and usage of payment services is expected to continue to increase. However, Razorpay is already beginning to face competition in the Indian market, with the MasterCard partnership aimed at providing leverage over competitors. This investment is also notable as it shows the importance of other financial intermediaries in the growing fintech space, and the value proposition for such firms.

Previously, fintech investment and interaction has traditionally focused on incumbent banks and new startups. However, this investment marks the growing importance and relevance of other financial intermediaries who are seeking to expand operations due to increasing technological development and usage of fintech. It also demonstrates the growth of internationalization and potential of emerging markets and the dynamism of the fintech space, with intermediaries taking direct interest in potential firms. MasterCard is expected to continue its investments through its startup programs, and will continue to be a major player in the fintech market by providing growing firms with direct access to resources and expertise, while also gaining value from the innovative business models of new fintech firms.

SoftBank-Paytm

The SoftBank Group is one of Japan's largest conglomerates with operations in telecommunications, finance, technology services, media and marketing, etc. The company's operations are well diversified and present in most major markets across the globe. Softbank conducts its operations through its numerous subsidiaries with strong capabilities in telecommunications, mobile phone services, etc. SoftBank also operates one of the world's largest investment funds dedicated solely to financing technology companies.

Paytm is India's largest digital payments company and offers comprehensive payment solutions for customers and vendors. The company also operates an e-commerce platform by offering a centralized location for online commerce in various industries with multiple vendors and users. The company currently boasts a user base of over seven million merchants and is currently valued at $10 Billion (USD).

Softbank announced plans to invest more than $1.4 Billion (USD) into Paytm. This collaboration aims to inject capital into Paytm and will utilize technologies such as artificial intelligence into its operations. While this collaboration provides Paytm with capital, Softbank aims to utilize its services to offer digital payment services into the Japanese market. The launch of this new digital payment service in Japan will also be carried out through a joint venture with Yahoo's Japanese division.

This partnership is unique in several ways. Previously, incumbents in the financial services industry has focused on firms from developed markets such as North America and Europe. This is a unique example of an incumbent from a developed Asian market aiming to collaborate with an emerging Asian market. Furthermore, this investment deal is an example of wanting to fully integrate and utilize the offerings of an emerging market fintech firm by leveraging disruptive technologies and innovativeness.

While Japan traditionally has a reputation for being a high-tech market, many analysts perceive Japan's focus and adoption of of fintech as relatively weak compared to other major developed markets. The Japanese government has also announced regulatory

changes to lower institutional voids in the fintech space and increase fintech activity, especially in the digital payments and telecommunications sectors.

This has provided incentives for major players in Japan to actively seek investments and potential partners for collaborating in fintech, in order to improve capabilities and deliver value to the Japanese market. Furthermore, Paytm is currently facing increasing levels of competition from other upcoming players, with this collaboration hoping to provide the firm with competitive leverage and direct access to a major developed market. SoftBank's investment comes at a time where other major players in Japan such as technology firms and telecommunication firms have already begun to direct attention towards fintech.

It is aimed that this collaboration with Paytm provides a launchpad for SoftBank to develop and expand its fintech activities globally, while leveraging its conglomerate-based business model to integrate telecommunications with financial services and technology to create value in the Japanese market. Softbank has also taken a keen interest in the Indian market with subsequent investments into the Indian fintech space through its other subsidiaries.

Acko-Amazon

Acko is another example of a general insurance company in India conducting operations through digital means. The company offers insurance services for mobile, auto, and bike services. Acko aims to tap into the disruptive potential of India's growing insurance service sector by utilizing a digital-only business model and democratizing the insurance sector by providing unique solutions to a growing customer base.

Amazon is one of the world's largest and most well-known firms. The company operates primarily in e-commerce and cloud computing services and is one of the world's most reputable brands. Amazon is present in most major markets and has an overwhelmingly large market share. It is estimated that over 60% of American households currently use Amazon services to some extent and the company holds the reputation of currently being the world's largest internet company by revenue. Amazon employees and subsidiaries have performed very successfully in various sectors, from e-

commerce, fintech, to food delivery services, etc. In addition, Amazon has taken a very active role in fintech through various business channels.

The company has taken a keen interest in fintech in order to boost its own capabilities and create an effective multi-channel network for its e-commerce platform. It has initiated several investments, particularly in emerging markets. This is done by focusing on building tools that aim to: increase the number of merchants on the platform and enabling each merchant to sell more in volume, increasing customer user base and increasing the spending per customer, and lowering transaction costs and frictions. Furthermore, Amazon currently operates four services which facilitate fintech activities internally within the Amazon ecosphere. Amazon Pay is a digital payments and digital wallet service which aims to reduce transaction costs and facilitate smooth online transactions in its platform.

This reduces what is known in the industry as “swipe fees” making it attractive for vendors and increasing revenue streams for Amazon. Amazon also operates a service known as Amazon Cash, which allows anyone to become a user of Amazon without the need for an existing bank account. This service facilitates payments through the Amazon platform and partners with other money lending and transaction services. This is lucrative for users in developed and emerging markets. The US currently has a large population base that does not use financial services such as banks. This is also a very severe problem in emerging markets such as India, in which the majority of the population does not have access to traditional banking services. In addition, Amazon has launched its SMB lending service which has facilitated funding and lending services to small-and-medium enterprises using online channels and digital payments. Lastly, Amazon has launched Amazon Fintech Solutions, a business and technology consulting service currently based in India.

The majority of Amazon’s equity and M&A investments have been in the Indian market, aiming to capitalize on high growth potential and technological capabilities. Amazon Fintech Services provides business technology consulting and auditing services, project management outsourcing, and talent management services for fintech companies. This ties into Amazon’s $12 Million (USD) investment of Acko, providing the insurance start-up with greater credibility and momentum. This investment signals

Amazon's commitment to developing fintech solutions and its commitment to further expanding in the Indian market.

This investment is aimed at developing Acko independently, and does not inhibit any restrictions on Acko's options to collaborate or pursue other strategic initiatives. While providing Acko with greater visibility, Amazon also hopes to further lower institutional voids in the Indian market by working actively with regulators. Amazon has significantly high bargaining power as a large e-commerce conglomerate with the promise of offering jobs and technological development. It is hoped that Amazon's commitment to the Indian market will allow for the loosening of regulations of India's insurance space, with Amazon as an important stakeholder in future development.

As discussed in the first example, this is another case of a non-traditional player in the fintech market. It is important to note that Amazon's activities are aimed at consolidating transactions and business activity into its ecosystem and the company has invested heavily in growth markets. This will provide strong competition to traditional banks as the nature of the consumer and retail markets continue to change, with growing emphasis on digital markets and payments. This has so far proved to be successful in emerging markets in which the disruptive forces of fintech have gained a faster hold on consumers, than traditional banks. There is currently speculation that Amazon itself wants to offer a comprehensive banking like service which would facilitate a one-stop for all business model for the Amazon platform, further isolating incumbents.

Findings

The examples discussed serve as an indicator regarding the optimism from foreign and domestic investors regarding fintech activity in the Indian market. These examples were chosen specifically based on the opportunities for value creation for foreign and domestic players and future opportunities in the market. These examples also indicate examples of collaboration between domestic and foreign incumbents. As mentioned previously, the majority of the funding types consist of direct investments through the form of private equity and other vc-backed investments such as seed funding and debt financing.

This indicates that the majority of fintech in India is still composed of small enterprises which receive support in the form of capital, knowledge, and resources. The examples demonstrate how companies are choosing investments and collaborations on the motive of exploiting disruption. This is best evident in the examples of the insurance based fintech startups. It was mentioned that insurance is an especially underdeveloped sector in the Indian market. Furthermore, many multinationals from advanced economies do not possess the knowledge to successfully navigate the Indian insurance sector with its complexities and regulatory barriers, although they may possess other valuable resources and capabilities.

This is evident in the example of Fairfax, as a large Canadian holdings company, which aimed to capture value in the disruptive Indian FinTech sector by utilizing a local partner. Local firms have developed and introduced technologies that deliver innovative solutions to the problem of accessing proper insurance coverage in the Indian market, with global firms seeking to maximize returns from investing in such disruptive innovations by providing capital and resources. The examples given also showcase radical and architectural innovations. (Clark and Henderson 1990)

This falls in line with the ideas discussed above regarding the decline of joint ventures in the Indian market. As the Indian economy becomes more and more integrated with the global economy, multinational firms from mature economies will have to reconfigure their global strategic orientation. (Kogut 1988) This will also force companies to reconfigure their understanding of global value chains and market entry strategies for emerging markets and make more use of local partners. Traditionally, literature has argued that the best way for firms to capture value in such a competitive landscape is to utilize local subsidiaries in order to harness their capabilities and knowledge of the local market and re-establish value opportunities from resource complementarity. (Kale and Anand 2006)

Furthermore, the fintech space will continue to experience disruptive competitive forces as non-traditional players in the financial services sector will continue to establish a foothold and change the dynamic landscape of the fintech sector. As discussed previously above, firms such as Amazon and SoftBank will continue their

foray into fintech, seeking large-scale investments that will not only increase their foothold into the Indian market, but will also allow them to diversify and develop new competencies for value creation. (Kale and Anand 2006)

These investments can then be viewed as competency-enhancing operations of a disruptive and innovative nature which are adding to the resources of new entrants. Meanwhile, incumbents will have to further reconsider their strategic position in emerging markets in order to ensure that this new form of disruptive competition will not space them out of the market by destroying existing competencies. This will prove as a double-challenge for foreign incumbents as they will first have to respond to disruptive and new market conditions, as well as responding proactively to new forms of competition and value opportunities in emerging markets. (Latif and Fu 2017)

Propositions

Based on the results that were obtained a number of propositions can be established regarding the state of fintech in India and the intensity of interaction between incumbents and new firms. These propositions were developed with consideration to the data regarding startup investments in the Indian market, as well as the theoretical and empirical data that was collected regarding the overall market and firm response to institutional voids and technological disruption. These propositions serve as key takeaways in understanding not only the current state of FinTech in the Indian market, but how firms can optimize interaction to best navigate institutional voids as a way of utilizing disruptive technologies.

Proposition #1: Emerging Firms and Technological Discontinuities

The Indian market is still experiencing a period of growth opportunity and development. This will present numerous opportunities for discontinuous innovations which will foster technological innovations. These innovations will continue to change the competitive landscape and provide new opportunities for value creation. It can be argued that fintech in India is currently in a stage of radical innovation. This has allowed new entrants to create more value in the market and take advantage of

opportunities presented by disruption. This is evident in the growth of vc-backed investments and the explosive growth of fintech in general. (Bergek et al. 2013; Bradley et al. 2016).

Furthermore, fintech has received government backing through the lowering of institutional voids and lowering barriers to entry for foreign investment, and the development of more sophisticated market, suitable for innovation. Incumbent firms are faced with the challenge of whether to adapt and respond to these technological innovations, or find a way to recapture value in the market and remain market leaders. (Anderson and Tushman 1986; Anderson and Tushman 1990)

Despite the disruption presented by fintech, it is still a small section of the overall global financial services industry with incumbent firms still holding majority of the market share. As the pace of technological innovation increases and the growth momentum of the Indian economy matures, it can be argued that the fintech sector will enter an "era of ferment". This will lead to technological variation and increased competition by incumbent and new entrant firms with a flow of new products and services that aim to capture value from the status-quo business framework. (Macher 2004) Eventually, further innovation and the changing market conditions of an emerging market will lead to the establishment of a dominant competitive landscape with new entrants establishing the market conditions. (Teece 1992)

This will be driven by the increased access and demand from a consumer base that previously did not have access to financial services and have adapted to technological change. Incumbents will be forced to respond to these discontinuities through either internal ventures, joint ventures and partnerships, and through outright acquisitions. This will depend on the existing business models of incumbents and whether core competencies and networks are made obsolete in the face of innovation as disruption will present competence-destroying innovations. (Chandy and Tellis 2000) As the market matures, the potential value for incumbents and new entrants will also change in a dynamic nature.

Once the market can be characterized as developed, incumbents may be able to re-capture value through their ability and knowledge of such markets, without the burdens

of navigating strong institutional voids. Furthermore, it can also be argued that the new entrants have developed these competencies over time by juxta positioning their activities with the pace of development and new innovations and seeking strategic partnerships and collaborations during the disruptive stage. This may then manifest into a market of architectural innovation, which enhances the capabilities of incumbents with gradual incremental innovations steadying the pace of technology. (Bergek et al. 2013; Macher 2004) This will only take place once markets are stable and has established industry leaders before another technology-based discontinuity once again disrupts the market. (Clark and Henderson 1990)

Proposition #2: Three areas of exploitation for institutional voids

It was previously discussed that strong government action and policy has significantly lowered the barriers presented by institutional voids in the Indian market. This has been done through financial inclusion initiatives, liberalization of the market to foreign entrants, as well as the maturation and development of financial markets and other macroeconomic intermediaries that have facilitated the development of a more mature and stable market. Literature argues that institutional voids most effect three specific areas in a national economy. (Abiaad and Combs 2014) These areas presented the best opportunity for firms to capture value due to uncertainty and disrupt traditional networks through new innovative procedures. These areas of impact are: product markets, capital markets, and talent markets. (Kalvet et al. 2013)

Product markets refers to the mechanisms in place that facilitate interaction between buyers and sellers. Currently, a large portion of the Indian population lacks any access to financial services, prompting a new market segment niche for firms. Through economic development and further progress of fintech, the nature of this customer base will change. This will then present the challenge of whether the networks created by emerging firms will continue to deliver value or if new strategic initiatives are required. The government's actions, especially under the Modi government, indicate that addressing this is a fundamental issue through its initiatives aimed at increasing financial inclusion and lowering of institutional voids.

Demonetization had added millions of individuals into the financial system and has addressed investor concerns regarding black money and corruption in the Indian financial system. This has poised for increased facilitation for commerce and a larger base of viable buyers and sellers. Furthermore, it can be sufficiently argued that the current capital market framework for India is still in a stage of development. Financial infrastructure and efficacy is still at a very low stage compared to other national economies. This will create a dynamic relationship between buyers and sellers in the overall product and capital markets as the needs of users will continue to change, impacting the bargaining power of users. How demographics will respond to this over time is still to be discovered and whether or not future economic development will need to even more rapid adoption of technology and financial innovation. (Kalvet et al. 2013)

This has facilitated the growth of fintech due to low consumer confidence in incumbent systems and the opportunity for fintech to disrupt traditional markets during a growth and expansionary phase. Many global firms have also expressed interest in the Indian market on this regard as opportunities to provide better financial solutions are abundant. It is evident that India will need to develop a fully modern and sophisticated framework for financial services as the country continues to develop and emerge as a potential global superpower.

Lastly, the talent market of India is currently underdeveloped relative to other markets. This is often manifested in socio-economic indicators which position India as a country that mostly lacks high-skilled labour and lacks institutions to facilitate the development of human capital in an optimal manner. However, this situation has improved over time due to increased demand from India's information technology sector. Empirical evidence from past economic development of emerging economies indicate that there is a strong correlation between development and improvements in metrics such as education and skills composition of the labour market.

This will facilitate into further growth of the services sector as a component of India's GDP. Countries usually make a trend in which an underdeveloped country develops capabilities and competencies through low cost advantages, and subsequently boosting primary sectors such as manufacturing. As macroeconomic indicators improve over

time, these emerging countries now create and capture value through low-cost skilled labour, while transitioning to a more complex and modern economy based on skilled labour. This has presented an opportunity for disruption as new entrants demonstrate capabilities that have never been seen and offer a more innovative and simple solution to accessing financial services through a locally developed talent pool that better understands the domestic market and the needs of consumers. (Kalvet et al. 2013)

It was also shown previously that majority of fintech investments are being generated domestically through internal development and financing. Further development of talent in financial services may allow domestic Indian firms to also adopt a global mindset, competing in more developed markets through the knowledge obtained from handling digital disruption and financial innovation from the onset, and ultimately capturing value from other developed markets. This is already evident in India's IT and business process outsourcing sectors as many multinationals have re-directed parts of their value chain into collaborations with the Indian market to take advantage of cost advantages.

These three factors will continue to serve as a benchmark for exploiting types of institutional voids. However, it is inevitable that such forces will change in their impact on emerging markets and the ability to exploit such factors will also change over time. This creates uncertainty in considering internationalization opportunities for both emerging companies and multinational incumbents. (Kalvet et al. 2013)

Proposition #3: Strategic partnerships will continue through the form of direct investments

Based on the data collected and the examples provided, future forecasts show that strategic partnerships will continue in the form of direct investments, the majority of which will be from other local firms. This shows that larger firms will continue to directly invest into fintech startups in order to obtain access to much needed innovative resources, capabilities, and networks. In return, startups will obtain access to further capital, establish economies of scale in production and distribution, and wider access to resources and established networks and other paradigms. (Crittenden and William 2010)

This seems to be based more on the purchasing power and capital strength of the investing firms, as fintech startups are still fairly small in numbers and capital. This will continue until a dominant design in financial services is established. (Luo and Chung 2012). It is still not yet known whether through these partnerships, if fintech startups will develop into the institutions and intermediaries that provide financial services, or if larger firms will adopt and establish such technologies based on their greater bargaining power and reputation. (Anderson and Tushman 1990)

At the current stage, these direct investments will facilitate itself through vc injection of capital, or direct acquisitions. However, there is also growing domestic activity of M&A and other forms of investments within the domestic market. This may change in the future as domestic firms continue to grow, they may exercise their own domestic power to capture value from incumbents and beat foreign competitors.

Empirical results have already shown a decline in joint ventures as a method of entry into the Indian market, indicating that the majority of growth of fintech firms are small firms. (Kale and Anand 2006) There is strong evidence to suggest that once the growth of fintech slows as the market matures, it is not yet known how the market power of such firms will change in response to changing factors.

Proposition #4: New entrants are best suited for exploiting the forces of institutional voids and disruption

From analyzing the trends in vc-backed fintech investments, it is apparent that the overwhelming majority of investment is still done by local firms. This is due to their ability to best navigate institutional voids due to local knowledge of the market and creating products and services which are best able to disrupt the status quo and change the pace of innovation and technological adoption. Furthermore, the macroeconomic conditions of emerging markets are characterized by high growth, facilitating the demand for new local firms. These firms will create products and services best suited to capture value from growth and changing market conditions. (Adner and Kapoor 2010)

This is evident in the examples of fintech insurance companies, which are capturing value through disruptive technology in a still growing sector. It is also evident that non-traditional players in financial services have taken the lead in optimizing and leveraging innovation. (McWaters 2015) For example, some of the largest investments from international incumbents were not from traditional banks, but from technology companies focusing on telecommunications and e-commerce. It was previously shown that the majority of vc investments are for the e-commerce sector in India. (On Demand: Solutions for the insurance, financial, e-governance, and Healthcare Sectors).

This demonstrates that other sectors are also currently experiencing disruptive forces through the facilitation of technology, changing the overall economic structure of certain industries and processes that complement financial services. As other economic sectors such as trade also experience the forces of technological discontinuities, the competitive networks of incumbents from advanced economies will also be forced to change. Incumbents such as banks are being increasingly threatened by companies such as Amazon, who have introduced innovations in their business models to integrate and enhance financial services. (King and Tucci 2002; Leonard-Barton 1992)

This has been a response to the disruptive nature of emerging markets such as India in which mobile and internet solutions have established a foothold and optimism from the consumer market. Incumbents such as traditional banks will face competition not only from local startups, but also from established firms in advanced economies that are seeking to capture value through disruption by horizontal integration. (Leonard-Barton 1992; Abernathy and Clark 1985) The forces of innovation will then determine which firms are best suited for success in exploiting disruption.

The embeddedness of traditional firms with regards to resources and values, combined with the double-edged competition from international and domestic players will present never before seen challenges to incumbent firms. This will force strategic partnerships aimed at best exploiting disruption, paving the way for more collaboration between local startups and innovative firms from established markets. (King and Tucci 2002)

Limitations

It should also be noted that there is currently a large number of limitations regarding the study of fintech in India and speculation regarding future trends and prospects. Firstly, fintech is a very new industry with very limited data, especially in the form of time series data. The problems behind this manifests itself in several ways. For example, high growth can be observed due to the new nature of the industry. It is not statistically clear how much of this is attributed to market disruption and technological prowess, as compared to speculation regarding a new product. (Sriram and Upadhyayula 2002)

It may also be that the growth and success of fintech can be attributed to following the product life cycle in which high rates of growth and consumer optimism are evident in an early growth-stage product. Secondly, the market and demographic factors characterizing the phenomenon behind fintech in the Indian market are unique and relevant comparisons to other market disruptions are difficult to draw upon. There is also the factor of the momentum from the IT and e-commerce industries, which must be taken into consideration when analyzing the potential for the Indian FinTech market. As stated, the IT sector has played and will continue to play a significant role in the Indian economy. More and more firms are seeking to outsource and establish operations in India due to factors discussed previously, one of the primary reasons being the access to low cost labour. (Mohan and Ray 2017; Vij et al. 2017)

This has previously given India a competitive advantage in its IT sector and has allowed the country to develop a sector of the economy that generates demand for skilled labour, improving the labour market composition and prospects as the country further develops. It is still not known how India will respond to economic transition from an underdeveloped to newly industrialized market and whether or not the country can sustain its international competitive advantage as a hub for global outsourcing. Subsequent improvements in macroeconomic and socio-economic indicators may generate new institutional voids for international collaboration for Indian firms, if they can no longer rely on the market synergy forces generated by the IT industry. (Annapoorna and Bagalkoti 2015; Bradley et al. 2016)

In addition, while attention has been focused on radical innovations and the impact on financial services, the broader scope for disruption as a result of e-commerce is yet to be properly understood. E-Commerce has generated digital solutions that have affected almost every facet of trade and commerce. Further innovations spurred by multinationals may also disrupt the framework of interaction within Finance itself, impacting intermediaries and institutions.

While this has facilitated the creation of new marketplaces and platforms that have provided catalysts for further FinTech innovations, many e-commerce platforms are seeking to completely disrupt consumer markets. It was previously mentioned that Amazon is aiming to revamp its online marketplace as a one-stop shop, with a complete network of infrastructure including solutions for financing and a digital payments platform. While the research has focused on how technology will impact traditional firms such as banks, it has not been analyzed whether future innovations in e-commerce may render current financial infrastructure and frameworks obsolete. (Saal et al. 2017)

The pace of technological development in fintech has accelerated over the last few years with adoption in emerging markets appearing volatile at times. When drawing upon theory regarding disruption, the comparison between new and existing products is blurred by technological capabilities. For example, it is not evidently clear whether or not the fintech product or service is initially an inferior product that serves a niche product, only to later develop a competitive advantage through technology and consumer demand factors. This is due to the very nature of emerging markets being unpredictable. Furthermore, many of the market conditions of India are unique to that market with conclusions regarding market forces harder to draw conclusions upon. (Peters 2016; Mogolola 2012)

It was previously mentioned that the Indian market is very unique in its demographics and outlook. As a national economy, India cannot yet be compared to the demographics of advanced and mature markets such as the United States and Australia, countries that have also to a significant extent, adopted fintech It also differs significantly from other technology-savvy and innovative countries such as China in demographic factors, government policy, etc. (Andersen 2018; Karlan et al. 2016) This also presents a challenge in market comparisons and outlook. For example, there are several countries

in East Africa which are also top contenders for fintech activity and outlook, such as Kenya, in addition to other players in Asia, Europe, and North America. (Sriram and Upadhyayula 2002)

However, the demographic and macroeconomic conditions of such economies differ too strongly from the Indian market for a viable comparison. (Arino et al. 2016) The most viable comparison would be with the Chinese market, as several of the driving factors for growth of FinTech in China can be applied to the Indian market. However, it is crucial to note that the trajectory of economic and technological development for the two countries have been very different with regards to development over time. Furthermore, the demographic and political factors of the two countries differ greatly. (Ndemo and Weiss 2017)

Due to the disruptive nature of fintech, and high growth of the sector, there is uncertainty regarding the nature of competition in global markets. Several other countries are also establishing hubs for fintech, both in emerging and developed markets. (Vij et al. 2017) While India has been a good case example for fintech growth and adoption, it is important to note that several other markets are emerging in response to technological trends and market potential. Response from advanced economies is also not yet understood. While advanced economies are characterized as being adversely impacted by rigidities and embedded institutions and practices, there is still highlighted concern regarding the disruptive prowess of FinTech firms.

Firms in North America and Europe will need to respond to the growing investments and innovations being generated in newer markets such as Asia and Africa in order to capture value from the growing tide of technological innovations in Finance. This is especially concerning when analyzing the composition of FinTech investment deals in the Indian market. For example, if the trend continues that the majority of investments and collaborations are facilitated by local incumbent firms into local startups, multinationals from more advanced may lose in the race for knowledge and developing new competencies aimed at navigating different competitive obstacles. The Indian market, despite its market optimism and explosive growth of fintech, is also still a small sector in terms of financial services. The nature of investments has also typically taken place through traditional finance channels such as venture capital and direct investment.

New innovations in financing structures and channels still have not risen with the onset of new technological innovations and discontinuities.

While channels such as crowd-funding have been discovered, these are still very small scale investments when compared to the broader global investment network. The channels and networks have still more or less remained the largely the same, while the characteristics of the participants has been altered due to the growth of emerging markets. New innovations, such as further e-commerce innovations and scaling from companies such as Amazon may make these channels also obsolete, further disruptive the financial services sector. It is not known whether India will actually develop into a global leader in innovation and financial services, or if this is a result of market momentum and reform. (ACI Universal Payments 2017)

Future economic outlook for India show general optimistic sentiment with sustained periods of growth over the next few years. However, uncertainties still remain regarding the country's ability to manage such growth and continue to implement policies aimed at driving economic growth. Furthermore, it is unclear how the pace of development will influence foreign investment and the changing nature of capital markets. Demographic advantages that are currently present may also cause strains in the future. (Vij et al. 2017)

While the current consumer base is enticed by fintech due to the promise of financial inclusion, further development of the financial services industry may render disruption unnecessary with existing frameworks and competencies becoming enhanced as the demographic base reaches the standards in mature markets. It is known that the Indian population is becoming more urbanized, educated, with higher levels of income. (McWaters 2015) How this population will respond to further technological disruptions and innovations in financial services will continue to be monitored. FinTech will continue to play a prominent role in the transformation of financial services and will usher in a new era of innovation that will drastically change the capabilities and competencies of firms. The phenomenon of emerging markets entering a transition period in terms of changing market environment and organizational contexts will pressure firms to reconsider existing business model paradigms and seek solutions that

can best navigate simultaneously the impacts of institutional voids as well as digital disruption. (ACI Universal Payments 2017)

Appendix

Figure 1.1: Opinion on challenges faced by companies when working with fintech across India in 2017, by type

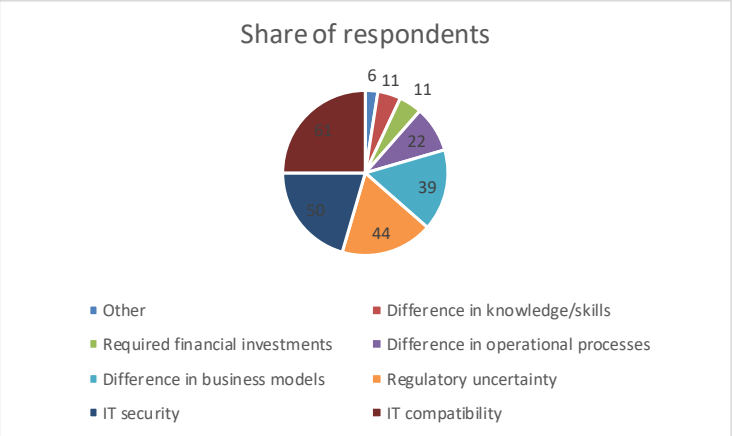


Figure 1.2: Opinion on challenges faced by incumbents when working with fintech companies across India in 2017, by type

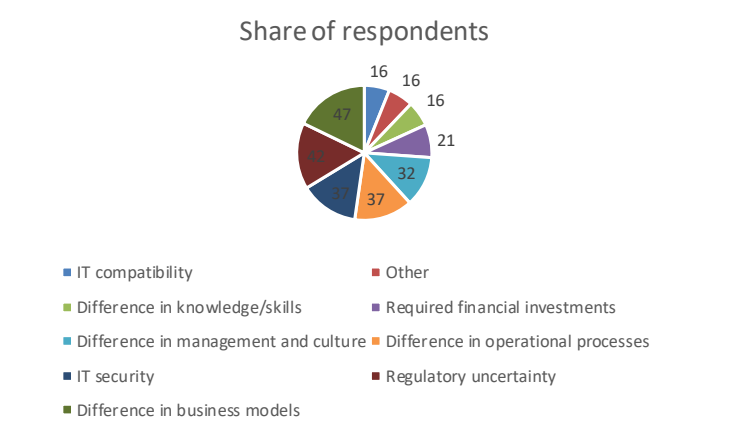


Figure 2.1: Forecasting data regarding future FinTech growth in the Indian market years 2017-2022

Transaction Value Growth in percent	2017	2018	2019	2020	2021	2022
Digital Payments	25.4	23.7	21.3	18.9	16.2	13.4
Alternative Financing	32.6	32.2	30.9	29.1	27.0	24.7
Personal Finance	54.8	44.4	35.6	27.8	21.4	16.7
Alternative Lending	125.7	106.4	80.3	59.3	44.2	33.4
Total	**25.9**	**24.2**	**21.8**	**19.3**	**16.6**	**13.7**

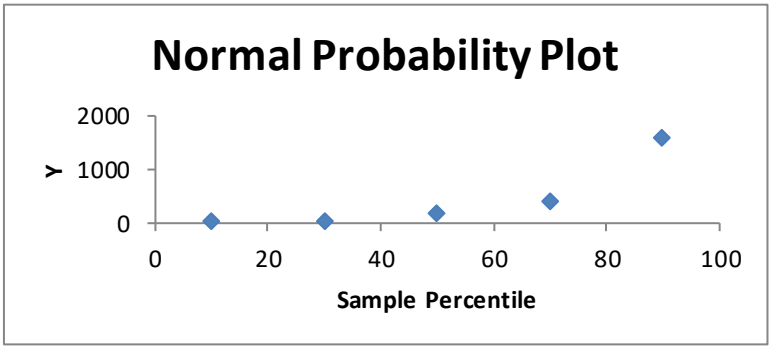
Transaction Value in million US$	2016	2017	2018	2019	2020	2021	2022	CAGR in %
Digital Payments	33,362	41,851	51,756	62,801	74,641	86,728	98,309	*19.7*
Alternative Financing	28	37	48	63	82	104	129	*29.4*
Personal Finance	384	595	859	1,165	1,489	1,808	2,111	*32.8*
Alternative Lending	52	117	241	435	693	999	1,332	*71.8*
Total	**33,826**	**42,600**	**52,905**	**64,464**	**76,905**	**89,639**	**101,881**	*20.2*

av. Transaction Value per User in US$	2016	2017	2018	2019	2020	2021	2022	CAGR in %
Digital Payments	135	145	158	171	185	199	210	7.7
Alternative Financing	1,027	1,026	1,071	1,160	1,286	1,447	1,639	8.1
Personal Finance	74	115	166	225	287	347	403	32.6
Alternative Lending	301	412	520	608	677	731	774	17

Figure 2.2: Regression and T-Test Statistics

Metrics	Results
Multiple R	0.157655038
R Square	0.024855111
Adjusted R Square	-0.300193185
Standard Error	746.7060364
Observations	5

Metrics	Results
Multiple R	0.72632125
R Square	0.52754255
Adjusted R Square	0.37005674
Standard Error	4365.25275
Observations	5



Metric	Variable 1	Variable 2
Mean	30.554	438.2
Variance	53.87278	428836.2
Observations	5	5
Hypothesized Mean Difference	0	
df	4	
t Stat	-1.39185883	
P(T<=t) one-tail	0.118182268	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	0.236364535	
t Critical two-tail	2.776445105	

Metric	Variable 1	Variable 2
Mean	30.554	3693.01
Variance	53.87278	30249441.19
Observations	5	5
Hypothesized Mean Difference	0	
df	4	
t Stat	-1.48901253	
P(T<=t) one-tail	0.105359074	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	0.210718148	
t Critical two-tail	2.776445105	

Metric	Variable 1	Variable 2
Mean	438.2	337.254
Variance	428836.2	144651.1101
Observations	5	5
Hypothesized Mean Difference	0	
df	6	
t Stat	0.298065843	
P(T<=t) one-tail	0.387852522	
t Critical one-tail	1.943180281	
P(T<=t) two-tail	0.775705044	
t Critical two-tail	2.446911851	

Metric	Results
Multiple R	0.6959914
R Square	0.484404
Adjusted R Square	0.3125387
Standard Error	315.34431
Observations	5

Figure 3.1: T-Test results

Metric	*Digital*	*Alternative*
Mean	64206.85714	70.14285714
Variance	564536533.1	1361.142857
Observations	7	7
Hypothesized Mean Difference	0	
df	6	
t Stat	7.141824566	
P(T<=t) one-tail	0.000189869	
t Critical one-tail	1.943180281	
P(T<=t) two-tail	0.000379738	
t Critical two-tail	2.446911851	

Metric	*Digital*	*Personal*
Mean	64206.85714	1201.571429
Variance	564536533.1	405412.619
Observations	7	7
Hypothesized Mean Difference	0	
df	6	
t Stat	7.013327098	
P(T<=t) one-tail	0.000209567	
t Critical one-tail	1.943180281	
P(T<=t) two-tail	0.000419135	
t Critical two-tail	2.446911851	

Metric	*Digital*	*Lending*
Mean	64206.85714	552.7142857
Variance	564536533.1	229620.2381
Observations	7	7
Hypothesized Mean Difference	0	
df	6	
t Stat	7.086656196	
P(T<=t) one-tail	0.000198053	
t Critical one-tail	1.943180281	
P(T<=t) two-tail	0.000396107	
t Critical two-tail	2.446911851	

Metric	*Alternative*	*alternative2*
Mean	70.14285714	552.7142857
Variance	1361.142857	229620.2381
Observations	7	7
Hypothesized Mean Difference	0	
df	6	
t Stat	-2.65657535	
P(T<=t) one-tail	0.018848012	
t Critical one-tail	1.943180281	
P(T<=t) two-tail	0.037696024	
t Critical two-tail	2.446911851	

Metric	*Finance*	*Lending*
Mean	1201.571429	552.7142857
Variance	405412.619	229620.2381
Observations	7	7
Hypothesized Mean Difference	0	
df	11	
t Stat	2.154269395	
P(T<=t) one-tail	0.027121291	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.054242581	
t Critical two-tail	2.20098516	

Metric	*Alternative*	*Personal*
Mean	70.14285714	1201.571429
Variance	1361.142857	405412.619
Observations	7	7
Hypothesized Mean Difference	0	
df	6	
t Stat	-4.69353105	
P(T<=t) one-tail	0.001674275	
t Critical one-tail	1.943180281	
P(T<=t) two-tail	0.00334855	
t Critical two-tail	2.446911851	

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I certify that:

(a) the thesis being submitted for examination is my own account of my own research

(b) my research has been conducted ethically

(c) the data and results presented are the genuine data and results actually obtained by me during the conduct of the research

(d) where I have drawn on the work, ideas and results of others this has been appropriately acknowledged in the thesis

(e) where any collaboration has taken place with other researchers, I have clearly stated in the thesis my own personal share in the investigation

(f) the thesis has not been presented to any other examination committee before

(g) the thesis has not been published before.

Oestrich-Winkel, 12/09/2018 (date: day/month/year)

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