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Fintech: A Disruptive Innovation of the 21st Century, or Is It?

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Abstract

Purpose: Industry 4.0 has witnessed the advent of Fintech, financial solutions made available through technological interventions. Creativity and innovation have caused disruptions in many traditional businesses and in the recent years, finance being one of them. The aim of this paper was to study the impact of Fintech on traditional financial processes and whether it could be considered a 'disruptive innovation'. The use of Blockchain, Artificial Intelligence, Big Data, Machine Learning, what has been the extent of disruption and what does the way forward look like? Are these solutions disruptive or sustaining? How will existing value networks like the stock trading market or retail banking or loan react to such disruptions? Will the disruptors serve the smaller needs of the society on a "as-a-service" basis, or can they materialize to become large financial organizations in direct competition with banks/insurance companies etc.? Can the incumbents respond with similar or even better products?

Design/methodology/approach: This study is extremely intriguing considering the volatility of the financial markets worldwide. The aim is to gain insights into the impact of digital transformation of financial services and for that there is strong reliance on existing research literature, white papers, inputs from finance-based companies, market research reports and opinion papers of establishments like Deloitte, PWC, OECD, IMF and World Bank and inferences will be deduced from the analysis of the collected secondary data.

Findings: This study established the disruptive potential of Fintech in areas such as P2P lending, crowdfunding, digital currencies, wealth management, e-payments and m-payments whereas in retail banking and payments, the traditional institutions seem to be stronger. The global acceptance of Fintech is largely due to the niche segments it serves. Despite the agility and convenience provided by the fintech products, they also bring alongwith challenges in the form of cybercrime, data breach and security concerns for the customers. Also, fintech products are largely devised and provided by technology organizations and other non-banking organizations. Such organizations don't come under the jurisdiction of financial regulatory bodies and norms which is critical as there is a direct implication on the financial safety of the customer.

Originality/value: This paper focusses on study the convergence of two relatively contemporary concepts – fintech and disruptive innovation. It is original from the point of view that the author(s) express their interpretations of the existing data. It is a valuable read for organizations aiming to enter the fintech arena or collaborate with existing players in the fintech market.

Keywords: Fintech, Disruptive Innovation, Retail Banking, Financial Services, Internet Technology

1. Introduction

In the 18th century, the society changed from being a pure agrarian one to an industrialised one. This transition was triggered by path breaking inventions like steam power and the ability to utilize the same for manufacturing and later transportation, the bedrock of the 1st industrial revolution. Society made tremendous growth owing to this technological innovation, goods were being manufactured 8 – 10 times faster. The hunger for more conveniences witnessed inventions and scientific developments such as electricity and assembly line production, this marked the beginning of the 2nd industrial revolution. Cars in an assembly line introduced the concept of mass production which touched every manufacturing business. It changed not only production processes, but also altered the consumers' outlook. Around the 1970's, memory programmable controls and computers revolutionized the manufacturing process (Desoutter Tools, 2018). The processes were repeatable in a controlled environment giving a consistent output each time. No more human errors, the computers controlled the entire process and production became efficient, cost effective as there were minimum wastages, negligible error, and reduced manpower requirement – Industry 3.0. The current times witness the inclusion of ICT in production processes. The advent of factories where machines function autonomously, and all involved in the process communicate two-way through an extensive network including the internet. The manufacturing environment not only has machines, product parts moving but a huge amount of data that circulates using technologies like Cloud computing, Internet of Things, Blockchain, AR/VR, Robotics etc (Luca and Dolga, 2021).

Each invention/innovation has been largely disruptive. They clearly altered the way businesses were modelled, processes were executed, industries produced outputs and consumers demanded products. Some created additional value to the product or the manufacturing process. Some created a new market altogether while some have created companies and businesses that have joined at the bottom of the market's pyramid.

Wikipedia for example, a clear case of disruptive innovation, has nearly replaced the print form of encyclopaedia owing to the ease of access to information that it offers unlike an encyclopaedia. Not everyone has a copy of an encyclopaedia at home, thus a visit to a library was a must. Moreso, to access the required information, one had to refer to either the index or a catalogue. Wikipedia on the other hand is available 24/7 on one's smartphone/phone with internet access. Additionally, it is interactive to the extent that a user can be a contributor as well. Similarly, the replacement of the light bulbs by LED bulbs or floppy disks by USB devices and now cloud storage.

The last few years have witnessed the emergence of Fintech (Financial Technology) and with it a great deal of financial companies that utilize digital technologies to tackle the financial needs of those segment that traditional financial institutions aren't serving thereby expanding the scope of financial inclusion within the human society (PricewaterhouseCoopers and Lele, n.d.). Fintech solutions have appeared either as standalone businesses or amalgamated within existing financial value chains. They have showcased the direction of innovation acceptable to the market and have raised the consumer's expectations, security features remaining untampered, the functionality has improved tremendous fold. Access is easy, with the click of a button, product portfolios visible, complete with all details for self-use, performance data readily available for the ease of decision making, faster process outputs and it has, in most cases removed the need of human intervention.

Human beings are known for their creative abilities. A constant compulsion to innovate, make something better than that which exists. New innovations have a radical impact on

existing products and services. Industry 4.0 is understood as that segment of the history of industrialization wherein ICT plays an integral part. The financial sector is not untouched by technology. The establishment of The Society of Worldwide Interbank Financial Telecommunications to facilitate electronic transfers, the development of ATM machines to make teller services available 24 hours a day, online consumer banking, online stock trading etc. were all made possible by innovative technology. These were linear innovations that were an organic growth over the previous processes. The last decade has seen rampant deviations from traditional financial products and services offered to the market by non-financial institutions.

The purpose of this paper is to study whether technology led innovations in the financial sector are disruptive or sustaining. What is the extent of disruption and what does the way forward look like? Is there a possibility for disruptive innovations to develop in existing value networks like the stock trading market or retail banking or loan? Will the disruptors serve the smaller needs of the society on a "as-a-service" basis, or can they materialize to become large financial organizations in direct competition with banks/insurance companies etc.? Can the incumbents respond with similar or even better products?

2. Literature Review

2.1. Disruptive Technology & Innovation

Bower and Christensen (1995) authored an article in the Harvard Business Review titled "Disruptive technologies: Catching the wave" in which they pointed out how large and prosperous companies failed to stay on top when faced with a change in technology or changes in market patterns and demand. A finding that emerged out of their study was that such companies invested large sums of money in developing and bettering technology that met current consumer demands (as their customer focus was extremely high) but were reluctant in anticipating the markets' future needs and investing in developing futuristic products. Also, the technological changes faced by such companies were historically, often not extremely revolutionary, just that they did not suit the customer needs at that moment. However, as the customers were exposed to the new technology and it gained favour with them, the pioneers of that technology begin to dominate the market.

Technological innovations are largely categorized into 2 types:

1. Sustaining technology
2. Disruptive technology

At the time the change is introduced into a market, it may assume either of the forms listed above which is apparent through the study of their performance trajectories plotted against their critical performance trajectory. *Sustaining technology innovations* improve the critical performance trajectory by offering an improved/upgraded version of the existing product in the direction that the customer values. For example, the smartphone market receives a new version of an existing model every year with few more attributes and functionalities.

Disruptive technology innovations are often referred to as creative destructions, ones that usually cause problems for existing businesses. These technologies offer solutions that are radically different, cheaper, bring in newer features, lack market acceptance and thus showcase a lowered/negative performance trajectory. Since it does not fit into the value chain of existing customers, the incumbents see no reason to divert resources towards similar developments (Bower and Christensen, 1995). Disruptions are further categorized into 2 types – Low end disruption and New Market disruption

Christensen and Raynor (2010) revised the conceptual terminology from *Disruptive Technology* to *Disruptive Innovations* as they recognised the fact that the technological

change in itself was neither sustaining nor disruptive, it was the business model adopted that resulted in success which caused the disruptive trajectory.

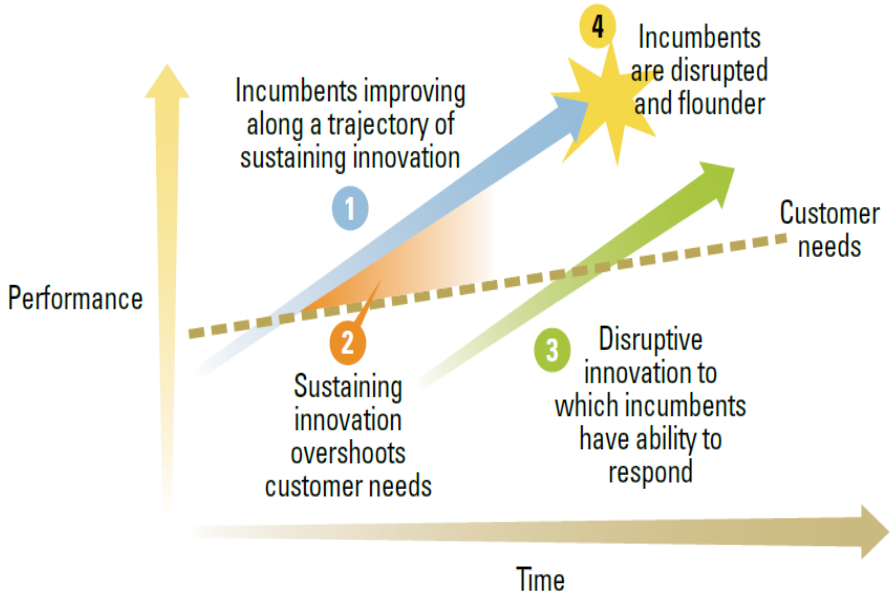

Figure 1: Disruptive innovation (Andrew, 2015)

The customer/market needs evolve with time and there is an expectation that the performance of the product will enhance with betterment in technology. Sustaining innovation attempts to constantly innovate and exceed customer expectations (1). While doing so, there comes a point when it overshoots those expectations of some customers making the product no longer desirable for them (2). This is when a disruptive innovation steps in serving the needs of those markets/customers whose needs aren't being fulfilled by existing market leaders. Even though, the established businesses have the ability to respond, they don't because the performance of the disruptive innovation at the initial stages is low and it doesn't appear to be making a big headway This is what Christensen referred to as the "Innovator's Dilemma" (3). This situation typically corresponds to 'Low end disruption'. However, with time it begins to appeal to other segments in the market as well causing a disruption for the sustaining innovation (MIT, nd.).

'New market' disruption occurs when the existing products do not satisfy a niche/emerging market segment and their demand for products requires new/different technologies, design etc. that the existing market leaders may not want to undertake. It may also occur when an innovator creates a product knowing that it would appeal to early adopters or a niche segment only.

"Discovering markets for emerging technologies inherently involves failure, and most individual decision makers find it very difficult to risk backing a project that might fail because the market is not there."

-Clayton Christensen, The Innovator's Dilemma.

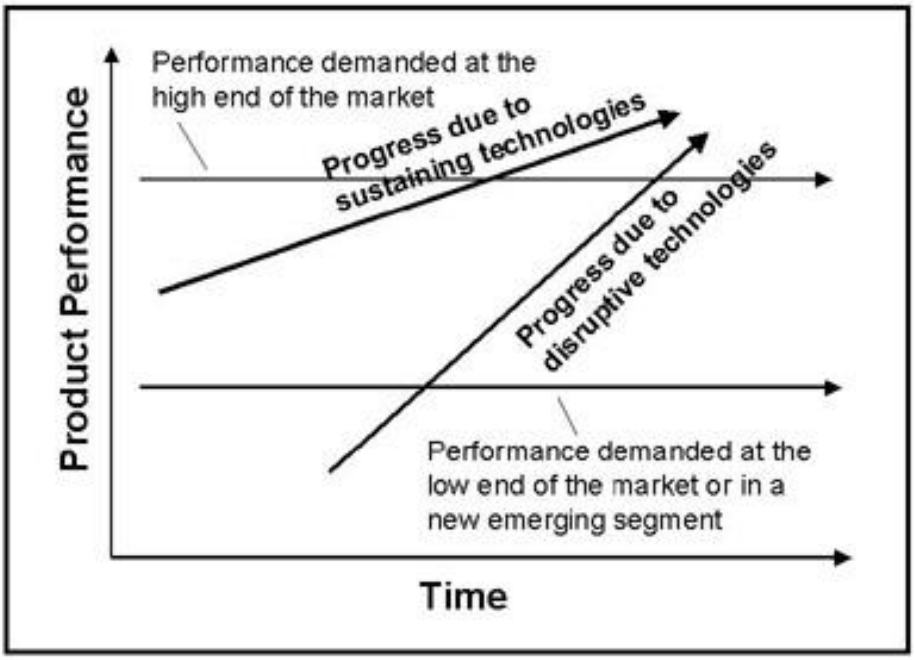

Figure 2: Disruptive innovation (MIT, n.d.)

However, in the real scenario, there isn't just a single line that can depict customer needs since there is a distributive pattern within which different customers exhibit their needs. As the figure above indicates, the disruptive solution might come in to serve performance demands at the lower end but over a period, it tends to satisfy needs at the higher end as well.
In the financial sector, the Grameen Bank by Dr Yunus is a disruptive innovation that focussed on micro-lending to members of marginalized communities, each member closely linked with the other. The aim of this product was to provide access to capital to grassroot level members of the society. Subsequently, it led to the formation of several micro-finance lending organizations. Bitcoin, the digital currency based on Blockchain technology has proved itself as a disruptive innovation worldwide. M-Pesa by Vodaphone, a telecom company, in Kenya almost jeopardized the existence of the formal banking system (Bhatt, 2016).

2.2. Fintech – Its Disruptive Potential

The world is shifting from an Internet Economy to a Digital Consumer Economy wherein the inter-relations lie between humans and software driven machines and the business models used make the ease of access to products and services extremely simple for customers. The possible outcomes are changes in the business models used by traditional organizations, development of new businesses entrants and financial inclusion of the un-serviced segments of the market.
The financial sector has been extremely conservative in terms of banking, lending, insurance, and other products but the last couple of decades have seen disruptive innovations creeping in. One of the biggest contributors to the development of Fintech was the rampant spread of the internet worldwide with ever increasing bandwidths and speed (Nawaz, 2021). The second push came in the form of the financial crisis of 2008 that sent the existing banking system into a state of collapse and more and more customers stopped trusting the traditional banking system. It changed the public perception of the banking system and the trust levels depleted. Another important impact was that it rendered 8.7 million people jobless causing a

major economic jolt. These people were largely involved in the financial sector. Fintech proved to be the most suitable employer where they could apply their knowledge and talents (Arner et al, 2015). The third motivator came in the form of a smartphone, that brought every possible activity into the palm and pockets of customers (Nawaz, 2021). In the developing world, certain other demographics have contributed to the rise of Fintech – young and digitally aware population, a rich middle class, lesser numbers of physical banking infrastructure, inefficient markets, prioritizing ease over trust, a large segment of the population with no access to financial products, and above all, a good number of technology graduates joining the talent pool each year (Arner, Barberis and Buckley, 2015).

The Merriam-Webster Dictionary (n.d.) describes Fintech as "products and companies that employ newly developed digital and online technologies in the banking and financial services industries".

Fintech encompasses i) Finance and Investment ii) payments and infrastructure iii) customer interface iv) data security v) risk management

Fintech opened doors to several small companies offering financial solutions that were either better than what the banks were offering, or the banks weren't in that segment at all. Using technologies like Big data, machine learning, AI and web platforms, these companies could cover a range of services and offer them at lower costs than businesses with legacy infrastructure. Popular products included Peer to Peer lending and payments (P2P platforms match the lender and the borrowers and screen borrowers using algorithms and machine learning causing ease of decision making.) Mobile remittances are a very popular Fintech product especially popular with the expatriate segment wanting to remit money to their home countries (Hadad & Hornuf, 2018).

Mobile wallets are yet another disruptive innovation that give consumers fast, low-cost methods to transact using the internet. These wallets offer security through encryption of data and the convenience of not having to carry several cards for making payments. Micro-investing by purchasing fractional shares of bonds, ETFs, equity crowdfunding and cryptocurrencies have encouraged small investors to enter the market. Broadly, mortgages, loans, payments, and wealth management are arenas where Fintech is moving towards gaining a stronghold (OECD, 2020). Another key aspect driving the Fintech businesses is access and monetization of data. In the initial years of Fintech, some large banks especially in the US updated themselves to compete with the Fintech companies and some even invested in Fintech start-ups to acquire new business solutions. Regulations favoured the transparency offered by digital solutions and in the 'as-a-service' economy, digital financial solutions are proving more relevant to customers (Weinstein, n.d.).

Although entrants have the potential to cause distraction, their existence to serve depends largely on incumbents with existing infrastructure. To understand the disruptive potential of Fintech, it is pertinent to understand the market structure to look at products with the possibility of potential disruption (Das, 2017).

2.2.1. Payments

Entrants have disrupted the payments market by using Blockchain technology and providing solution to customers, merchants and some businesses who offer solutions for both. PayPal, Venmo, Apple Pay, Android Pay are some options that showcase the success of digitization of payments. They have created great interest amongst the iGeneration who tend to take a liking to technology-oriented products. Contactless payments, transfer between accounts through smartphones, use of the Unified Payment interface (upi) have been some of the main disruptive attractions in the payment category (Kangas et al., 2019). The main drawback is that the network they need access to the existing financial organizations and for which they often must pay huge surcharges/fees to the incumbents. This may not be extremely lucrative

for the new entrants and the banks being large can push them out of competition. Thus, there could be a while before powerful disruption is felt in this segment (Das, 2017).

Online payment has brought forward e-security issues and constant threat of cyber-crime. Since banking is largely based on trust a customer has on a financial brand, the banks have had to invest through entrants the services of safe identification creating another small business/ start-up potential. Globally, e-commerce is gaining a strong foothold and they require safe payment options with a high customer experience both for payment and financing as these are a part of the overall experience a customer receives on their website. Moreover, platforms such as Amazon, Alibaba, Google, WeChat are attractive to customers and can draw them away from banks towards their own payment products (Kangas et al., 2019).

Payment products like GooglePay & AmazonPay have already become quite popular as a payment option. A tiny cut from both the merchant and the consumer will yield huge returns considering the access they have to infinite customer profiles and being tech giants, they may as well show the potential to create a disruption.

2.2.2. Wealth Management

Investment decisions have been traditionally taken by customers after due consultation with financial advisors. However, in the recent past, there has been rampant technological development in this service domain. Robo-advisors with vast information and a variety of investment options deliver data driven options in an unbiased manner directly to customers without any human intervention. This is a service that existing banks and large financial institutions too have adopted thus making the market, highly competitive (Das, 2017).

2.2.3. Lending

Disruptive entrants have made a dent in the lending arena. The focus here is on marketplace lending wherein people can lend directly to a borrower. The lender can be an individual or an investment company. This is definitely a disruption for banks and other lending organizations as customers are finding the peer-to-peer lending option much easier to access and avail. In 2019, the value of the global P2P lending market was $67.93 billion and is expected to touch $558.91 billion by 2027. Small businesses and consumer credit loans will be the highest grossing products in the P2P lending portfolio (Khan, Goswami and Kumar, 2020).

Sofi, Lighter Capital, Kabbage Inc., Avant Inc. are some such entrants that are creating a competitive scenario against banks. The new entrants are sourcing funds from different sources and are providing credit opportunities to smaller fund strapped businesses. Sofi, for example sources funds from alumni of different universities to fund student loans. It offers career development advice to prospective students who then tend to apply for education loans to fund their studies. Sofi is currently moving up the trajectory by offering students loans for the next in line items like car, house that comes along a successful career, a natural progression post education. This way it is easing its way through disruptive solutions in the lending market. Although they are selling a dream as a strategy to create a database of repeat customers, such customers having been satisfied once are also causing referral business in not just in the student loan segment but in the personal loan category as well. Similar solutions are currently offered by other entrants as well in real estate lending, purchase and small business finance and personal loans segment (Das, 2017).

2.2.4. Insurance

The insurance product is largely unsought. However, in the present circumstances, getting assets insured is more of a requirement than a purchase of choice. From the insurance salesman advising customers, Fintech has disrupted the process using technology like Big

data and internet of things to bring the customer directly in contact with the insurer removing the intermediaries. Fintech companies can acquire data from mobile phones with respect to the driving patterns of a person or health data from wearable tech like Fitbit to understand the true risks and customize insurance products and risk pricing for specific individuals. This kind of tailor-made product to suit individual requirements and their risks is unavailable at traditional insurance product selling companies for whom the base for selling an insurance is the person's age, his earnings and lifestyle and habits that he declares. Secondly, the underwriting process is repetitive in nature which technology handles with ease. Fintech companies have also used disruptive strategies like the use of P2P networks to form a group of individuals who have the need to purchase insurance products. Being a group insurance there is an overall saving on the premiums paid, which in undoubtedly an attraction for the customers. Since the insurance is provided to a group, it is unlikely that consumers submit false documents and make fraudulent claims. Several incumbent organizations have begun partnering with Fintech entrants to upscale their value propositions (Berry, 2015).

2.3. Regulatory Innovation (RegTech)

Traditional businesses in the financial markets have grown in a culture of financial regulations. With Fintech having developed over the last decade, a large number of non-financial background companies (technology firms) have entered this segment with negligible experience/knowledge of financial regulations or regulators, a condition paramount for consumer protection in financial services. Moreso, there has always been a debate as to why technology companies are required to follow financial regulatory norms which as businesses they don't get covered by. Within the scope of Fintech, a new development in the form of RegTech using API and SaaS model has been devised to cope with the regulatory requirements of almost all financial establishments (PricewaterhouseCoopers, n.d.). Globally, guidelines are being devised and issued that would regulate fintech and provide the security consumers need.

3. Findings

Digitalization will be the mainstream activity in the financial sector. Fintech is a disruptive innovation in some products and a sustaining innovation in some other. Being data and technology driven, factors like customer intelligence will indicate the revenue growth and profitability of a company/product. Blockchain and AI are the 2 main drivers of fintech solutions. Cyber crime will be the single most deterrent factor in the Fintech ecosystem.

Christensen et al (2016) state that all disruptive innovations are not successful, and the source of success is based on what they call the 'job to be done' theory. They suggest that companies must focus on jobs that the customers need solutions for, and the solutions promulgated must be accompanied with an experience to create a memory recall. Financial disruptors that have gained prominence have been effective in disseminating convenience alongwith a powerful customer experience at much lowered costs (PwC, 2016).

One major drawback that most banks and financial institutions have is that while they have good IT teams that can manage platforms and upgrade them as the requirement may be, but they lack cutting edge IT capabilities and foresight to build disruptions. The banks are thus, largely dependent on third parties or consultants to provide solutions. This prevents them from aggressively pursuing disruptive innovations.

The study has indicated how large e-commerce firms like Alibaba and Amazon, social networking platforms like Facebook, Twitter and mobile companies are influencing customers away from traditional banks by connecting them with non-banking platforms for payments and finance without having to navigate to any other webpage. This is a source of major disruption for the banks.

Some studies have indicated that Fintech should not be considered a disruptor instead it should be considered a 'stimulator' for the larger incumbents showing them the purpose to focus on developing products that customers demand or if designed will accept. Moreover, a bank-fintech collaboration is a win-win situation rather than competing for a small share of the market.

Regulations seem to favour Fintech. Several Fintech entrants are from the technology background and as companies are not governed by financial regulations giving them the edge over banks and other financial institutions to design and deliver financial products and services.

Some of the segment where disruptive innovation seems a clear possibility are retail banking and payments. However, in some cases, it could be more of a sustaining innovation than disruptive innovation. Crowd funding, robo-advisory services and P2P lending are areas which are truly disruptive innovations.

In terms of the customer segments, iGeneration, small businesses and those segments of the financial market that are under-served is where Fintech should expect growth. The millennials, worldwide, are going to be growing the fastest in numbers and they appreciate the agility and convenience that digitization of financial services provides them. Small businesses find traditional lending institutions as risk averse and do not easily provide loans to MSMEs. In the unbanked segment, while their access to financial services is poor, the penetration of the mobile phones is not. Thus, mobile banking solutions are a service that the Fintech companies can provide tapping into the completely untouched market.

There is a general lack of awareness with respect to fintech products amongst customers leading to a lesser pace of adoption.

While Fintech has immense potential, its growth and development will depend upon the entire financial ecosystem. While innovations get delivered to market segments, regulations must also be framed and ready, technological infrastructure should be compatible to the population being served.

4. Conclusions & Recommendations

Human needs are constantly evolving, and products and services successful today may not be in demand in the future. The changes witnessed during Industry 4.0 if compared with the first Industrial revolution, is ten times faster and 300 times in scope and scale, thus the impact on the society, 3000 times. The disruptive propagators of this performance have been widespread global connections, fast paced technological developments, urbanization, and an aging population (Dobbs et al).

Fintech products are becoming popular, but banks enjoy customer trust due the regulatory compliances that are in place and the fact that these establishments being large, can thrive through difficult economic situations. Fintech seem appealing to the customers since they are capable of delivering customised solutions to individual needs, have a very strong customer service and the digital features provided allow seamless transactions 24/7. They are high on convenience, accessibility, agile, cost effective and fast while simultaneously vulnerable to cybercrime.

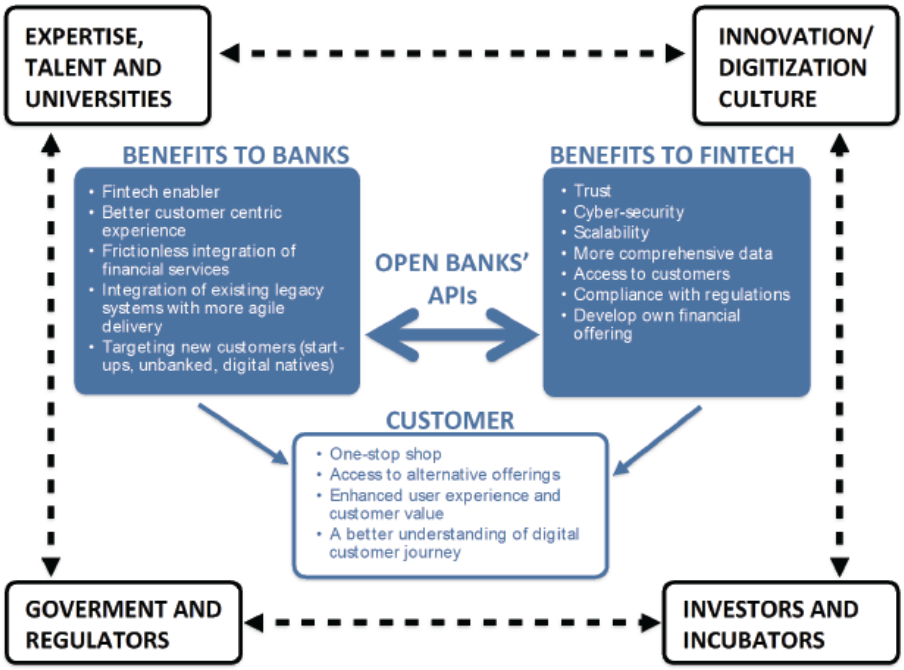

Figure 3: Hybrid platform (Zalan and Toufaily, 2017)

The large legacy institutions can survive challenges posed by Fintechs by creating similar facilities and innovative services internally. While their physical services function as they do, simultaneously, they can launch digital services to cater to the untapped segments. This is already proving meritorious in the Asian market. Another alternative is to collaborate with existing fintech companies to merge capabilities. If that does not seem like a possibility in any given market, the institution can set up its own Fintech services.

Now, owing to technology, lots of changes are being witnessed in the financial sector. Change of customer needs, changing demography, changing regulations are all compelling a move towards complete digitization of financial services. Lowered costs and increased efficiencies are a direct outcome of Fintech. Being futuristic in nature, this innovation is here to stay.

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