"APPLICATION OF FINTECH IN BANKING SECTOR WITH REFERENCE TO ARTIFICIAL INTELLIGENCE"

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ABSTRACT

Artificial Intelligence helps in the development of advanced technologies which works like a human mainly use for reducing the repetitive and cumbersome work manually. AI is utilize in almost all area includes medicine, healthcare, financial institution, transportation, education, etc. The paper aims to bring focus on the function of Artificial Intelligence in banking sector in India and also to highlight Artificial Intelligence used by big four banks in USA, UK & India. India is using Artificial Intelligence like SIA, SPOK, iPal , Onchat, etc to provide various financial services to the customer in order to ease the services provided. This paper is an attempt to understand the nature of FinTech as well complementary application of AI in India. Since 2015 the pace of FinTech has sharply rise which left the high potential to grow for Indian banks.

Keywords: FinTech, Artificial Intelligence, Banking sector.

1.0 INTRODUCTION

1.1 Financial technology

A revolution came 65 years back which turned the stone in financial sector. Though it was a continuous process and still going on but this led the technology run on our fingers. Implication of Technology in Financial sector that has created a new way for the financial institutions and the customers to do transaction in easiest manner. It all started with Frederick Lincon's Bank Proof cash machine in 1934 and Frank McNamara's Dinner's Club card in 1951. Later on John Barron has rendered us with first ATM machine in 1967.This was the stage were financial industry has already achieved a transformation and soon in 1971 NASDAQ introduced electronic trading which boost up the sector to a great extent . Earlier trading in stock market was an open cry process where people used to shout out the price and stock was handed in a paper format. But due to the evolution of FinTech the stock has been dematerialize and trading has become easier considering time and place constraint which existed earlier. In 1983, the first online banking

system - Homelink was founded in London which included a new system of comparing the price from home apart from bank transfers, bill payments, etc. It is only because of FinTech that we are able to do net banking, online transfer, check balances, etc. today. Since all the banks are interlinked the financial transaction from one bank to other has been possible. In 1997, in Finland, through text message the first mobile payment was realized for buying Coca-Cola through vending machine. Due to growth in technology now-a-days we are able to do payment of transaction online through Paytm, PhonePe, e-wallets, mobile banking, freecharge, BHIM, etc. Again in 2008, Satoshi Nakamoto has revolutionized the sector creating a digital currency called Bitcoin. Bitcoin is a cryptocurrency which use the encryption technique to regulate and generate the unit of currency for online transaction without revealing the identity of sender and also without any intermediaries. Since 2017, Bitcoin has experience a drastic hike in price as the demand raise, in terms of rupees 1 Bitcoin is around Rs.5 lacs. FinTech's objective to provide financial services to general public that easily accessible is being achieved successfully.

According to the survey of CB Insights, the global investment in Financial Technology (FinTech) has sharply increased in 2014 as compared to the increase in investment during 2008-13, and again in 2015 the investment has increased sharply from 2014, which shows FinTech is an emerging market where most of the investment were done by United states followed by Europe, Asia Pacific & others.In 2015, there has been massive global investment of $ 19 billion in the FinTech space by arrival of 12000 startups. As per NASSCOM, FinTech software and services sector is expecting growth rate of 7.1% (USD 45 billion) by 2020.

Financial technology also call as FinTech widely refers to application of technology in an inventive way which is used to design & provide financial services and product. Nowadays FinTech is used for multiple business segment which includes advisory services, management of investment, payment and advancing loan services.

FinTech is majorly used by Banks for managing their customer data as well as, it is use by many startups & traditional financial companies for offering many financial services in such a way that it impacted positively on the society by offering reduced price product with good quality service. Some of the Start-up companies like Transferwise provide money transfer facilities internationally, Lenddo provide credit scoring service that influence social media, Ripple provide payment network facilities that use distributed ledger technology.

As per CNBC, Citigroup is the largest bank in terms of portfolio of FinTech with 13 new companies supported from 2011 through 2015, Goldman Sachs, with 10 new businesses upheld; and JPMorgan Chase, with five, speak to other Wall Street pioneers in FinTech meeting rooms. For regulating the FinTech, the regulatory framework organize by supervising more traditional financial service provider who can be classified as bank, insurer, and asset manager easily. The

main product that financial Technology are Robo advisors, E-aggregators, block chain technology, distributed ledgers technology, Big Data, P2P lending platforms, crowd funding, smart contracts etc.

1.2 Artificial intelligence

Artificial Intelligence (AI) is a computer program which helps in the development of advanced machines which works like a human. Artificial Intelligence is usually used for the applications in the financial service industry.

The financial stability implications are considered as very important for their uses in the financial service sector. The developments in this area should be monitored thoroughly. One of the key feature which differentiate from us, humans, is intelligence. The capability to understand, applying the knowledge and improvising the skills has played avital role in our evolution and helps in the establishment of humans' civilization. The Artificial Intelligence can also be called as machine intelligence. The main scope of AI is to make the computer programs which helps to solve problems and achieve goals in the world, as well as humans. The other scope in developing the machines can be through speech recognition (Siri in iPhone), language detection machine, robotics, game playing and so on. The main traits of AI include intellectual, data representation, development, education, dispensation, awareness besides the facility to more and deploy things. The other main goal of AI is to be creating the technology that allows computers and machines to function in an intelligent manner. (Investopedia, n.d.)

1.3 History of AI

The history of AI started in times long past, with legends, stories and bits of gossip about counterfeit creatures invested with insight or cognizance by ace experts; as Pamela McCorduck composes, AI started by "an antiquated wish to forge the gods." The present-day AI were fixed by traditional thinkers who endeavored to depict the way of human reasoning as the power-driven control of descriptions. This effort ended in the 1940s, a mechanism in view of the abstract essence of mathematical reasoning. The device and the opinions behind it propelled a group of investigators to jerk really chitchat about the possibility of constructing an automatic brain. The field of AI explore was established at a garage hung on the grounds of Dartmouth College during the mid-year of 1956. The individuals went to would turn into the pioneers of AI look into for quite a long time. Huge numbers of them anticipated that a machine as intelligent as an individual would exist in close to an age and they were given a huge number of dollars to influence this vision to work out as expected.

In the end it ended up clear that they had terribly thought little of the trouble of the undertaking because of processer hardware confines. In 1973, because of the feedback of James Lighthill and

progressing weight after assembly, the U.S. furthermore, British Managements quit financing aimless study into man-made reasoning, and the troublesome years that took after would later be known as an "AI winter". Next seven years, a unrealistic activity by the Japanese Government roused régimes and manufacturing to furnish AI with billions of money, however by the late-night 80s the speculators ended up frustrated by the absence of the required PC control (equipment) and pulled back subsidizing once more. Investment and interest for AI blasted in the main many years of the 21st century when machine learning was effectively connected to numerous issues in the scholarly community and industry because of the nearness of great PC equipment. As in past "AI summers", a few eyewitnesses, anticipated the approaching entry of counterfeit general insight: a machine with scholarly capacities that surpass the capacities of individuals (Wikipedia, n.d.).

2. REVIEW OF LITERATURE

The research paper titled "*Wealth management through robo advisory*" by **Ishmeet Singh (2017)** focusses on the development of robo advisory model, its needs and potential in management of wealth. This paper gives a view of future of the robots and the investment made for them. It also focuses on the part of investment like wealth management, assets allocation, diversification, asset allocation models**,** wealth management through robo – advisor, evolution and different modes of robo-advisors, their need &advantage and their accessibility to investors. The paper concluded Robo-advisors may not be fitting for everybody but rather they unquestionably offer a profitable corresponding asset to speculators.

In the report by **Lee (2016)** titled "FinTech*: Ecosystem and Business Models*" has surveyed worldwide and national status of reception of Artificial Intelligence technology. The report has analyzed the improvements in some different nations to discover the steps taken by them. In light of these, it has recommended a path forward for India which includes foundation advancement, arrangement and controls, inquire about and improvement, and AI advancement.

Siti Rohaya Mat Rahim (2018) , in her paper titled "*Artificial Intelligence, Smart Contract and Islamic Finance"* examines AI and smart contract issues in Islamic finance. The main aim of this article is to assess the function of smart contract & AI, and to distinguish between the procedure of AI and smart contract.

The report by **Bundy (2016)** titled "*Review of Preparing for the Future of Artificial Intelligence*" is an exceptionally helpful commitment to the present verbal confrontation about the effect of AI. This is a far reaching report on an adjusted survey of the condition of the AI art, its potential effect and what moral, monetary and societal issues it presents. It asserts that it has as of now conveyed major benefits to the general population in fields as various as human services, transportation, the environment, criminal justice, and economic inclusion". The report at that

point investigates its potential in autonomous vehicles, administration, training, digital security and weapons.

The research work carried out by **Shirodkar (2017)** in his paper titled "*Artificial Intelligence and Blockchains in financial services. Potential applications, challenges, and risks*" has examined the writing on AI and Blockchain technologies. The writing was broke down to recognize the several difficulties looked in the financial industry and to search for circumstances later on for these advances. The reason for this paper is to condense every one of the information and clarify how these advancements have turned out to be troublesome to the finance business.

"*Once upon a time in AI*" is a research paper by the author **Schank (2006)** where in he has communicated his own supposition in the field of education and AI. The AI ought to have genuine encounters as genuine specialists that could be comprehended as required by the computer as it was seeking after real goals, termed this case-based thinking. AI is expected to make educated frameworks that get more intelligent and smarter. In the event that the area of information is sufficiently little, and goal-directed, AI can help.

Liu (2018) gave an insight that Artificial Intelligence (AI) ought to be viewed as expanded insight to help every one of us settle on better decisions in every financial choice—from manufacturing to investing to analyzing in his paper by titled "*FinTech Is Merging with IoT and AI to Challenge Banks: How Entrenched Interests Can Prepare*". The rest of this article is proposed to give exceptionally solid cases of how keeping money, protection, explore, investigation, support administration, and funding can profit by these new innovations. FinTech is the financing end of this new computerized world that is made from the sensor revolution

"*A Survey on the Role of Artificial Intelligence in FinTech*" by **Shivkumar Goel (2017)** in which he expects to examine the impact of Artificial Intelligence in the financial space and its potential in enhancing the administrations gave by the financial organizations. AI has heaps of usage and it is being utilized as a part of various segments for different reasons. In this paper, he talked about how AI is utilized as a part of the budgetary segment, what are the advantages that AI offers to FinTech and the distinctive manners by which it can enhance the activities of financial organization

In the present investigation "*Artificial Intelligence in Various Domains of Life– A Review*" by **Singh (2016)** surveys the certainties and utilization of Artificial Intelligence specified in different research papers and reports. It additionally expounds the change made by Artificial Intelligence in different spaces of life. Artificial Intelligence is associated with different spaces of similar education, stimulation, transportation, work and so on. Most likely, Artificial Intelligence has changed lives yet it must be embraced under reasonable and significant strategies.

In summary, the motivation behind the paper titled "*The presentation of the set of stock exchanges features in international portfolio diversification for the application of artificial intelligence*" by **Halicki (2014)** is to characterize an arrangement of qualities of stock trades and their underlying decrease from the point of view of the use of Artificial neural systems during the process of portfolio administration

"*The Foreseeability of Human–Artificial Intelligence Interactions*" is a research by **Kowert (2017)** in which he investigated the connection of Artificial Intelligence with human and remote chance of misfortune and harm caused by Artificial Intelligence. All things considered, who ought to be dependable and who should pay the harm? Artificial Intelligence organizations should know about the genuine risk of tort obligation. In the event that they don't find a way to shield themselves from obligation, these organizations could be shutting their entryways as fast as they have opened them. Not exclusively would this be terrible for the Artificial Intelligence, however it would hurt society in general to lose trend-setters of such a promising new innovation. The tort framework requires a harmony between shielding people from the potential damages of Artificial Intelligence and the free improvement of such innovation. Organizations should painstakingly assess the predictable dangers of the innovation they are going into the market and find a way to limit those dangers

Nadler (2017) gave an insight that concentrated on longed adoption of Artificial Intelligence, trusting it can help battle societal problems in his paper titled "*Don't Fear Artificial Intelligence*" He opined that AI won't just change the financial administrations industry yet additionally lead the world through the Fourth Industrial Revolution. It's in all likelihood that AI will be a shelter for society and business alike

One of the dicussion by **Palmer (2017)** in his reseach article "*Artificial intelligence is guiding venture capital to start-ups*" he discussed one of the greatest difficulties for funding organizations is finding fascinating investment options before any other person. It is usually a difficult, travel-escalated work. But machine learning and prredictive investigation are beginning to change how a speculator puts a portfolio together.AI is useful for filtering through the commotion, yet the choice to contribute or not will dependably be about sense toward the end

The applied and theoretical paper of **Dirican (2015)** titled **"*The Impacts of Robotics, Artificial Intelligence On Business and Economics*"** is expecting to state and inspect the ultimate fate of robots, mechatronics and Artificial Intelligence in alternate points of view. Changing type of the business terms and work powers, the method for working together by utilizing new advances will impact the everyday business life and getting from these on nations and on world financial aspects will confront serious risks, hits, change, exposures and additionally openings and increases with the enhancements in Artificial Intelligence and Robotics.

In the research paper titled "*new technology brings new opportunity for telecommunication carriers: artificial intelligent applications and practices in telecom operators*" **Wei LIANG1 (2018)** found out as the progressions of profound learning and different advances, AI is currently in the phase of being utilized as a part of particular ventures to expand effectiveness and lessen costs. AI has been effectively connected to automatic pilots, medicinal medications and wellbeing, back, retail, excitement, AR, VR and numerous different fields with phenomenal significance. A few specialists say that AI may turn into the new profitability and even one of the key drivers of the fourth modern upset. For telecom administrators, the openings and difficulties coincide behind AI advancement.. Later on, telecom administrators will influence more prominent utilization of the conventional favorable circumstances, to look for more unmistakable territories for AI improvement and collaborate with different ventures to make an advancement biological community and advance modern change all the more effectively

"*FinTech reloaded-traditional banks as digital ecosystems*" an article by **Dapp (2017)** wherein he discussed the rising advanced ecosystems. To limit the effect of potential cut-throat competition on financial institution, traditional banks ought to hence jump onto the bandwagon, build up a digital ecosystem of their own with their own advanced corporate administrations, and furthermore end up coordinated in existing unions with a receptive outlook or potentially frame their own particular unions.

3. STATEMENT OF THE PROBLEM

Financial industry is facing a lot of changes in past decades. Lot of complex decision has been taken by the use of Artificial Intelligence which were accurate and precise. When it comes to maintaining database and analyzing, Artificial Intelligence can handle lot of variables which is tedious when done manually. With the help of these, banking companies can reduce the duplication and repetitive work also so that employees can focus on specialized work. This give an insight to do research, that what type of artificial intelligence is used by banks in USA, UK & India and for what purpose? Is India behind, or following the pace? Is lagging of financial inclusion making Artificial Intelligence slow its growth? Also the importance of Artificial intelligence in banking sector is need to be highlight.

4. OBJECTIVES OF THE STUDY

- To comprehend the idea of Artificial Intelligence and FinTech.
- To focus on the functions of Artificial Intelligence in Banking sector in India.
- To highlight Artificial Intelligence used by big four banks in USA, UK & India.

5. DATA

Data collected from secondary sources i.e. websites, journals, article related to FinTech technology, Artificial Intelligence and banking sector

- Financialbrand.com
- PayJo
- Techemergence.com
- computerworlduk.com

6.0 DISCUSSION

As indicated by Financial Stability Board (FSB**), (Report of the Working Group on FinTech and Digital Banking, November 2017)** of the BIS, "FinTech is mechanically empowered money related development that could result in new plans of action, applications, procedures, or items with a related material impact on budgetary markets and organizations and the arrangement of monetary supervisions".

FinTech is generally divided into 5 groups: -

Payments, Clearing & Settlement- FinTech in this area helps in increasing the efficiency and speediness of the payment, settlement, clearing of funds in which customer is dealing with. Also it reduce the cost of the financial transaction and change the approach of accessing the financial services. For instance, useful application like, Android Pay, Apple Pay, and Samsung Pay which sit over existing card installment system engaging the customer's mobile phones to go about as their credit/platinum cards. It is done in the regions of Mobile and online installment applications-IMPS in India,Digital monetary forms (DCs) – Bitcoin, Distributed records Technology, Block chain Technology, etc.

Deposits, Lending & capital raising -FinTech giving the organizations of Deposits, Lending and capital raising is changing the components of market of regular sorts of crediting and capital raising. Under it Peer-to-peer (P2P) crediting, Crowd financing are broadly used.

Market provisioning- Advances in rational power are empowering speedier and more affordable plan of information and organizations to the market. Clear contracts, E-Aggregators, Cloud processing, big information, AI and Robotics are somewhere in the range of few development in advertise provisioning.

Investment management- High-tech outlines can possibly change the matter of speculation management. Robo assistance, E-Trading are mostly used application.

Data Analytics & Risk Management- Anyhow making new openings, FinTech similarly conveys potential dangers for the budgetary division. These incorporate dangers to the benefit of tenant showcase players and in addition dangers identified with digital assaults.

6.1 Impact of FinTech on Indian Financial Services

India's FinTech segment might be youthful yet is developing quickly, filled by a vast market base, an advancement driven startup scene and agreeable government strategies and directions. In India, FinTech can possibly give serviceable answers for the issues looked by the customary budgetary organizations, for example, low infiltration, rare record as a consumer and money driven exchange economy. On the off chance that a communitarian cooperation from every one of the partners, viz., controllers, showcase players and speculators can be tackled, Indian saving money and monetary administrations division could be changed drastically. The Indian FinTech industry in 2013 & 2014 has achieved a growth of 282%, gaining 450 million dollars in 2015.In India, around 400 FinTech organizations are working and it is require to develop its speculation by 170% till 2020. "The Indian FinTech software development market is gauge to interact USD 2.4 billion by 2020 from a present USD 1.2 billion, affording to NASSCOM. The exchange an incentive for the Indian FinTech segment is evaluated to be roughly USD 33 billion out of 2016 and is gauge to achieve USD 73 billion of every 2020."

Peer-to-Peer (P2P) Lending Services offer easy access to investment, operational facilities which rightly match investor with the mortgagor that may be the commercial or distinct. For e.g., Faircent, Gyan Dhan, Chillr, Shiksha Financial, i2iFunding, and Market Finance, Lendbox.

Personal Finance give recreated data identified with money related part to people and business to contribute, oversee, spare individual fund in a powerful and better route as indicated by one's need. for e.g.: - FundsIndia.com, Scrip box, Policy Bazaar, and Bank Bazaar.

Equity Funding Services bounce crowdfunding offices that are especially focused at beginning time of business. Cases incorporate Ketto, Wishberry, and Start51.
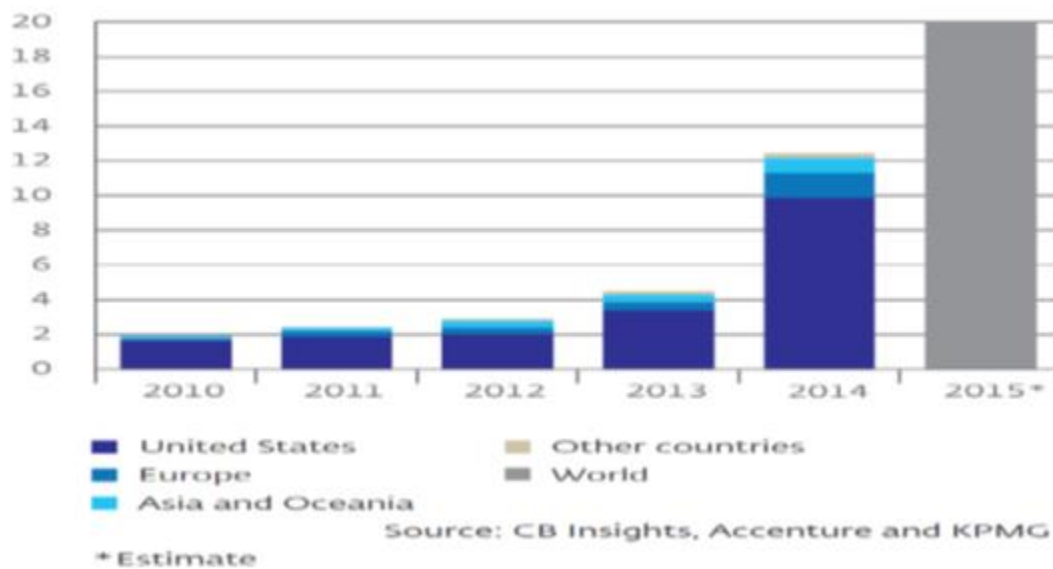
Crypto currency use in Indian market is very low in contrast with the universal market because in India trade still rules out terms of installment. Still India has some startup of bitcoin trade Unocoin, Coinsecure, and Zebpay.

Blockchain Technology (BCT) in India for Banking and Financial Industry in India, IDRBT has stepped up with regards to investigating the application of Blockchain technology by distributing a White Paper specifying innovation, worldwide encounters & conceivable territories in terms of selection in budgetary part.

Fast Payments can be done by installing Immediate Payment Service in cell phones or m-wallets issuance. The scenario for installment and fast payment in India has been changed by bank and non- bank installments wallets. PayTm, Citrus Pay**,** Citi MasterPass, Mobikwik, ICICI Pockets are some of the installment wallets for fast payment transaction.

Bharat Interface for Money (BHIM) It is an e-installment developed by government of India which encourage cashless exchanges through banks. It enable customers to get cash as well as send cash to other by scanning QR code, UPI installment locations or sequential number with IFSC code or Mobile Money Identifier Code (MMID) to other customers who don't have an UPI-based financial balance. It additionally enables clients to check existing adjustment in their financial balances and to pick which ledger to use for directing exchanges, albeit just a single can be dynamic whenever.

AI is turning into a vital piece of the saving money framework, capacities, procedures and client associations. Both Robotics and AI will enable banks to oversee both inward and outer clients considerably more viably and help diminish operational expenses exponentially later on. The capability of AI and Robotics based arrangements is huge and will alter the manner in which individuals do manage an account.

Source: CB Insights, Accenture and KPMG

*Estimate

According to the estimate of CB Insights; Accenture and KPMG, the investment in FinTech has been sluggish over the year since 2010 to 2013, around 2014 the investment has risen sharply and again 2015 the investment has risen to maximum shows the trend of FinTech over the world.

6.2 Government and Regulatory Push for FinTech

In 2017, the finance minister and the senate exposed exceptional say spending on discourse upon take off new control sooner rather than later. With vast popular portions in conveying FinTech developments to topmost of awareness status towards digitization has discovered a solid voice in government PR correspondences. Picking up acknowledgment with clients is a test looked by

numerous endeavors, and the administration's part has positively been useful in such manner (PWC, 2017).

6.2.1 Initiatives

Likewise, the Aadhaar cards and allotting e-IDs which are biometrics based to very nearly 1.1 billion individuals have remained noteworthy advance to monetary consideration. The Aadhar-Enabled Payment System (AEPS), permits operational exchanges for the purposes of offer (MicroATM) over the business journalist of any bank utilizing Aadhar verification. An India Stack were aggressive undertaking that goes for giving nearness less, computerized and electronic administration conveyance to Indians. It additionally empowered permission to monetary tools towards the already not banked through plans like the Jan Dhan Yojana and the Jeevan Jyoti Bima Yojana which mean to convey access to managing an account, protection individually by the most reduced levels of the public.

Advanced KYC through Aadhaar, a key empowering agent in advancing conversion and additionally over consideration plans. Though the Startup India activity goes for giving a favorable domain to new businesses to empower simplicity of working together and additionally giving monetary and administrative help. The additional key activities attempted by state governments, prime illustrations being the dispatch of T-Hub by the Telangana state government and FinTech Valley Vizag by the Andhra Pradesh state government, both meaning to brood and develop new companies through different coordinated efforts.

The Bharat Bill Payments System (BBPS) is an activity to upgrade the shopper involvement in the payment of bills by expediting installments for every single real utility a solitary online stage. It has likewise propelled and conceded passes to Expenditure Banks and Small Payments Banks, perceiving the requirement for specialty managing an account benefits in India.

6.2.2 Regulators

The FinTech business can fall under four administrative bodies in India, the Securities and Exchange Board of India (SEBI), The Reserve Bank of India (RBI), the Insurance Regulatory and Development Authority (IRDA) and the Telecom Regulatory Authority of India (TRAI). This assumes a critical part in forming FinTech and key activities taken up by them. The general goal of RBI is to "build a pervasive electronic installments system and all-inclusive access to investment funds" propelled a few activities that advance FinTech. By the National Payments Corporation of India (NPCI), the key activity of RBI is to dispatch a United Payments Interface (UPI) by which has been imagined as an application-level interface, which brings a few various

installment specialist organizations on to a solitary stage and empower quick 1-click shared installments.

6.3 Application of AI in Banking

Customer Service Usage of Natural language processing (NLP) to shape computerized speech framework and Chatbots to assist clients with managing their records and discover answers to general request without the assistance of a live agent.. It uses historical and past data already collected to serve customer a tailored experience (PWC, 2017).

Customer Acquisition - Utilizing Deep Learning for focusing on clients but investigating computerized impressions of their interests and late buys via web-based networking media Prescient examination encourages banks to recognize chances and oversee upselling successfully. It can likewise be utilized to break down which clients would leave, and which will remain.

KYC and Onboarding - Prescient investigation stage can give overall perspective related to customers and gatherings, guaranteeing reuse of existing due steadiness and predictable treatment crosswise over purviews and lines of business. It uses NLP innovations for extricating useful data and use OCR filter account opening structures, KYC archives, for example, Aadhar & PAN card,

Personal finance management

AI can help in managing the personal finance of each and every customer by forecasting their spending pattern by getting inputs from past data that how much they had spent in a particular week, month and year. Once the cost is determine, it can be cut back and savings can be determine and can be increased. AI like Yolt & Pariti offer this type of facility considering the data is reliable (Jones, 2017).

Advertising

AI can provide the special, unique, peculiar experience keeping in mind preference of the individual customer. It change the way of bank looking at the clients data and expectation of client can be fulfill by producing the tailored made advertisement on the basis of lifestyle and preference of each and every customer

Security (Fraud Detection) with the help of AI now banks can easily detect the fraud done by keeping close eye on security, customer and the situation if found inconvenient and unsatisfied.

With the help of AI and analysis of Big Data fraud detection's accuracy can be improved and inconvenience can be eliminated (Mangani, 2017).

Financial advice: AI can also give financial insights to the customer, through this banks can gain a lot. Based on the past data AI can recognize the pattern about the users and offer various services like strategies related to investment, investment in credit card, management of funds, etc. it recommend the best solution of finance management according to the preference of users.

AML Pattern Detection: . With the help of AI banks can detect the Anti money laundering through AML pattern detection application. AML is an arrangement of techniques, laws or controls intended to stop the act of producing wage through unlawful activities. Most of the time, money launderers shroud their activities through a progression of steps and make illegal money legal.

Algorithmic trading: Nowadays more than 70% of the trading is done through AI. AI is capable of understanding the pattern and strategies followed by different hedge funds through some inputs. It identifies the trading opportunity by learning from various sources in market and make decision on the basis of sentiments about the entity. A few hedge funds active in AI space are: Two Sigma, PDT Partners, DE Shaw, Winton Capital Management, Ketchum Trading, LLC, Citadel, Voleon, Vatic Labs, Cubist, Point72, Man AHL

6.4 AI used by US, UK, Indian Banks

Country	Bank	Artificial Intelligence	Purpose	Benefits
United Kingdom	Barclays	RPA	Detecting fraud, monitoring risk, processing of receivables of accounts, and for application of loaning.	It upgrades profitability, ready to spare over £175 million every year in bad debt provisioning, 100% exactness in account-conclusion approvals crosswise over five frameworks, 88% development in handling time, 66% development in trade entry turnaround time

	HSBC	Game Changers	In-depth look at factors with the potential to transform the Securities Services industry	Provide asset owners and managers with a fresh, engaging perspective on key developments and their potentially far-reaching effects.
	Lloyds Banking Group	Pindrop	Detection of fraud phone calls	It distinguishes 147 unique highlights of a voice from a telephone call or even a Skype call, which can enable a man to recognize info, for example, the area that a caller is in making a "audio fingerprint." Help it reduce call times and additionally secure clients.
	The Royal Bank of Scotland Group.	Luvo.	Resolve RBS, Ulster and Natwest bank customer's queries and perform simple banking tasks like money transfers.	Luvo "talks through WhatsApp-type interaction" and what sets it apart from digital assistants like Siri and IKEA's Ask Anna is its ability to understand context and perform tasks.
United States	Bank of America	Erica a voice- and text-enabled	Controlling "predictive analytics and cognitive messaging" to	It will be open to customers all the time and perform everyday exchange, comprehend

		chatbot	provide monetary guidance to the company	their exclusive money related needs and help them achieve their financial objectives by giving savvy suggestions. To enable clients to settle on more brilliant managing banking choices
	Citigroup	Clarity Money	personal finance	persuades clients to take part in third-party services that can enhance financial wellbeing
	JPMorgan Chase	Contract Intelligence (COiN)	Examine legitimate records and concentrate on vital information. It likewise utilizes the innovation to parse messages for employees, concede access to software systems, and handle basic IT call like resetting passwords	12,000 annual commercial credit agreements could be reviewed in seconds.It investigate complex lawful contracts quickly and more productively than human legal advisors
		Finn	acts as a savings coach, prompting users to round up transactions to save faster	able to warn clients when they are overspending or encourage them to save for a forthcoming holiday
	Wells Fargo	1.AIERA (artificially intelligent equity research analyst)	It provide overall view on the fall and rise of stocks by tracking daily, weekly, monthly and	

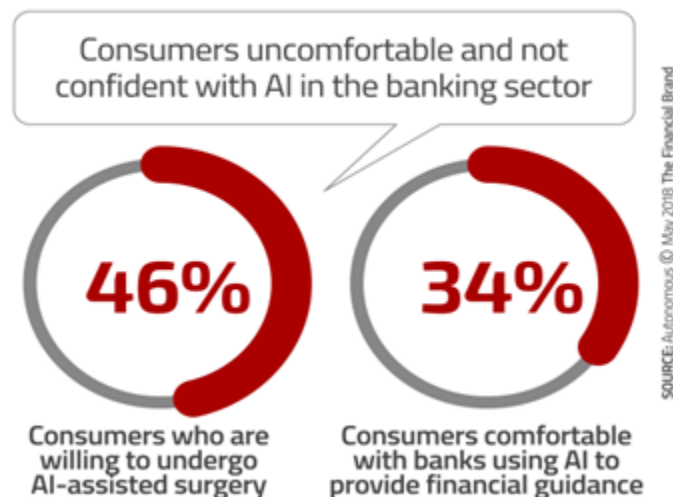|				
			annually.	
		2. Facebook Messenger chatbot.	Facilitate information related to customer's account by communicating with users and reset password on their request	
India	HDFC Bank	Eva Electronic Virtual Assistant	Integrate data information from thousands of sources and response in less than 0.4 seconds	Clients can get data on its products and services momentarily. It evacuates the need to pursuit, peruse or call.
		HDFC Bank with Facebook Messenger Chatbot	Allows the user on HDFC Bank's Facebook messenger to search/track stock prices via their chatbot, from where customer can trade in stocks using HDFC securities platform.	Would allow investors to directly create portfolios, stock watch lists, buy and sell stocks on chat, get stock trends, receive recommendations for investments etc
		SPOK Life insurance email bot	Professed to be first in India that consequently read, comprehend, arrange, organize and react to client messages that are sent to HDFC Life, in a reach of milliseconds. It help to create further knowledge on client needs by distinguishing	It will enhance client experience, while furnishing the support staff with the bandwidth to center around consumer loyalty and satisfaction.

		designs in client connections and encouraging HDFC Life to logically foresee and address all client issues and needs	
	OnChat	user can interact, confirm and pay for services within chat itself without any additional app download	
State Bank of India	AI-based solution developed by Chapdex	Check cameras set up in the branch and seizes the outward appearances of the clients.	promptly reports whether the client is cheerful or pitiful by recognizing facial appearance, this is continuous or close ongoing feedback
	SIA chat assistant	Direct client query in a split second and causes them with regular banking function simply like a bank delegate	Almost 10,000 enquiries is dealt by SIA per second or 864 million in a day
ICICI Bank	iPal	1. It includes FAQs, which are basic inquiries that customer need to approach their bank officials for which there are simple, organized answers.	It has already connected with 3.1 million clients, replying around 6 million inquiries, with a 90 percent precision rate

			2. It includes money related transaction, wherein fund transfer can be made by customer from individual to-individual, pay their bills or recharge cell phone charges utilizing questions. 3. These are basic how-to task, for example, how to reset your ATM pin, which is more developed and resembles connecting with bank official	
	Axis bank	AI & NLP enabled app	It to assist customer with monetary and non-monetary transaction, answer FAQs and connect with the bank for different products of loan.	It support in diminishing the turnaround time (TAT), the bank has executed AI crosswise over 125+ procedures and intellectual computerization crosswise over 90 procedures, which required redundant physical work

6.5 Challenges faced by AI

With the use of AI the Indian economy has been impacted in a large manner with better outcomes. According the report of Accenture, AI has added $957 billion in the Indian economy. Also it has the capacity to increase country's annual growth rate of GVA by 1.3% (Ghosh, 2018). Due to AI, banking sector has gained prosperity but the challenges it is facing cannot be ignored. Banks faces challenges like lack of internal regulatory standards for AI and machine

learning and its rising usage in the BFSI Sector has left the regulators unsure about the real-time impact of new and unique links between markets and banks. A strict Governance is required since AI need to be viewed from the angle of skepticism as it cannot be blindly trusted. Companies can misuse the algorithm. As said by Financial Institution, out of 4 only one employee is ready to work with AI. According to the Accenture study, employees need to be retrained or reskilled in order to make AI responsible. There is a lack of commitment by banks to invest in reskill the employees towards the latest changes AI is high-end technology which required to be handled by experts. In a country like India, where Financial Inclusion is still in progress, AI is stagnant in the term of usage purpose. Since AI becomes the substitute of the human resources, it poses a serious threat to the employment. AI can work better than human with more accuracy and less errors so preferable against human. AI is wiping out the employment in a devastating way. Also, Attitude of the customer towards the services matters. People are skeptical to use machine where finance is related and have trust issue. They prefer to solve issues face to face or through an executive. Consumers are less comfortable with Banks using AI but are fine when issues with healthcare. It also requires time to learn and need to be updated time to time.

6.7 Challenges faced by Indian FinTech industry

AI implementation in India is still a major challenge also due to the challenges faced by Fintech Industry in India. In India, the financial infrastructure is still underdeveloped and act as a major drawback in financial inclusion. Still so many people do not have bank accounts in rural parts of India and are unaware of facilities provided by banks. Due to which financial services hardly reach to them. Documentation for credits or loans in India is very dull and tedious process as it requests physical archives for ID evidence, pay slips, legal official copies, confirmation of signs,

face to face check, and physical review of property, because of which individuals have a tendency to go for moneylender who charges more interest than banks and needs no records. Substantial measure of exchange go undocumented. In India a fourth portion of population is illiterate and are in poverty, States like Bihar, Uttar Pradesh, Jharkhand, Madhya Pradesh and Rajasthan has literacy rate between 62-70%, which makes India's illiteracy 73% (Fintech in India, 2016). It emerges a new issue i.e financial illiteracy, which hinder the financial services benefits reach to all and are more prone to fraud. This illiteracy contributes to Government scheme like the Prime Minister's Jan Dhan Accounts (PMJDA) to underperformed being offered to the unbanked population. Under the scheme of Prime Minister's Jan Dhan Accounts (PMJDA) around 25 crore of accounts have been opened during the last 2 years but its operation is difficult. There is a need of authority to ensure the operation of Jhan Dhan Account

7. CONCLUSION

AI in banking sector has a major role to play in the light of FinTech as it provides many financial services to customers like personal financial management, fraud detection, financial advice, advertising, etc. UK & USA utilize AI in banking sector for fraud detection, risk monitoring, account receivables processing, loan application, detect fraud calls, security purpose, and personal finance, analyze legal documents, etc. while India utilize AI for addresses customer enquiries, customer assistance, financial advice, etc. In India AI still need to be improved by improving the pace of Financial Inclusion as India is lagging behind in terms of financial literacy. 70% of the population in India is under poverty and are illiterate so are unbanked and under-banked. This makes the demand of AI in banking sector in India low in comparison to the developed countries like USA & UK. But, in 2015 FinTech industry has took a sharp rise so India has potential to grow and develop.

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