

Role of Artificial Intelligence in Providing Customer Services with Special Reference to SBI and HDFC Bank



Ritu TuliSameer Salunkhe

Abstract: *Technology has changed the operating psychology of the businesses over the last couple of years. There is a growing need and demand to use Artificial Intelligence (AI) and the Indian banking Sector is gradually shifting itself towards using AI. Banks are exploring and implementing technology in various ways. Artificial Intelligence is getting better and smarter day by day. The adoption of AI in banking has grown a lot than other sectors. This is happened because banking sector still has lot of human intervention in the operations. Indian banking sector is exploring the ways to enhance customer services with the help of Artificial Intelligence. This paper is about how Artificial Intelligence (AI) is used by Indian banks with reference to SBI and HDFC Bank to improvise customer services in future.*

Key words: Artificial Intelligence, Customer Service, App.

A. INTRODUCTION:

Technology is the cornerstone of India's banking sector. Indian banks may have embarked on their technological journey only in the mid-to late 1990s, they have more than made up for this relatively late start. The banking sector has deployed the latest technologies from core banking and payment systems to risk management and, more recently, digital strategies. Artificial Intelligence (AI) has been around for decades, ever since John McCarthy defined it as “the science and engineering of making intelligent machines”. Due to its high potential, its adoption is being treated as the fourth industrial revolution. As with any major advancement in technology, it brings with it a spectrum of opportunities as well as challenges. Several applications have been developed or under development with potential to improve the quality of life significantly. But it is only lately that AI technology has undergone rapid evolution and raised significant interest among the banking sector. Artificial Intelligence is the theory and development of computer systems which can perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

The Indian banking sector is adopting AI quite aggressively. According to Fintech India report by PwC in 2017, the global spending in AI applications touched \$5.1 billion, up from \$4 billion in 2015. There is a keen interest in the Indian banking sector as well. Natural Language Processing, Natural Language Generation, Machine Learning (such as Neural networks/deep learning), and Computer Vision have been adopted by the sector. The banking industry has found the use of AI in the area of business and management operations and Financial operations. Following are the uses of AI in the banking industry.

Customer Interface: Banks are using virtual customer assistance to provide resolution to their queries and for this Chatbot is being used on platforms such as mobile applications and websites, as well as social media platforms such as Facebook Messenger, Telegram, WhatsApp and Twitter.

Customer Insights and Personalization: AI has the potential to provide customers with personalized engagement services through the use of AI algorithms. The technology observes clients’ behavior patterns based on digital profiles and transactional history it suggests products which are tailored to meet their requirements. By using emotional Analytics for Social Enterprises, it is possible to gain better insights into the emotional and cognitive state of clients. From the video and audio inputs, the application will help microfinance advisors better understand the topics that would cause users to engage or disengage during the microfinance process.

Business and Strategy Insights: With the availability of large amount of data with banks, AI can enable better understanding. Such analysis can facilitate deeper and real-time insights into internal operations and external market dynamics, informing potential strategies across various departments. Deeper insights into customer data, for example, can facilitate marketing and portfolio strategies. It can also be used for digital payments.

Facilitating Backend Processes: AI is being utilized to assist with backend office operations that often involve high volume, rules based and highly organized and systematic work. AI technologies can be used to perform “intelligent automation” like automating the writing of investment/earning reports, or extracting functional information from relevant financial documents.

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Credit Scoring and Loan Decisions: AI is used by lenders to calculate credit scores and develop credit profiles. Firms can make fast credit decisions by analyzing individual's banking transactions, their past decisions, their spending and earning habits and, familial history, mobile data etc.

Fraud Detection and Risk Management: AI is used to monitor and prevent various instances of fraud, money laundering, malpractice and the detection of potential risks.

Government Initiatives

In India, the government is investing heavily in AI. The finance minister in her budget speech of 2019 emphasized on development of new-age skills like Artificial Intelligence (AI), Internet of Things, Big Data, 3D Printing, Virtual Reality and Robotics. The 2018 budget allocated \$480 Mn (Rs. 3,703 Crore) to the Digital India programme, effectively doubling its past investment. These initiatives are seen in the form of joint projects, internal programs, and the AI Task Force. While most of these initiatives concern a broader implementation of AI, there are several initiatives specific to, and others that indirectly affect the banking and finance industry.

B. Review of Literature:

How Artificial Intelligence Is Changing The Banking Sector –A Case Study of top four Commercial Indian Banks

Dr. Simran Jewandah, Associate professor, Chandigarh University, International Journal of Management, Technology And Engineering, pg no 525 - 530 ISSN NO : 2249-7455, Volume 8, Issue VII, JULY/2018

The Banking sector cannot stay aloof from technology if it intends to be updated and competitive for providing prompt services to its customers. AI is used to provide personalize financial services, smart wallets, underwriting, voice assisted banking, application to assist in lending decisions, customer support and digitization. It covers usage of AI and its implication on the top banks in India. AI has assisted in detection of frauds, reduction in cost and increase in revenue, making customer experience better. It was identified that SBI, HDFC, ICICI and Axis Bank have entered the digital era through chatbots and usage of robotic software.

Artificial Intelligence: Way Forward for India

Sunil Kumar Srivastava, Government of India, Ministry of Electronics and Information Technology, New Delhi, Journal of Information Systems and Technology Management – Jistem USP, Vol. 15, 2018, e201815004, ISSN online: 1807-1775, DOI: 10.4301/S18071775201815004

This paper covers evolution of AI from its inception to till date. Late fifties and early sixties focused on development of general techniques which could be applied in several domains which weren't that successful till late eighties. With the increase in storage capacity and computational ability of computers, AI has progressed since the last decade. Eminent scholars have raised concerns like existential threat, safety, slowdown in the growth of economy, unemployment etc. The international scenario of application of AI was studied via sectoral analysis of healthcare, education, cyber security, law, finance,

information browsing, transport, virtual assistants, ecommerce, customer care, energy etc. Policy documents framed by US, UK, Japan, Singapore and even China was studied. The report concluded with AI developments in India. Various startup companies are providing AI expertise in sectors like healthcare, e-commerce, finance etc. IT majors like TCS, IBM and Infosys are contributing to AI development. India has huge knowledge resources, however issues of infrastructure development, policy & regulations, research & development, and human resource development needs to be addressed in collaboration with government and corporates.

Robotic Process Automation - A Study Of The Impact On Customer Experience In Retail Banking Industry

Karippur Nanda Kumar & Pushpa Rani Balaramachandran, S P Jain School of Global Management, Journal of Internet Banking and Commerce, December 2018, vol. 23, no. 3

The paper discusses challenges retail banking industry has faced due to disruptive technology such as intelligent automation and competition from Fintech startups. It emphasizes on usage of Robotic Process Automation (RPA) to maintain competitive advantage and increase profitability, thereby improving efficiency, accuracy, 24/7 operations, reduce cost and offering innovative services and better experience to customers. The relationship of four independent factors ie Security and Privacy; Reliability; Usefulness and Human-like interaction were studied with dependent variable i.e. RPA in order to identify the usage of RPA in retail banking industry.

Artificial Intelligence in Indian Banking Sector: Challenges And Opportunities.

Business & Mgmt Operations	Financial Operations
<ul style="list-style-type: none"> • Customer Interface • Customer Insights & Personalization • Business & strategy Insights • Facilitating backend processes 	<ul style="list-style-type: none"> • Credit scoring & loan decisions • Fraud detection & risk mgmt • Wealth Mgmt • Algorithmic trading • Transactions

Dr.C.Vijai. Assistant Professor, Department of Commerce, St. Peter's Institute of Higher Education and Research, Chennai, Tamil Nadu, India, International Journal of Advanced Research 7(5), pg no 1581-1587, ISSN: 2320-5407, April, 2019

This paper evolves from conceptual understanding of AI, its types, history, contribution to the growth of banking sector through development and support of various regulatory bodies, enabling acceleration in the usage of latest technology like AI and block chain technology. Formulation of regulatory body, academic research unit by various players, presence of major IT companies in India have contributed to the growth story of India as a tech hub.

It has changed business processes and customer-facing services significantly.

The paper also emphasizes on the benefits and challenges faced in implementing AI in India. It accentuates the usage of AI to shift only from private players and consumer goods. Public and private funding models should be encouraged to promote development of research on AI in India. There is a huge need to change the traditional education mechanism, as the nature of jobs and skills required to do them are changing rapidly.

No job losses due to chatbots, artificial intelligence: Banks [Banking]

Shetty, Mayur . The Economic Times ; New Delhi [New Delhi]06 Apr 2017.

The financial sector in India has seen tremendous investments into chatbots and artificial intelligence (AI) to augment customer service. The routine queries will be moved to the self-service mode. Chatbots will not replace customer executives but will complement them, providing customers with a richer experience. The bankers believe there would not be job losses.

SBI is working with IBM to make use of Watson -- an answering computer software to assist staff and employees. HDFC Bank has tied up with AI firm Niki to bring in conversational banking. YesBank partnered Payjo to launch AI-led digital initiatives with focus on speech recognition. The bank launched Yes Tag--a chatbot-based app on five messaging platforms: Facebook Messenger, Twitter, Skype, Telegram and WeChat. The chatbot experience is extended to insurance firms and NBFC too. Bot would recommend best insurance plans after quizzing the user for 60 seconds. Fullerton became the first to launch a loan acquisition and fulfilment chatbot "Asha."

How HDFC Bank is giving shape to its digital vision Mint ; New Delhi [New Delhi]19 May 2017.

The article encapsulates digital innovations of HDFC bank till date. It envisions to be a completely customer-centric organization, for which it has taken initiatives towards digitization.

The bank developed a humanoid IRA (Intelligent Robotic Assistant) which guides people at a branch to find the relevant counter. The bank is testing if customers expect more than this basic interaction like assistance for transactions and better interaction.

EVA (Electronic Virtual Assistant) is created to answer common queries of bank website users. A Facebook Messenger bot assists users in transactions like bill payments, mobile recharges and even booking cabs. EVA was created by fintech firm Senseforth and facebook messenger integration was done by Niki.ai.

The bank intends to provide a uniform experience to app operated, or the internet or social media or walk-in branch customers. It focuses on providing a platform-led approach. The emphasis is not on product-specific or channel-led or segment-led approach, but it should be subsets of a platform-led approach.

The bank engaged with at least 25 fintech companies for AI and marketing to risk analytics and payments as it intends to move from a multichannel to an omnichannel experience. It also experimented with holographic conversations which it discontinued due to poor customer acceptance. Smartwatch

banking could not scale up because the watch itself did not do well. Bank is bullish on the smartwatch as a potential banking interface as it will communicate on its own and multiple things can be connected to watch even if the smartphone is at home as it doesn't have to be paired with it. A report from Accenture Plc estimates competition from digital players could erode as much as one-third of traditional retail bank revenues by 2020, hence it puts pressing needs on banks to outperform the competitors.

Rise Of The Robo-Banker

Gupta, Kanishka . Business Today ; New Delhi (Jul 15, 2018).

The banking sector witnessed surge in the usage of chatbots thereby reducing human interface, bringing down operating expenses and improving efficiency. HDFC bank's EVA, Onchat, ICICI Bank's iPal, YES Bank's Yes Robot are some examples to name.

ICICI Bank, YES Bank and HDFC Bank all use the services of ToneTag, which has created databases of encrypted sound waves for them, allowing customers to make payments without touching a button. A humanoid is placed by HDFC Bank at three select branches in Mumbai, Kochi and Bengaluru, called Ira

Various banks are handholding fintech firms like ICICI Bank supported FinoPaytech, YES Bank through its programme called Yes Fintech has supported 1,000 fintech start-ups, HDFC Bank came up with 'Industry Academia' initiative, which allied with engineering and management schools to

promote fintech start-ups, as well as an annual Digital Innovation Summit where start-ups make their presentations and the bank selects and backs the five best ones. Bank of Baroda and Lakshmi Vilas Bank have partnered with Fisdom, to offer financial planning and wealth management services. Axis Bank has teamed up with US-based fitness technology company GOQii to use the latter's fitness band - which measures steps taken, calories expended, etc - for making payments as well, using the internet of things (IoT) and near-field communication (NFC).

ICICI Bank is working on IoT and machine learning in matters concerning HR. In September 2016, the bank announced the deployment of software robotics in over 200 business processes, including agribusiness, trade, and foreign exchange, apart from retail banking and HR. The investment in these processes led to reduce response time by 60 per cent and increase accuracy to 100 per cent. Many fintech companies are working on improvising chatbots that will be able to comprehend regional languages as well as the Hindi-English combination.

C. Research Gaps:

The banking sector has grown leaps and bounds in terms of technological development and use of artificial intelligence. However, not much research evidence is seen in the usage of humanoid robots in the sector. More research is required in the activities which the robot can undertake as presently it only focuses on handling customer basic queries.

The present research has laid emphasis only on the implementation of AI for various services but there is need to have more research on customer satisfaction.

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There is tremendous scope to cover the challenges faced by banks in providing such services, and how cost effective and competitive has it proved to the bank. The entire scope of AI has been only on providing basic information to clients on primary banking products, but which other services can it cover is something which needs much research.

D. Scope of the Study:

Study is restricted to HDFC Bank and SBI only in Mumbai region.

Study of AI is limited to customer services only.

E. Objectives of the Study:

- 1) To study the methodology of adoption of AI in banks.
- 2) To understand challenges faced by banks while adoption of AI.
- 3) To understand how AI helped banks in betterment of customer services of HDFC and SBI as well

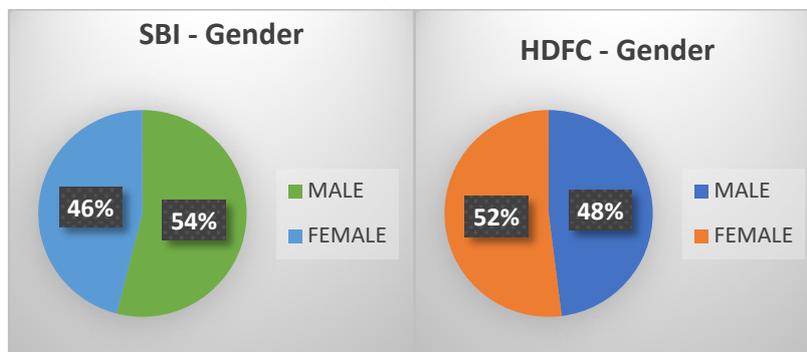
as customer feedback on the same.

F. Research Methodology:

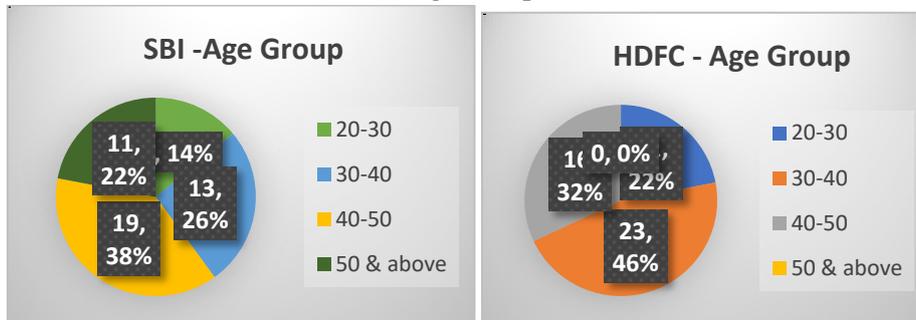
Research is based on exploratory research. Present study is based on primary as well as secondary data. Primary data is collected from customers of top two commercial banks i.e. HDFC bank and SBI consisting of questions related to improvement in customer services through AI, challenges faced and customers' feedback. 50 customers of each bank were surveyed to collect data on awareness, usage and satisfaction level of AI enables services. Secondary data was collected from various sources like research journals, websites and articles to ensure detailed understanding of the subject and authenticity of information.

G. Data Analysis & Interpretation:

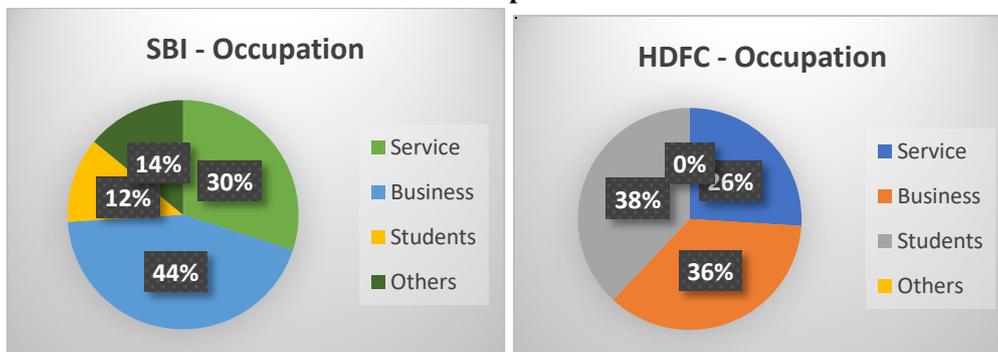
1. Gender:



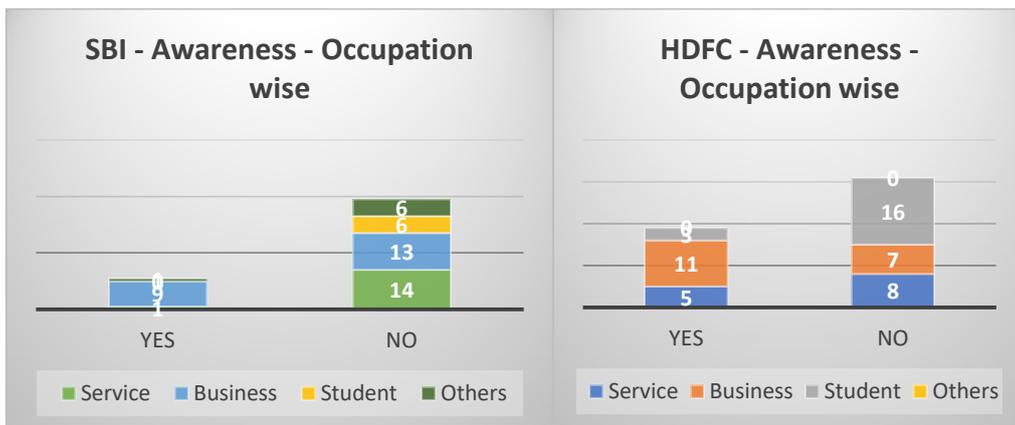
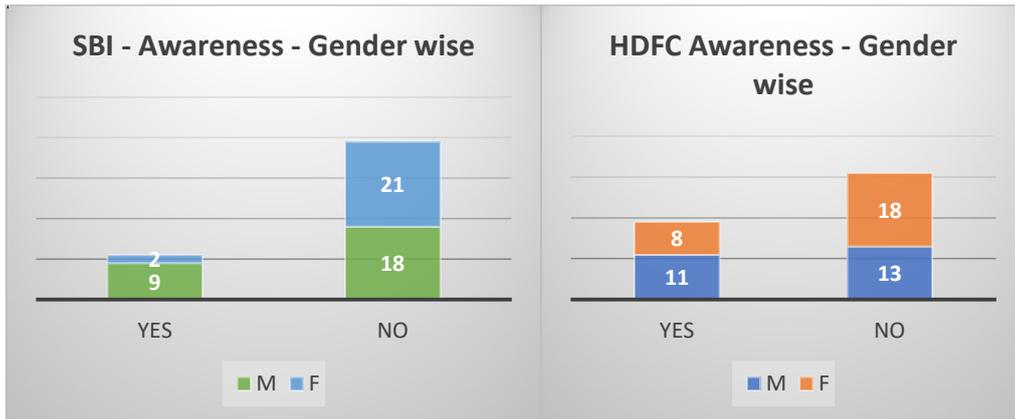
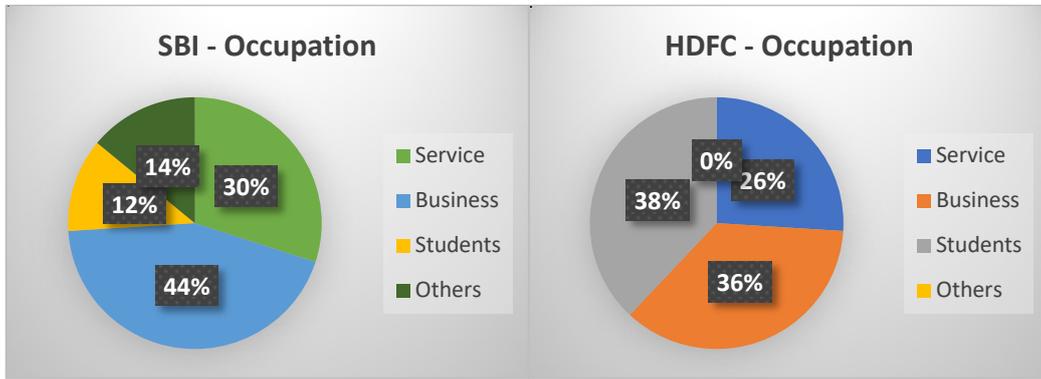
2. Age Group



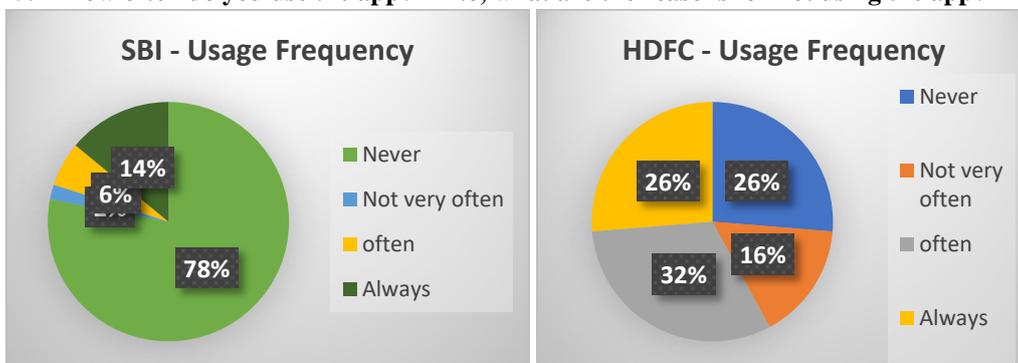
3. Occupation



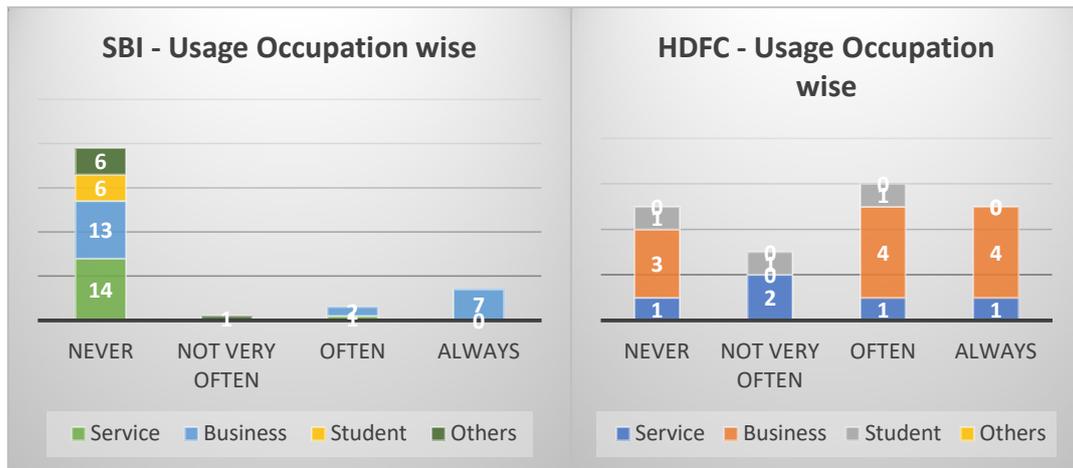
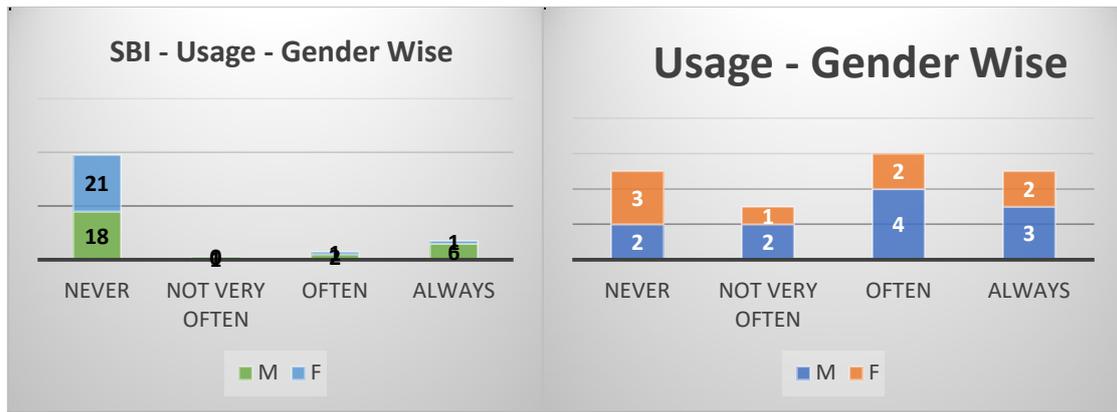
4. Are the customers aware about the app?



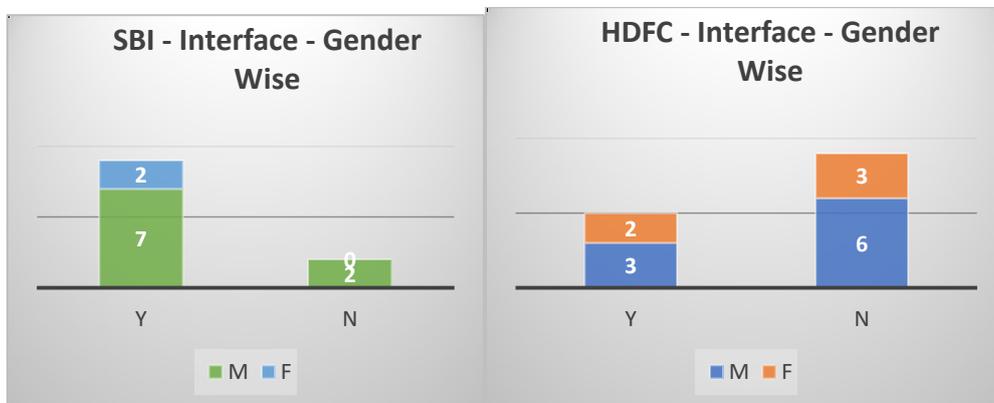
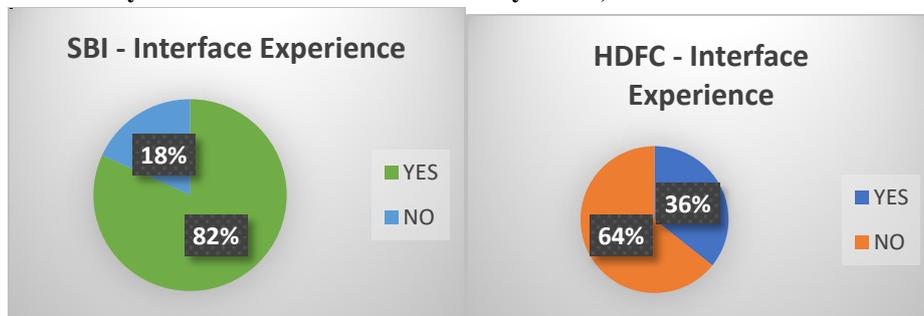
5. How often do you use the app? If No, what are the reasons for not using the app?

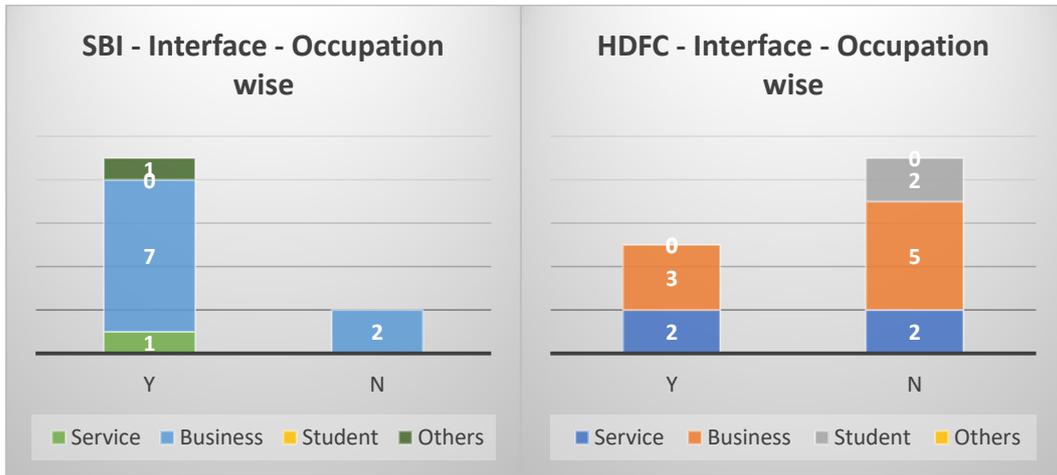


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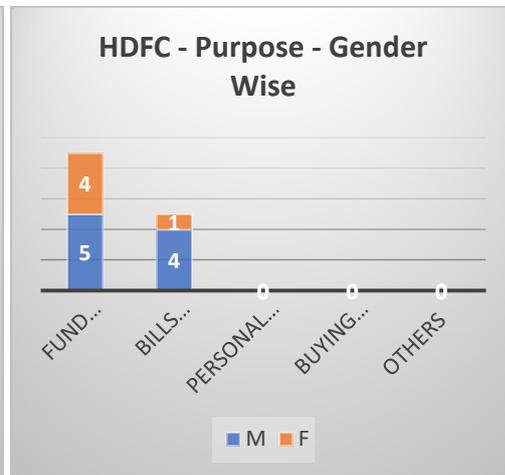
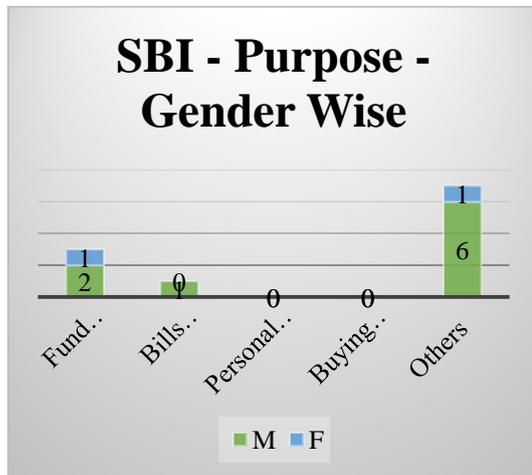
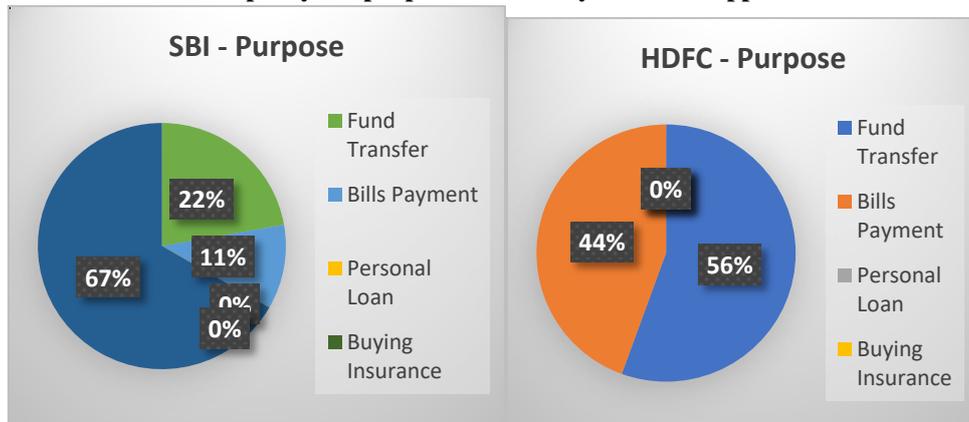


6. Did you find the interface user friendly? If no, what are the concerns?

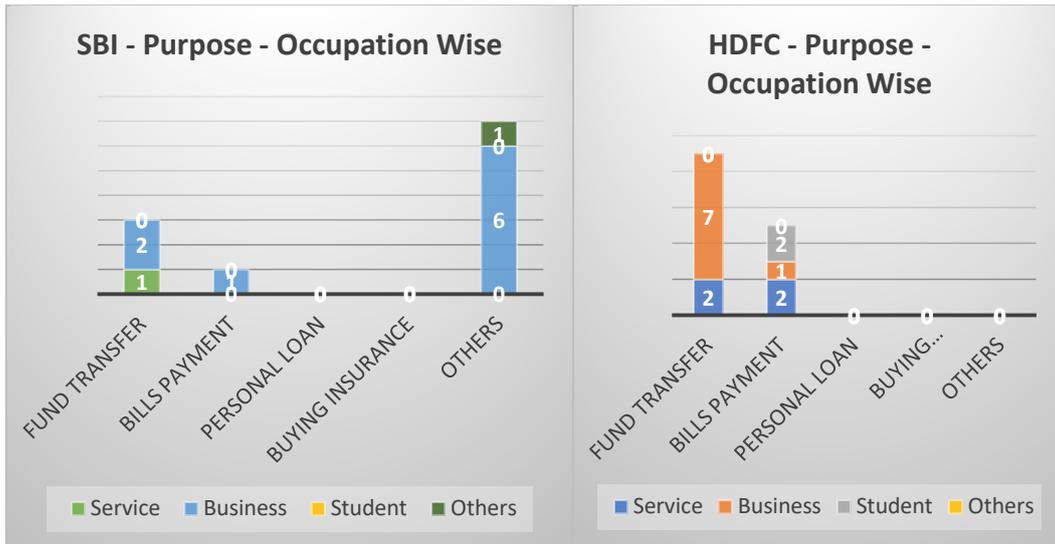




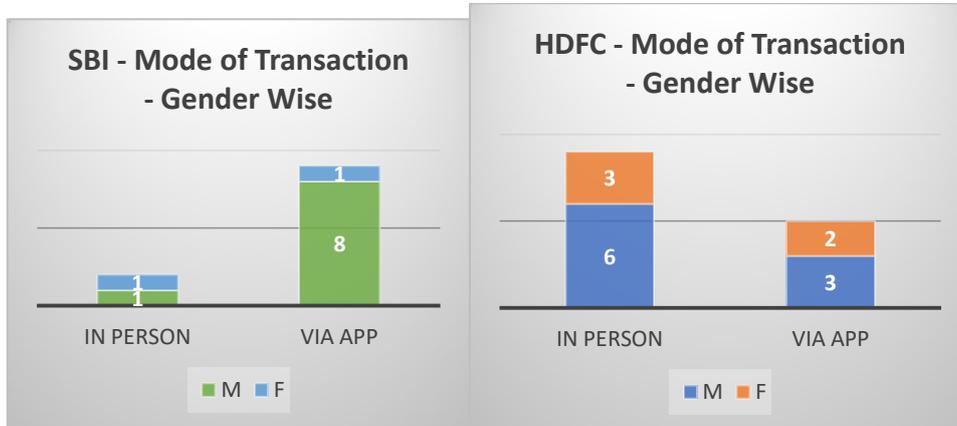
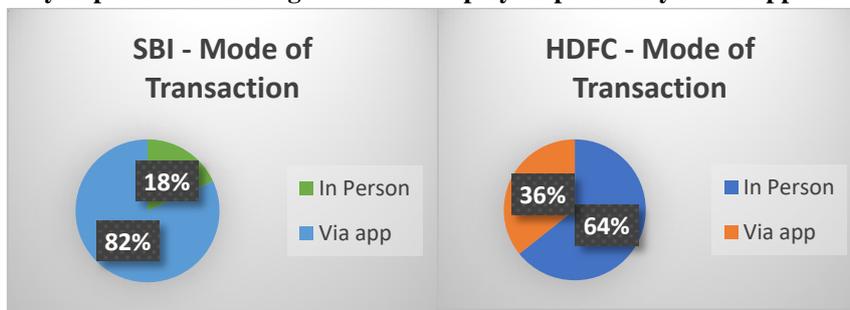
7. Specify the purpose for which you use the app?

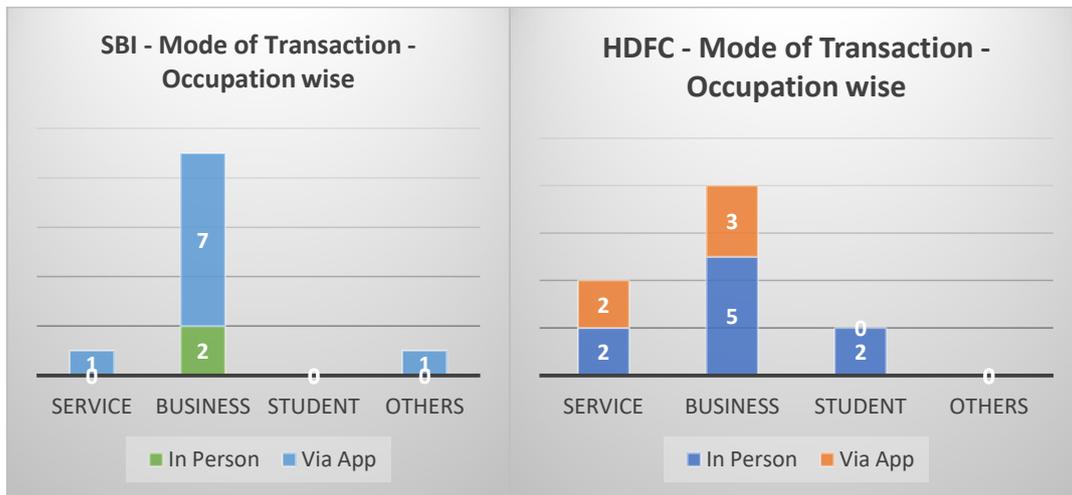


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8. Will you prefer transacting with bank employees personally or via application?





Analysis - SBI

1. In case of SBI 80% of the respondents were not aware about YoNo as well as NoQueue app only 20% respondents are aware, out of which maximum awareness is among male respondents.
2. Around 54% respondents belonging to service and business are unaware about these app services of SBI, however only 22% of the people are aware of the app services, which indicates there is huge potential for bank to tap the service and business class. SBI should start promotion activities emphasizing more towards the service class as it comprises maximum population of Mumbai. Since awareness is very limited, the usage of the YoNo as well as NoQueue app is also restricted to limited population.
3. 42% of females and 36% males are not using the app services of SBI through mobile app. While analyzing the frequency of transactions, it was observed that only 12% male and 2% female respondents were regularly using the app. However only 4% of male respondents were using it often, despite huge investments in AI, there is limited usage from females for the banking services via mobile app.
4. Only 14% respondents from business class category are using app services regularly, 28% from service and business class are not using services at all. The usage is very less in case of students as well. It is observed that the usage is limited across all occupations. SBI should focus more on utility of the application in all categories.
5. 63% of businessmen and 9% of service class found the user interface customer friendly, whereas 18% of businessmen were unhappy.
6. A majority of 63% comprising of businessmen and housewife use the app services for YoNo cash, whereas 27% of service and businessmen use it for fund transfer and a mere 9% use it for bill payments. No keen interest was taken by respondents for buying insurance and personal loan via app. Personal visit to bank is preferable.

Analysis - HDFC

1. A majority of 62% of respondents are unaware & 38% are aware out of which 57% are male & 42% females.
2. 57% businessmen are aware of the app. 51% of students are unaware of the app, which is equally influential. HDFC should tap these students through promotional campaigns emphasizing on student friendly products.

3. 58% of service and businessmen use the app often to regularly and 26% are not using the app at all.
4. 64% respondents are unhappy with the user interface of which a majority of 55% businessmen are unhappy with app interface.
5. 68% respondents use the app for fund transfer and remaining use for bill payment. The popularity of the app for other services is negligible.
6. 64% respondents found visit to bank preferable over the app. The customers are highly dissatisfied with the app.
7. There is a group of respondents who are aware about the services provided via Mobile Application but these respondents are not at all comfortable with technological developments due to security issues and user friendliness.

H. Findings of the Study:

1. There is no gender disparity observed as both male and female equally use the app of both banks. However, more male respondents were active in using the app.
2. Businessmen and service professionals are highly aware and frequent users of the app. Student customers with SBI are not aware, however HDFC's student customers have a decent awareness.
3. SBI customers were satisfied with the user interface, however HDFC businessmen were highly dissatisfied with the user interface as they found the app difficult to use, poor customer support, refund issues and transaction failure.
4. Fund transfer and bill payments were highly utilized services for both the banks. However, YoNo cash was highly utilized service of SBI YoNo app. This app provided instant cash withdrawal up to Rs. 10,000 without the physical ATM card. Insurance, personal loan service was not utilized by the customers as they preferred in person visit over app. Despite limited utility for personal loan and insurance, new products are in pipeline to be incorporated in the SBI app.
5. In spite being aware, there are certain customers who are not using the app, hence banks need to focus on converting them into productive customers through app usage.

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6. Banks need to put efforts in increasing the volume of transactions through this app as regular users are equally concerned about data safety, account hacking and other online frauds, impairing the usage of the app to its potential.

Management, Journal of Internet Banking and Commerce, December 2018, vol. 23, no. 3

I. Conclusion

There are huge investments from the banking industry in AI implementation. However, the sector has challenges in terms of awareness, acceptance of new technology, issues with security and data threat. Banks need to promote these products and should have strong policies in place to enable its optimum usage.

J. Scope for Further Research

The paper covered the customer satisfaction in the usage of few AI services of two banks. AI is not restricted only to app services, feedback of chatbots, humanoid robots' implementation in banks is yet to be measured as it is in early stages of implementation.

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