Artificial Intelligence in the Banking Sector – A Critical Analysis

OPEN ACCESS Mr. Joel Manjaly PGDM Final Year, Xavier Institute of Management Entrepreneurship Volume: 8 Kalamasserv, Kochi Special Issue: 1 Dr. Ranjana Mary Varghese Faculty in OB &HR &Deputy Director, Xavier Leadership Centre Month: February Xavier Institute of Management Entrepreneurship, Kalamassery, Kochi Year: 2021 Mr. Philip Varughese VP & Lead, Cyber Defense, Security & Resilience , Accenture Technology P-ISSN: 2321-4643 Abstract "Computers will overtake humans with AI in the next 100 years. When that E-ISSN: 2581-9402 happens, we need to make sure the computers have goals aligned with ours." The pros and cons of AI is evident in this statement made by Stephen Hawking. The Impact Factor: 3.122 last decade had witnessed tremendous changes in how each industry functions. The rapid growth of technology, internet and infrastructure has fuelled this disruption Received: 17.01.2021 at a 10X speed. Talk of the town in digital disruption is Artificial Intelligence. Number of mentions Accepted: 13.02.2021 of AI or Machine Learning in earning calls by public company executives shows an exponentially rising trend since 2015 as per the data by CBInsights. AI has brought in groundbreaking changes in the global banking industry. The future of Published: 26.02.2021 AI in banking is enormous as the power of advanced data analytics can combat fraudulent bank transactions and improve compliance. AI technologies reduce costs Citation: in the banking sector by increasing productivity. According to Open Text survey of Manjaly, Joel, et al. financial services professionals, 80% of banks are highly aware about the potential "Artificial Intelligence benefits that AI can bring to the business. What are the potential benefits of AI in in the Banking Sector financial institutions? Does adopting AI come with risks and costs? What are the regulatory constraints which could be the impediments for implementing AI in the - A Critical Analysis." Banking sector? This conceptual paper deals with risks, rewards, use cases and ways Shanlax International to adopt AI in the banking sector. This article also tries to identify the paybacks and Journal of Management, also the key uses of some of the tools which are used by both financial institutions vol. 8, no. S1, 2021, and central banks. It also indicates the main constraints of the technology and its pp. 210-16. likely consequences for the correct functioning of the financial system. Keywords: Artificial Intelligence, Banking, risks, rewards, compliance, cyber security DOI: https://doi. Introduction org/10.34293/ In 2017, the Financial Stability Board (FSB), a global association management.v8iS1that checks and makes commendations about the worldwide Feb2021 3778 financial system, set out different applications of AI in the financial

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sector, such as in the verticals of portfolio management, client due diligence, credit scoring, and regulatory compliance. The FSB also

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outlined possible benefits for retail customers and small and medium-sized enterprises (SMEs), as well as efficiency gains in back-office procedures carried out by banks. In a 2018 report, the Basel Committee on Banking Supervision (BCBS) - a committee of banking supervisory authorities and the primary global standard setter for the prudential regulation of banks - encouraged banks to harness emerging technologies such as AI to surge their competence in responding to fintech-related perils. TheRBI had set up a working group which was Inter-Regulatory to understand the problems pertainingto Financial Technology and digital banking in India. The report states that the digital transformation of the banking and financial sector would ride on three pillars: Artificial Intelligence , Block Chain and the Internet of Things .One of the finding of the report was that as the variousequipmentwere interconnected which will lead to self-learning usingArtificialIntelligence, the banking sector will growpastwebsites, applications and brick and mortar branches.

Rewards and benefits of Applying AI in Financial Business Processes

The authors have tried to understand the application of of AI in banking sector from three categories (1) Customers (2) Business (3) Employees



Fig 1: Benefits of AI for various stakeholders in Banking Industry

Risks & Challenges

Cybersecurity was recognized as a veryfruitful area for ArtificialIntelligenceenabled weaknesses. The major objective of artificial agents (both informational and cyber physical artificial agents) is the efficient operation of information. Most of the present autonomous learning systems have a data diet susceptibility (Osoba and Welser, 2017). The systems run on AI areclassically only as good as the data on which they are skilled. They manifest any biases or untruths found in their skilled data (Barocas and Selbst, 2016)

Some other challenges which was identified were as follows

Meeting Regulatory and Legal Compliance requirements

There are plenty of regulatory mechanisms in place for AI on national and international levels. It is unavoidable to meet the compliance requirements specified by each body. The consequences of violating any of the regulatory requirements lead to serious consequences like brand value deterioration, loss of money and so on.

Ethical Bias Management

AI is a self-learning mechanism. The automated decisions are made on the basis of the data that the system learns. The major advantage and disadvantage of AI is the same that it takes logical decisions and this logic need not be ethical. For instance: A company is hiring for the position of sales manager. Just because 90% of current sales managers are male, it cannot take a majority based decision to look only for male candidates in hiring. Incorporating ethics management into AI is a herculean but necessary task.

Mapping & Enforcing Accountability and Responsibility for the Outcomes

One essential difference between AI and human employees is accountability and responsibility. Can we have a performance appraisal system for AI based machines? If something goes wrong, will the AI machines be responsible and accountable for the mistakes? It is a hard task to incorporate responsibility and accountability to machines. Greater autonomy should come with greater responsibility and accountability. Each decision an AI takes should be justifiable in all aspects. The decision making algorithms must include moral values, societal norms, beliefs and values that makes it accountable for every single decision.

Loss of Jobs

This is the most common threat of AI perceived by humanity. It is true that many of the monotonous repetitive jobs and logic based decision making jobs in banking industry will be taken away by AI. Deploying AI instead of human capital, increases efficiency and effectiveness of the work and saves cost in the long run for the company. Imagine a bank with an AI Robot as a cashier. The daily transactions will be perfectly maintained with respect to associated variables like time of transaction, denominations, face recognition of the customer, authenticity of the cheque and so on.

Even though many such jobs become redundant in the future, on the other side there would be jobs generated to develop, monitor, modify and manage such AI systems.

Opacity in Processes

The backend of AI and its functioning is opaque for the common people and normal employees. This opacity leads to dissatisfaction to the users one or the other way. The EU Commission's High-Level Expert Group on AI (AI HLEG) published the ethical guidelines in April 2019 which stated transparency as one of seven key mandates for a 'trustworthy AI'. It is also emphasized as one of the five key requirements in a recent study of ethical guidelines addressing AI on a global level (Jobin et al., 2019).

Use-Cases

The possibilities of applying AI to banking is numerous. A few of the use cases identified are in the maturity stage whereas many are still in development. Going ahead, there is tremendous potential to have more number of use-cases for AI in banking. In the present scenario, most widely used applications include fraud detection, anti-money laundering analysis, credit scoring and AI chatbots. As per the Autonomous Next Research by Business Insider Intelligence, the cost savings arising from usage of AI in banking industry is estimated to be about \$446 bn by the year 2023.

Choosing the right use-cases is a very crucial decision for any bank. It depends on what problem or need is the bank trying to address. Budget availability also play a key role in selection of use-cases. Authors have classified the use-cases of AI in banking sector based on its benefit for three stakeholders 1) Business 2) Customer and 3) Employees



Fig 2: Use-cases classification

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Regulatory Mechanism

GDPR - General Data Protection Regulation aims to protect the privacy of data. This European Union regulation has affected most of the companies who are using and tackling with and keeping personal data of individuals residing in the European Union. Most of the AI based systems use bulk volumes of data to train and learn the scenarios and thus to help in better decision making. These training and validating datasets include personal data of individuals as well. Also the regulation directly mentions 'automated individual decision making' i.e. decision making without intervention of people which is the soul job of AI.



Fig 3: Six Core principles of GDPR Source: Network ROI

- IT ACT, 2000 Information Technology Act 2000 of India was amended in 2008 such that the scope of the act was expanded to include regulation of electronic business transactions and cyber crimes. This was due to the surge of internet banking services in India which resulted in increased cyber crimes and frauds. The act has urged the banks for the adoption of mandatory policies for the protection of confidential and sensitive information.
- Basel Basel is a global committee which deals with regulations and supervisory practices in the banking sector.Basel Committee on Banking Supervision (BCBS) issues 'Basel Norms' which are a set of global banking guidelines to be followed by the global banks. Including India, representatives from central banks of 27 countries are a part of BCBS. Adoption of AI by the banks should not violate any of the Basel Norms at any circumstances.
- ITGC IT General Controls are the basic controls applied to IT or IT related systems, processes, infrastructure and data. The primary objective of ITGC is to ensure integrity of data and processes. In this context, AI implementation is directly related to ITGC. 2018 report from Deloitte detailed about the significance of ITGC and GITC for ensuring integrity in modern business operations.
- GLBA Gramm-Leach-Bliley Act 2019 is United States Federal regulation that needs financial establishments to clarify how they use and guard their customer's private data. The data protection suggestions of GLBA are mentioned in Safeguards Rule and Federal Trade Commission's Privacy Rule. At any point of time, if non-compliance to GLBA is proven, the punishments can have serious ramifications to the banks.
- COBIT Control Objectives for Information and Related Technology is a global outline created by ISACA (Information Systems Audit and Control Association) for IT governance and supervision. It is a thoroughly recognized guideline that can be adopted by any companies irrespective of industry. COBIT 5.0 certification is a benchmark of quality in IT and related technology.

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- PIPEDA It stands for Personal Information Protection and Electronic Documents Act. This is a Canadian federal privacy legislation for private sector organizations in Canada. The law intends to govern the assortment, use and disclosure of personal information in an organization.
- PCI-DSS Payment Card Industry Data Security Standards are mandatory requirements that has to be followed by all establishments that use, stock or communicate credit card data. This is an autonomousorganization created by major players like VISA, MasterCard, American Express, DIscover and JCB.

Artificial Intelligence in Banking Sector- Adoption and the Barriers

Adoption of AI is a crucial decision for any organisation. Companies should be mature enough to embrace technology by all means. Without data, there is no AI. First and foremost question is whether companies have proper database management systems or not. Banks and financial institutions should ask below questions before deciding to adopt AI.

- 1. Do we have proper data to be leveraged for decision making?
- 2. Is the company mature enough to adopt AI?
- 3. Do we have the right resources to manage AI?
- 4. Which need or opportunity of organization are we trying to address?
- 5. What is the expected short term and long term outcome through adopting AI?
- 6. Is the company financially sound to embrace AI?
- 7. What is the intensity of potential resistance from stakeholders?

Internalizing the above questions will help bring clarity to the financial institutions in adopting AI. Proper plan and strategy leads to successful implementation of the technology.

Similar to any change, adoption of AI also comes with resistances and barriers. These include tight regulatory mechanisms and a culture of innovation in the organization. It is difficult for traditional banks to quickly migrate to AI technology. Tremendous amount of unlearning and relearning for both employees and customers is mandatory for a smooth transition. Companies often lack a clear strategy for implementing AI enabled banking. Improper strategies backfire the organization quickly and results in financial losses . Today, data is a sensitive entity that has to be dealt with carefully aligned to all compliances and policies.



Fig 4: Barriers to adoption of AI in banking industry

In addition to the above regarding data security some of the additional challenges faced by AI and ML are

- Limited processing power -While AI and ML have great potential, they utilize a ton of processing power. Most computing simply isn't that advanced. As a result, it's difficult to fully utilize these technologies outside of very specific environments.
- Limited knowledge- Only a handful of people truly understand AI well enough to explain it to the marketplace. This has kept adoption rates from being where they should be and is slowing down growth.
- Lack of Trust -There will always be a degree of mistrust between people and computers.

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How to Overcome the Barriers?

A planned effort is necessary to overcome the barriers to embracing of Artificial Intelligence in the banking sector. Firstly, the barrier have to be identified. This may differ from one bank to the other. Soft aspects of barriers like culture, skill, style, etc. can be overcome using change management methods like Kotter's 8 step model or ADKAR model of change. But the hard aspects like structure, system, strategy etc. should be driven exclusively from the top leadership of the organization. It would be significant for the organization to understand if its set-up in a way that allows it to adopt AI. This can be done using McKinsey's 7S framework. Keeping the core values central to all elements, this framework throws light on the readiness of the organization to embrace change. Authors have tried to apply the McKinsey framework to the context of implementation of AI in the banking sector, globally.



Fig 5: McKinsey Framework for Adoption of AI in Global Banking Sector

Conclusion

AI has brought about revolutionary changes in banking.Forget the physical branches, AI brings about a whole new world of modern banks. The expansion and growth is tremendous with the new banking services enabled by AI. The penetration is increased and cost effectiveness has turned to betterment.How we deal with our money is being decided by the dual computational intelligence-AI and ML. The banking sector has been given a new structure of meeting the demands of the customers, in a convenient, safe and smart way. The financial institutions need to notice the need of the hour. They have realized that technology is not expensive or complicated to learn; everything is bundled together in a smartphone that an ordinary man can easily operate (Donepudi, 2017).

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