DSAR Assignment-2: Solution

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No.	Question & Answer
01	**What are the 5 major common challenges of the telecom industry, and how to overcome them using AI?**

Ans: The Challenges Faced by Telcos Today

Today's communications service providers (CSPs) face both internal and external challenges.

Poor Network Management

Global traffic and the need for more network equipment are growing dramatically, resulting in more complex and costly network management.

Lack of Data Analysis

Telecoms struggle to leverage the vast amounts of data collected from their massive customer bases over the years. Data may be fragmented or stored across different systems, unstructured and uncategorized, or simply incomplete and not very useful.

High Costs

Following massive investments in infrastructure and digitalization, industry analysts expect telecoms' global operating expenditures to increase by billions of dollars. Many telecoms face a financial crunch and must find ways to improve their bottom lines.

Crowded Marketplace

Telecom customers are demanding higher quality services and better customer experience (CX) and are known to be especially susceptible to churn when their needs are not met.

6 Common Applications of AI in the Telecom Sector

Considering their challenges, forward-thinking CSPs have focused their AI investments on applications that help them address these challenges. In these areas, AI has already begun to deliver tangible business results.

Network Optimization

5G networks began to roll out in 2019 and are predicted to have more than 1.7 billion subscribers worldwide – 20% of global connections — by 2025. AI is essential for helping CSPs build self-optimizing networks (SONs) to support this growth. These allow operators to automatically optimize network quality based on traffic information by region and time zone. AI in the telecom industry uses advanced algorithms to look for patterns

within the data, enabling telecoms to both detect and predict network anomalies. As a result of using AI in telecom, CSPs can proactively fix problems before customers are negatively impacted.

Predictive Maintenance

AI-driven predictive analytics are helping telecoms provide better services by utilizing data, sophisticated algorithms, and machine learning techniques to predict future results based on historical data. This means operators can use data-driven insights to monitor the state of equipment and anticipate failure based on patterns. Implementing AI in telecoms also allows CSPs to proactively fix problems with communications hardware, such as cell towers, power lines, data center servers, and even set-top boxes in customers' homes. In the short term, network automation and intelligence will enable better root cause analysis and prediction of issues. Long term, these technologies will underpin more strategic goals, such as creating new customer experiences and dealing efficiently with emerging business needs.

Virtual Assistants for Customer Support

Another application of AI in telecom is conversational AI platforms. Also known as virtual assistants, they have learned to efficiently automate and scale one-on-one conversations. AI adoption in telecom helps contend with the massive number of support requests for installation, set up, troubleshooting, and maintenance, which often overwhelm customer service centers. Using AI, operators can implement self-service capabilities that show customers how to install and operate their own devices.

Robotic Process Automation (RPA) for Telecoms

CSPs have vast numbers of customers engaged in millions of daily transactions, each susceptible to human error. Robotic Process Automation (RPA) is a form of business process automation technology based on AI. RPA can bring greater efficiency to telecom functions by allowing telcos to more easily manage their back-office operations and large volumes of repetitive and rules-based actions. RPA frees up CSP staff for higher value-add work by streamlining the execution of complex, labor-intensive, and time-consuming processes, such as billing, data entry, workforce management, and order fulfillment. According to Statista, the RPA market is forecast to grow to 13 billion USD by 2030, with RPA achieving almost universal adoption within the next five years. Telecom, media, and tech companies expect cognitive computing to "substantially transform" their companies within the next few years.

Revenue Growth

AI has a powerful ability to unify and make sense out of a wide range of data, such as devices, networks, mobile applications, geolocation data, detailed customer profiles, service usage, and billing data. Using AI-driven data analysis, telecoms can increase their rate of subscriber growth and average revenue per user (ARPU) through smart upselling and cross-selling of their services. By anticipating customer needs using real-time context, telecoms can make the right offer at the right time over the right channel.

02   What problems is the banking industry facing now?

Ans: **WHAT IS FINTECH IN RELATION TO BANKING?**

Fintech is the introduction of technology into the finance industry. Concerning banking, this is many things. Technology allows financial institutions to completely transform how money is held, received, sent, invested, monitored, analyzed, and so much more.

1. VIRTUAL PAYMENTS

Payments continue to be one of the most disruptive and dynamic aspects to banking. Innovations are boosting customer expectations and intensifying competition globally. With friction endemic in almost every legacy payment system, the search for frictionless digital payment experiences continues. PayPal, for instance, crossed 250 million active users worldwide. Apple Pay and Amazon Go are adding new users rapidly. Similarly, Tencent and Alipay are setting new records for digital payment transactions in China. Contactless in-store payments were about $2 trillion globally and will triple by 2024.

Driving volume-based fee growth in payments is expected to become increasingly challenging for card issuers in 2023. Cheaper digital solutions from nontraditional players and expensive reward programs may make it difficult for card issuers to increase fee income. This challenge is facing banks in 2023. Banks will have to get faster, more efficient, and cheaper for both consumers and businesses.

2. CYBER-SECURITY

The banking sector is the most targeted area by hackers and fraudsters for apparent reasons. Casey Merolla says: "Banks face a delicate balance between customer experience and fraud management: while prevention practices can create friction and a declined customer is often an unhappy customer, fraud events can result in lost relationships."

Financial crime costs the global economy $2.1 trillion yearly – more than the combined GDP of Saudi Arabia, Pakistan, Switzerland, and Ireland. AML compliance costs $83.5 billion a year. Approximately $2 trillion a year is laundered, with only 1% getting caught by regulators. Fraud detection and security issues are a big, costly headache for the banking industry

3. MAXIMIZING OPERATIONAL EFFICIENCY

To remain competitive in an increasingly saturated market – especially with the more widespread adoption of virtual banking – banking firms have had to find a way to deliver the best possible user experience to their customers. Internally, the challenge is to maximize efficiency and keep costs as low as possible while maintaining maximum security levels.

Automation is already significantly impacting asset management and other industries across the board. According to the International Federation of Robotics (IFR), at a global level, the adoption of automation is accelerating, driven by increased global competitiveness and the need to boost productivity and the quality of services.

4. VIRTUAL CUSTOMER SERVICE

Customer service is a must for banks, whether they're brick and mortar or virtual. Customer service is meant to solve customer problems in a friendly and quick manner while helping banks save money through speed and customer lifetime value. A major challenge in the banking industry is large departments that aren't using their human resources wisely (too many people doing too little). The question has remained; how to enhance communication?

5. ADOPTION OF NEW TECHNOLOGY

A major challenge for banks today is the adoption of new technology. Due to legacy solutions and out-of-date business processes, larger organizations have a hard time adopting new proccesses and tools, making it – according to experts – the biggest challenge in the financial industry for 2023.

Despite proven effectiveness in other financial sectors, banks are in no hurry to apply artificial intelligence, blockchain, or cloud computing actively. Meanwhile, recent studies show that customers expect to receive service from banks with minimal participation of consultants. For the modern consumer, the autonomy and reliability of banking services are essential.

03   How is artificial intelligence used in banking?

Ans: The following are 5 applications of Artificial Intelligence in banking:

- **Customer service/engagement (Chatbot)**

Chatbots deliver a very high ROI in cost savings, making them one of the most commonly used applications of AI across industries. Chatbots can effectively tackle most commonly accessed tasks, such as balance inquiry, accessing mini statements, fund transfers, etc. This helps reduce the load from other channels such as contact centres, internet banking, etc.

- **Robo Advice**

Automated advice is one of the most controversial topics in the financial services space. A robo-advisor attempts to understand a customer's financial health by analyzing data shared by them, as well as their financial history. Based on this analysis and goals set by the client, the robo-advisor will be able to give appropriate investment recommendations in a particular product class, even as specific as a specific product or equity.

- **General Purpose / Predictive Analytics**

One of AI's most common use cases includes general-purpose semantic and natural language applications and broadly applied predictive analytics. AI can detect specific patterns and correlations in the data, which legacy technology could not previously detect. These patterns could indicate untapped sales opportunities, cross-sell opportunities, or

even metrics around operational data, leading to a direct revenue impact.

- **Cybersecurity**

AI can significantly improve the effectiveness of cybersecurity systems by leveraging data from previous threats and learning the patterns and indicators that might seem unrelated to predict and prevent attacks. In addition to preventing external threats, AI can also monitor internal threats or breaches and suggest corrective actions, resulting in the prevention of data theft or abuse.

- **Credit Scoring / Direct Lending**

AI is instrumental in helping alternate lenders determine the creditworthiness of clients by analyzing data from a wide range of traditional and non-traditional data sources. This helps lenders develop innovative lending systems backed by a robust credit scoring model, even for those individuals or entities with limited credit history. Notable companies include Affirm and GiniMachine.

04   **What are the examples of artificial intelligence in banking?**

Ans: Banks are capturing the artificial intelligence by administering it into daily operational workflow by including changes in the values, employment and information patterns. Some of the application areas of artificial intelligence in the banking industry are listed as follows:

1. Refining Consumer Participation

Artificial intelligence helps understand the customers better. The data gathered from the customer's choices and preferences enable AI to lead machines to decode the next decisions and thus create a personalized container of information for each customer.

This, in turn, is helpful for the banks to customize the buyer experiences as per their choices, in turn improving satisfaction and loyalty towards the institute.

Interactive Voice Response System (IVRS) are examples of such AI-led systems that include voice assistance to customers. It guides the customers by understanding their queries in the right direction by routing calls to the correct department as well as assisting them with the transaction and other banking-related issues in real-time.

2. Wealth Supervision

These customized plans for customers not only benefit the banks by increasing their customer-base but also helps the user to manage their wealth in hand with personalized inputs and advice on risk and investment plans. Involving AI-led customer service to meet the front office standards is a challenge with the diverse language set in countries like India.

3. Examining Data to Enhance Defence

AI has the power to foretell future trends by interpreting data from the past. This property, when associated with machine learning, will help produce data-driven predictions to counter cases of capital laundering and identifying fraud.

4. Upgrading Security

Unusual data pattern recognizing property of AI-led machines helps banks tighten security and recommend changes by identifying loopholes in existing processes. Deceptive emails and log reports, patterns in breach of process flows can be tracked by artificial intelligence to provide better security in the existing methods.

5. Interfacing Emotions

AI-led machines use technology that identifies the emotions of the customers based on the text they use to input requirements. Based on this, the devices respond, suiting the tonality and fabrication of the words used by the customer. Natural language processing helps this happens. Read more about the applications of natural language processing.

This not only a realistic experience but also helps banks save massive costs on human resources and large chunks of time.

Chatbots are examples of AI in banking that are replacing the front-desk scenes at the banks. These AI-led machines provide next level digitized and customized interactive experiences to the customers. Learn more about creating a chatbot using Python.

| 05 | How do insurance companies use AI to mitigate risk? |

Ans: In the last decade, Artificial Intelligence (AI) has emerged as the game-changing technology in the insurance sector. Apart from driving data transformation, it has been key in creating more efficient claims application and management systems as well as augmenting hyper-personal insurance products and services. But perhaps its most significant impact lies in risk management, particularly in claims and underwriting, where it is being utilised along with other technologies, such as Machine Learning (ML), to identify and minimise risks, detect frauds, and find a balance between risks and opportunities.

Optimising risk selection:
Insurers are leveraging AI to identify underwriting risks and optimise risk selection. Smart algorithms comb through industry databases to cull pertinent data on customers, efficiently segregating them into pre-decided pricing categories. AI-based risk detection is utilised to identify credit risks, governance and compliance risks, operational risks, market risks, liquidity risk, trading risks, cyber risks, and the criminal risks, such as fraud or money laundering.

Embedded AI and real-time integration with industry databases have also helped to make the process of underwriting, including risk selection and pricing, faster and more efficient,

significantly improving customer experience. For insurance companies, these technologies are fast emerging as a key competitive tool for customer acquisition and retention. Given the prominence of IoT and tracking devices in our life, and their access to precise and critical data, AI-related technologies will gain further importance in data analysis, risk selection, and pricing.

Smart claim processing:
From chatbots for quick resolutions to ML applications, intelligent tools have completely overhauled the claims processing, making it more efficient while reducing risks. When it comes to risk management, data analytics has gone a long way in automating fraud detection, identifying patterns in claim volumes, and further strengthening loss analysis.

One of the biggest concerns for an insurance company is fraudulent claims. Investigating each claim can take up time and valuable resources. Today, visual analytics, involving the analysis of pictures and videos, has sped up the processes. Insurance companies can carry out preliminary investigations with minimal resources while relying on highly precise data, thereby weeding out fraudulent claims.

Predictive analytics:
Predictive risk management is a crucial aspect of any insurance business. While underwriters perform due risk selection when deciding pricing, there is only so much data that a human can process. With the massive amounts of data at our disposal today, predictive analytics has necessarily been taken over by AI-based technologies. Smart predictive algorithms can scan through data to identify patterns in outlier claims- cases that result in unexpected huge losses.

This allows insurance companies to plan their policies so as to reduce chances of outlier claims. Predictive analytics can also help identify common risk factors to incentivise safe behaviour, thereby reducing overall claim volumes. For instance, health insurtech looks at hospitalisation data to identify high risk lifestyles. Consequently, the insurance company can incentivise safe practices that reduce the chances of hospitalisation among its customers.

Addressing liabilities:
One of the biggest challenges presented by AI-based solutions is in fixing liabilities. The shift from human to technology in decision making creates a grey area when it comes to decision making that could eventually lead to governance and compliance issues. As embedded AI technologies become a critical component of the underwriting process, we must be aware of unintended biases that can arise out of their implementation. While algorithms are touted as failsafe mechanisms to calculate risks, these must be applied keeping in mind certain social-cultural factors, and this is where machines can make mistakes.

Failure to account for these factors can give rise to two main liabilities – bias in claim settlement and discriminatory underwriting. Insurtech algorithms decide underwriting pricing based on factors like gender, creditworthiness, and social class. The model output may carry bias against any one factor even if the other variables meet the desired standard. Similarly, in the case of claims, it can dismiss meritorious claims based on an error in fraud detection.

AI-human collaboration:
Human-AI collaboration is not just important for ensuring the 'human' factor, it is also a necessary risk mitigation strategy. While machines can perform complex calculations, we need humans for emotional intelligence, such as to identify biases, and to ensure human-centric outcomes, creating a value add in both products and services.

An article published last year pointed out the vulnerability of AI-ML technologies to unintentional and intentional risks, calling for human oversight of critical decisions. For instance, human intervention is necessary to determine patterns of bias or discrimination in claims or underwriting. This also opens up the possibility of new business models addressing future liabilities that may arise out of AI usage, such as robo-advice.

AI and Blockchain:
AI has also been instrumental in complementing blockchain transition in the insurance industry. The digital distributed ledger format of the Blockchain decentralises data, easing access, and ensuring transparency. AI automates Blockchain data gathering, allowing adjusters to quickly settle claims with lower risk of fraud. Similarly, IoT with blockchain can drive hyper-personalisation while reducing the risk of discriminatory underwriting by providing the underwriter with highly accurate and relevant data. In this manner, it can further leverage hyper-personalisation of insurance products.

More importantly, the transparent nature of the blockchain minimises risks of fraud, while optimising risk selection. For instance, blockchain augmented AI-powered healthcare analytics ensures accurate health record keeping, thereby helping reduce risks associated with underwriting or claims selection.

With the growing prominence of embedded AI-based technologies in our life, insurers have access to unprecedented amounts of data. This has provided them with unparalleled insight into their consumers, allowing them to improve customer experience, develop personalised products, and add value to the insurance value chain. However, we must stay vigilant towards the risks posed by the use of such technologies. It is vital that insurance companies undertake frequent internal risk evaluations to assess the safety of AI systems and prepare against any possible failures.