**Business Understanding**

**Instructions:**

Please share your answers filled in-line in the word document. Submit code separately wherever applicable.

Please ensure you update all the details:

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**Topic: Business Understanding**

**Instructions:** Learn to understand the business objective(s) and constraint(s) based on the business problem statements. You should identify and frame statements using the words “maximize” and/or “minimize” for objective(s) and constraint(s) (for example: “maximize profit” “minimize risk”, etc.)

Q1. For the below listed business problems, draft the business objectives and constraints.

**Hint:**

* Objective(s) implies the goals to be achieved in terms of maximizing & minimizing.
* Constraint(s) are the challenges/limitations in achieving the objectives.

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| **S.no** | **Business Problem** |
| **Hint:** | Smart data platforms can bring together customer transactions data and data from real-time communication streams to disclose the insights concerning customers feelings about the services which allows addressing the satisfaction-related issues and churn prevention.  **Sol: Hint**  Business Objective:  Minimize: Churn rate (churning implies customers going to another company for their needs)  (or)  Maximize: Customer satisfaction (satisfaction will make customer more loyal to the brand)  Business Constraints: Lack of data coverage for all customers |
| 1 | Advanced targeting allows predicting needs, preferences, and customers’ reaction to the telecommunication services and products on offer by segmenting their market and targeting the content according to each group.  Business Objective: To Improve customer engagement and improve Sales  Maximize: Customer Satisfaction and Retention . Targeted Promotions  Minimize: Wasted Resources and time. Marketing Cost  Business Constraints: Data Privacy , Budget limitations for analytics tools. |
| 2 | Telecommunication companies tend to regard the customers’ engagement process and internal channels as a guarantee of smooth functioning of the operations. Network management and optimization gives an opportunity to identify the root causes.  Business Objective: Identifying and resolving issues early, improving service quality.  Minimize: Customer Complaints, Operational Costs  Maximize: Network uptime, service quality  Business Constraints: Limited real time data access |
| 3 | Ensuring the high-quality performance of the product according to the customer’s requirement is not possible without applying smart data solutions.  Business Objective: Deliver high-performing product  Minimize: Defects and performance issues  Maximize: Product quality and customer satisfaction  Business Constraints: Limited resources, time and data availability |
| 4 | Collection of positive & negative reactions to the service or product from social media sources, recent trends via customer sentiment analysis may provide an opportunity to utilize mechanisms for direct responding.  Business Objective: Improve customer engagement and satisfaction through social media  Minimize: Negative feedback and delayed responses to customer complaints.  Maximize: Positive customer interactions and brand reputation.  Business Constraints: Limited resources, real-time monitoring challenges, and data privacy regulations. |
| 5 | Acquiring as many subscribers as possible remains a critical goal. In recent years, the number of users has been growing extremely fast and pricing emerged as a tool to limit congestion and increase revenue at the same time.  Business Objective: Managing network performance and increasing revenue  Maximize: Network efficiency  Minimize: Operational Cost  Business Constraints: Network capacity limitations, Pricing sensitivity |
| 6 | Customers usually search for better & cheaper services so the telecommunication companies measure, manage, and predict the customer lifetime value (CLV). Smart solutions process real-time insights based on customer purchasing behavior, activity, services utilized, and average customer value.  Business Objective: Predict and increase Customer Lifetime Value (CLV) using smart data insights.  Minimize: Marketing cost, Customer churn  Maximize: Customer Stable, Customer Lifetime value  Business Constraints: Real time data, privacy, data accuracy |
| 7 | In telecommunications, companies prevent bypass fraud by using big data to review the source of transactions, the cost of the call, and the destination number, in real-world situations.  Business Objective: Detect and prevent bypass fraud using big data analytics  Minimize: Revenue loss, fraud Incidents, Network abuse  Maximize: Fraud detection accuracy , security  Business Constraints: Real time data processing, cost of big data |
| 8 | Identify security issues, conduct predictive analysis, and use machine learning-based solutions to analyze any patterns of threats and automated escalations to resolve issues before they cause serious damage.  Business Objective: Identify security alerts fastly using the machine Learning analytics  Minimize: System Downtime, Response Time  Maximize: System Uptime, Automation in response  Business Constraints: Real time data processing, False alerts |
| 9 | Retail industry uses AI systems with built-in machine learning algorithms to collect and analyze data regarding products, transactions, etc. Based on findings from data, systems estimate the best strategies that can be implemented for the profit of the business  Business Objective: Finding best strategies using AI systems for getting profit in the business  Minimize: Operational costs, wrong product recommendations  Maximize: Sales and profit , customer satisfaction  Business Constraints: Data quality and availability |
| 10 | The price determination process depends not only on the costs to produce an item but on the wallet of a typical customer and the competitors' offers. The tools for data analysis bring this issue to a new level of its approach.  Business Objective: Set optimal prices using data on cost, customer ability, and competitor pricing.  Minimize: Pricing errors, customer loss due to high pricing.  Maximize: profit margins, competitive advantage.  Business Constraints: Incomplete customer data. |
| 11 | Inventory deals with stocking goods for their future use. Inventory management refers to stocking goods to use in times of crisis. The retailers aim to provide the right product at the right time in the proper condition.  Business Objective: Availability of Best products at good time.  Minimize : Stockouts, storage costs  Maximize: Product availability , Customer satisfaction  Business Constraints: Storage space limit, demanding forecasting accuracy. |
| 12 | Customer feedback is taken as an important aspect of the retail store. Considering customer feedback and making changes can increase the store profits and customer satisfaction.  Business Objective: To take best feedback from customers.  Minimize: Negative reviews , customer satisfaction  Maximize: Useful feedback from customer, Service improvement.  Business Constraints: Feedback Collection, Limited Response. |
| 13 | Businesses have to be extremely cautious about choosing a new store's location. To make such a decision, a great deal of study regarding the location is required which gives us a basis for understanding the potential of the market. Also, special settings concerning the location of other stores are considered.  Business Objective: Choose best location for new store based on market and competition.  Minimize: Risk of poor location, Customer inaccessibility  Maximize: Sales and profit, Best service  Business Constraints: Real estate availability and cost |
| 14 | Airlines use AI systems with built-in machine learning algorithms to collect and analyze flight data regarding each route distance, altitudes, aircraft type, weight, weather, etc. Based on findings from the data, systems estimate the optimal amount of fuel needed for a flight.  Business Objective: We use AI to estimate and optimize fuel requirements.  Minimize: Fuel wastage, Operating Costs.  Maximize: fuel efficiency , Flight safety  Business Constraints: Accuracy of weather, route distance, real time processing time. |
| 15 | Airlines and flight operators can significantly reduce their operational costs and overhead by optimizing their sales revenue in the longer term with AI-powered systems (dynamic pricing)  Business Objective: Used AI based dynamic pricing to maximize long term sales.  Minimize: Pricing errors, unsold seats  Maximize: Revenue per seat, Profit margins  Business Constraints: Real time data accuracy. |
| 16 | As flight delays are dependent on a huge number of factors, an intelligent system can be applied to analyze huge datasets in real time to predict delays and re-book customers’ flights in time.  Business Objective: Use AI for predict delay and re-book customer flight.  Minimize: Flight delays, customer satisfaction  Maximize: Customer service, customer satisfaction.  Business Constraints: Real-time data availability and accuracy |
| 17 | By analyzing specific customer’s flight and purchase patterns, and coupling it with historic data, algorithms are able to point out suspicious credit card transactions and detect fraudulent cases thereby saving airline and travel companies millions of dollars every year.  Business Objective: Detect and prevent **fraudulent credit card transactions** using AI algorithms  Minimize: Financial losses due to fraud, customer complaints related to fraud.  Maximize: Customer trust and Data Security, and Data Privacy.  Business Constraints: Real – time fraud detection requirement. |
| 18 | What is the optimal way to schedule an airline’s crew to maximize their productive time and balance their working hours to increase employee retention?  Business Objective: Design an intelligent system to optimize crew schedule  Minimize: Specific time for crew members, overworking.  Maximize: Employee satisfaction and retention  Business Constraints: Legal limits on working hours. |
| 19 | The image of the enterprise in the community largely influences the recruitment process. A person may not be interested in applying for a job in an enterprise whose goodwill is low.  Business Objective: Improve the company’s image in the community to attract better talent and recruitment.  Minimize: Negative public feedback  Maximize: Positive brand image, Number of quality image.  Business Constraints: Time required to build/improve reputation, Market competition and media influence |
| 20 | If the job is boring, hazardous, tension ridden, and lacking in opportunities for advancement, very few people may be available for such jobs.  Business Objective: Improve job Attractiveness for employees.  Minimize: Employees overwork, employees dissatisfaction.  Maximize : Job safety, Give chance for them.  Business Constraints: Improving job conditions. |
| 21 | One of the greatest challenges that an HR leader could face is keeping the staff satisfied.  Business Objective: HR have to staff will satisfied from their work  Minimize: Staff Overwork, staff disatisfaction  Maximize: Team Discussion , Friendly environment.  Business Constraints: Varying employees expectation. |
| 22 | Organizations face huge costs resulting from employee turnover. Some costs are tangible such as training expenses and the time it takes from when an employee starts to when they become a productive member.  Business Objective: Productivity loss due to employee turnover.  Minimize: Employee turnover rate, Time to productivity.  Maximize: Hiring and training processes, Workforce productivity.  Business Constraints: Availability of skilled candidates. |
| 23 | Attracting the attention of a candidate and driving the traffic towards a company’s hiring page is one place where an AI can see widespread use.  Business Objective: Use AI model to attract recruitment and attract skilled and quality candidates.  Minimize: Unqualified candidates, or Unskilled candidates.  Maximize: Quality of applicants.  Business Constraints: Availability of AI tools and talent |
| 24 | HR departments are responsible for the implementation of training programs. Some of these programs are designed to ensure your staff follows policies and procedures while others are used for job advancement. In some job settings, employees are required to complete certain certification programs.  Business Objective: Enhance employee skill and increased certification programs.  Minimize: Training time and costs, skill gaps among employees.  Maximize: Employee performance growth.  Business Constraints: Limited training budget and time. |
| 25 | Understanding people and why they decide to stay at or leave a job is arguably one of the most important questions for HR to answer. Identifying attrition risk calls for advanced pattern recognition in surveying an array of variables.  Business Objective: Use data to understand employee behavior and reduce attrition.  Minimize: Loss of experienced talent, Cost of rehiring and retraining  Maximize: Employee retention and satisfaction, Accuracy of attrition risk prediction  Business Constraints: Data Privacy and security regulations. |
| 26 | Your HR department likely deals with many requests and queries from employees throughout the day. This could include queries about available time off, vacation time, or HR issues with their paycheck. They may also receive requests for shift swaps and other scheduling problems.  Business Objective: Streamline HR query handling to improve response time and employee satisfaction.  Minimize: Response time for HR queries, Employee dissatisfaction due to delayed answers  Maximize: Employee satisfaction and self-service usage  Business Constraints: Budget for automation tools or AI chatbots |
| 27 | In modern manufacturing, production can often depend on a few critical machines or cells. The same data that provides a manufacturer real-time monitoring can be analyzed through data science to improve asset management and prevent machine failure.  Business Objective: Use data science to optimize machine performance and predictive analysis.  Minimize: Maintenance costs, production losses due to critical machine breakdowns.  Maximize: Predictive maintenance accuracy.  Business Constraints: Limited or incorrect information or data stores in old machines. |
| 28 | Plan to help manufacturers analyze if their product and services are meeting all objectives for initial processes such as the DMAIC framework. They need a strategy to be used to determine which product has the highest impact. Helping in minimizing errors and losses and eliminating unnecessary human effort can increase the overall quality of products and services.  Business Objective: Implement a structured DMAIC-based strategy to improve product/process quality, identify high-impact products, and reduce inefficiencies.  Minimize: Process errors and losses, Waste and inefficiencies  Maximize: Product quality and process efficiency  Business Constraints: Time and cost of training and implementation |
| 29 | Some flaws in products are too small to be noticed by the naked eye even if the inspector is very experienced. The time taken for inspection also slows down the production.  Business Objective: Use AI/ML based visual infection to detect defects.  Minimize: Production delays, Inspection time.  Maximize: Accuracy of defect detection, Production speed.  Business Constraints: High cost of AI systems and Cameras. |
| 30 | A business wants to make design enhancements/upgrades to the current version of the product to increase consumption of the product and thereby the brand image. They need to identify the features which most of the customers use and they need to understand customer behavior towards the product, brand, and their interests.  Business Objective: To enhance product design by identifying key features used by customers and understanding customer behavior,  Minimize: Customer churn , Negative feedback  Maximize: Customer satisfaction and engagement, Sales and market share.  Business Constraints: Limited budget for redesign, research. Data privacy and issues. |
| 31 | For many contract manufacturers, product development is part of the service they provide so having data to validate their choices to their customer is crucial. To validate the choices, they need to depend on a wide range of factors such as value for money, quality, reliability, and service. It is crucial to gather such data.  Business Objective: To help contract manufacturers validate product development decisions using reliable data on quality, cost, and customer satisfaction.  Minimize: Minimize product failure risk, rework costs, and customer dissatisfaction.  Maximize: Maximize product quality, customer trust, and data-driven decision-making.  Business Constraint: Limited access to high-quality data, time constraints, budget limitations, and dependency on third-party suppliers. |
| 32 | Manufacturers are able to detect all kinds of issues on their routine methods of production, from bottlenecks to unprofitable production lines. Companies are taking a deeper look into their logistics, inventory, assets, and supply chain management. The insights will bring high-value insights that uncover potential opportunities not just in the manufacturing process but also in the packaging and distribution.  Business Objective: To optimize manufacturing operations by identifying inefficiencies and uncovering opportunities in logistics, inventory, assets, and supply chain.  Minimize: Minimize production delays, bottlenecks, waste, and unprofitable operations.  Maximize: Maximize operational efficiency, profitability, resource utilization, and supply chain visibility.  Business Constraints: Data integration across multiple systems , High implementation cost. |
| 33 | The Department of Employment, Skills and Small Business carries out research to identify skill shortages in the labor market. Factors for skilled labor shortage analysis are adequate availability of vacancy, job postings and recruitments, applicants’ qualifications for the job, factors affecting the position to be filled, such as required licensing requirements, qualification and experience requirements are few of those constraints that should be considered.  Business Objective: To identify and address skill shortages in the labor market through effective analysis of job vacancies, applicant qualifications, and recruitment challenges.  Minimize: To identify and address skill shortages in the labor market through effective analysis of job vacancies, applicant qualifications, and recruitment challenges.  Maximize: Maximize job-market alignment, availability of skilled workers, and efficiency in recruitment.  Business Constraints: Incomplete or outdated job data, unskilled labour |
| 34 | The world is constantly changing. Thus, the sports industry is faced with the challenge of trying to predict the next trend, the next big idea that will capture their audience. Coupling this challenge with that of technology, it’s clear that some sports teams and venues will always be at odds.  Business Objective: The advanced technologies and data analytics tools accurately predict sports trends.  Minimize: Minimize missed market opportunities, fan disengagement, and poor adoption of emerging technologies.  Maximize: Maximize audience engagement, trend adoption speed, and revenue from innovative fan experiences.  Business Constraints: Rapidly changing trends, budget limitations |
| 35 | Betting companies analyze the massive amounts of data generated by sporting events all around the world to come up with probabilities for future outcomes. Goes without saying that predictive modelling using machine learning techniques plays an important role in this.  Business Objective: To accurately predict outcomes of sporting events using machine learning models for better odds-making and improved customer experience.  Minimize: Minimize prediction errors, financial losses due to inaccurate odds, and data processing delays.  Maximize: Maximize prediction accuracy, real-time data analysis, customer trust, and betting platform engagement.  Business Constraints: Need for real time processing, Dependence on data quality and data consistency. |
| 36 | Stadium management and sponsors have studied the average profile of their audience carefully and have made targeted advertisements that appeal to their audiences. The broadcasters and stadium management have placed those ads carefully after conducting a careful analysis of its own resources for maximum impact.  Business Objective: To enhance audience engagement and advertisement effectiveness by using targeted ads based on audience profiling and resource analysis.  Minimize: Minimize ad wastage, irrelevant promotions, and poor audience response.  Maximize: Maximize ad relevance, audience engagement, sponsor satisfaction, and return on investment (ROI).  Business Constraints: Limited access to real-time audience data, Varying audience demographics |