**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:  Maximize: the offers on the given prepaid plans  Minimize: the customer churn rate  Business Constraints: budget problem for providing the less price offer |
| 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:  Minimize: Network downtime, call drops, and customer churn  Maximize: Customer engagement, network performance, and revenue  Business Constraints: Limited infrastructure & spectrum |
| 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:  Minimize: the errors in the solution of the product .  Maximize: the skilled people which do work of smart data solution.  Business Constraints: solution must be reliable. |
| 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:  Minimize: the problem mentioned in the negative reaction  Maximize: the spending time of reading the positive reactions  Business Constraints: timely updating the service and product |
| 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:  Maximize: user experience of product  Minimize: the problems in the services  Business Constraints: hard to identify the problems in product and services without feedback and surveys |
| 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:  Minimize: churn rate and time delay response to the user problems  Maximize: satisfaction level of user and the availability of services in all areas  Business Constraints: investing the more time on platform for user’s need |
| 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:  Minimize: the fraud call and identification of fraud transactions  Maximize: the services of fraud dectors and maximize the user experience  Business Constraints: dentification of fraud in less \_time interval proper working of all services |
| 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:  Minimize: the security issues/error in the solution of model  Maximize: the accuracy of model /safety solutions  Business Constraints: requirement of time to idetefy the security issue the and accuracy of the model |
| 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:  Minimize: the purchasing the of product which is less sold /errors in the model output  Maximize: the product quality /accuracy of the ml model /reliability of product  Business Constraints: privacy issues for getting the data of customers sometimes model gives wrong result |
| 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:  Minimize: the product price /loss (product which is not in demand)  Maximize: revenue (increasing the most sold product)  Business Constraints: customers choice may change (prediction may differ depend on mude of customes) |
| 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:  Minimize: loss of food /dissatisfaction of customers  Maximize: the utility of food/satisfaction of customers /stocking goods in inventory  Business Constraints: if no crisis happen food may get waste due to expairy |
| 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:  Minimize: the things which is mentioned in the negative feedback  Maximize: most selling product quantity  Business Constraints: feedback is not given in proper format |
| 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:  Minimize: the risk of less famous location  Maximize: the search time of location  Business Constraints: best location may have high price |
| 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:  Minimize: the unnecessary wastage of fuel /longest distance  Maximize: efficiency of plane /optimize route  Business Constraints: sometimes model gives false analysis /high budget for ai system |
| 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:  Minimize: the price of ticket for short distance travel/errors in systems  Maximize: the profit of company/passengers satisfaction  Business Constraints: operational cost may depend on various senarios/Ai system may give wrong result |
| 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:  Minimize: the factors due to which flight get delays  Maximize: the efficiency of intelligent system/ customers satisfaction level  Business Constraints: getting real time data in huge is difficult /time required for analysing the data |
| 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:  Minimize: the fraudulent cases /the travel of suspicious transactions /loss of company  Maximize: the profit of company /analysis of historic data  Business Constraints: not each person travel daily via flight so analysis may not accurate sometimes |
| 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:  Minimize: the unprofitable \_work/wastage of time  Maximize: productive time period /engaging with values people  Business Constraints: sometimes emergency may occur |
| 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:  Minimize: the work load of employees  Maximize: enterprise value in market  Business Constraints: if company is of specific work which is not preferable by every likeable |
| 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:  Minimize: the boring work /tension /the loss  Maximize: the opportunities for advancement/ profitable work  Business Constraints: likeable work may not be available in the company |
| 21 | One of the greatest challenges that an HR leader could face is keeping the staff satisfied.  Business Objective:  Minimize: workload of employees / boring work /tension  Maximize: the assignment of likable project /opportunities  Business Constraints: employee is happy with the assignment work /not having enjoyable work |
| 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:  Minimize: investment of money on each employee/the training time  Maximize: the productive work done by employee/ profit  Business Constraints: some work need specific time to invest |
| 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:  Minimize: the unusefull ads on the page /faulty response time on page  Maximize: the engagement time on page/the traffic on page  Business Constraints: huge cost may required /internal process may work properly |
| 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:  Minimize: Training cost, skill gaps, non-compliance  Maximize: Productivity, training completion, compliance  Business Constraints: Budget, time, regulatory requirements |
| 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:  Minimize: Employee attrition, hiring cost  Maximize: Retention, employee satisfaction, productivity  Business Constraints: Budget, data availability, privacy rules |
| 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:  Minimize: the work load of employee  Maximize: the salaries the of employee  Business Constraints: lack of time (some project must complete within deadline) |
| 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:  Minimize: the human operated machines  Maximize: the automated machines  Business Constraints: lack of real time data/ high budget |
| 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:  Minimize: Errors, losses, manual effort  Maximize: Product quality, process efficiency, customer satisfaction  Business Constraints: Budget, time, resource availability, technology adoption |
| 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:  Minimize: production of product  Maximize: the inspector / Ai enabled machines  Business Constraints: lack of budget /lack of skilled person |
| 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:  Minimize: the less used features  Maximize: the analysis of each feature  Business Constraints: lack of access to the customer privacy |
| 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:  Minimize: time delay of product development  Maximize: profit of the product  Business Constraints: lack of skilled people |
| 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:  Minimize: defective lines  Maximize: the production of each production line  Business Constraints: budget problem |
| 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:  Minimize: the diversified field of interest  Maximize: the skilling of people  Business Constraints: lakh of skills |
| 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:  Minimize: Wrong predictions, audience loss, operational costs  Maximize: Fan engagement, revenue, adoption of new trends/technology  Business Constraints: Budget, technology limitations, audience preferences, time to adapt |
| 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:  Minimize: prediction errors, financial risk, fraudulent activities  Maximize: the promotion of sport (most liked sports)  Business Constraints: if the player changes, then prediction may get wrong \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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:  Minimize: the less famous sports  Maximize: the promotion of famous sports  Business Constraints: audience type may not be constant |