**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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**Batch ID: Batch 1**

**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: 1. Customer ratings on various service provided to the customers  2. Analysis the smart data and identify the contents and corresponding segment so as to increases  the revenue  Minimize: Customers negative review  Business Constraints: Availability of exact data of customers need and preferences. |
| 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: The call drop rate  Maximize: The satisfaction index over the network.  Business Constraints: Overlook of unseen events like environmental condition , pricing limits due to competitive condition. |
| 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 failure of the product, minimize the negative review of the product.  Maximize: The performance quality of product  Business Constraints: If customer support is increased, then cost is going to increase and now a day customers are looking for low cost and best support. |
| 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: Negative sentiments by providing quality features in the product.  Maximize: : Quality of product and work on positive sentiment of customers.  Business Constraints: Getting various resources to collect the customer’s reactions. |
| 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: The subscriber’s base and optimize the operation cost so as to provide maximum benefit to the  Customers.  Minimize: Operation cost and negative reactions of customers  Business Constraints: Pricing of service is bottleneck. |
| 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: Customer’s switching rate  Maximize: customer’s life time value on the network.  Business Constraints: Designing dynamic modeling of offers. |
| 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: Farud at various points  Maximize: The profit of the company  Business Constraints: Some time it is not possible to process the data at various points which lead to trapdoors for fraud. |
| 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: Potential attacks and threats to the network  Maximize: The endpoint security  Business Constraints: Applying the various security mechanisms and monitors various points increase the cost of operation and hence the overall cost. |
| 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 wrong inference from such tools so as to take correct actions.  Maximize: The accuracy of predictions of customer’s satisfaction on various products.  Business Constraints: Identification of exact features of product satisfaction. |
| 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: Errors in prediction of the costs of product  Maximize: costs of product should be optimize.  Business Constraints: Designing dynamic cost model is challenge. |
| 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: The delivery of product time to the customers.  Maximize: Customers satisfaction index about the delivery and proper condition.  Business Constraints: Maintaining big inventory and space increases the operational cost. |
| 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: Customer complaints about the products  Maximize: Customer base and profit in turn  Business Constraints: Getting customer’s review using smart mechanisms and process with appropriate  Mechanisms or agency. |
| 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 mistakes in analyzing the sale of products in the given area.  Maximize: The inferences so as to make correct decision of selection of location.  Business Constraints: Availability of smart mechanisms and data so to have correct analysis. |
| 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: Fuel cost and operational cost in turn.  Maximize: The accuracy of prediction of data so as to optimize the cost of fuel.  Business Constraints: Environmental conditions and unseen events estimation. |
| 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: Fuel cost  Maximize: occupancy of seats and the efficiency of fuel  Business Constraints: data Privacy and infrastructure to manage the fuel |
| 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: customer satisfaction and revenue generation during delays.  Maximize: flight delays and operational costs.  Business Constraints: Adhere to safety regulations, data privacy laws, and contractual agreements while ensuring real-time decision-making capabilities. |
| 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: fraud detection accuracy and cost savings for airline and travel companies.  Maximize: financial losses due to fraudulent transactions and false positives.  Business Constraints: Ensure compliance with payment industry regulations, protect customer data privacy, and maintain seamless payment processes. |
| 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: crew productivity and increase employee retention through balanced working hours.  Maximize: crew fatigue and disruptions in flight schedules.  Business Constraints: Comply with labor laws and union agreements, ensure crew availability for flights, and manage costs effectively. |
| 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 negative impact of a poor reputation on the ability to attract top talent.  Maximize: the attractiveness of the enterprise to potential candidates by building a positive reputation.  Business Constraints: Maintain and improve the company's image within the community, respond to reputation challenges |
| 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 challenges associated with boring, hazardous, and high-stress jobs to attract more candidates.  Maximize: the appeal of the job by offering incentives, improving working conditions, and providing opportunities for advancement.  Business Constraints: Ensure safety and compliance in hazardous jobs |
| 21 | One of the greatest challenges that an HR leader could face is keeping the staff satisfied.  Business Objective:  Minimize: Employee Turnover and Dissatisfaction  Maximize: Employee Engagement and Job Satisfaction  Business Constraints: Budgetary Constraints, Legal Compliance, Resource Limitations |
| 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: recruitment, training, and onboarding expenses associated with turnover.  Maximize: employee retention and reduce turnover costs.  Business Constraints: Develop strategies to retain top talent, provide opportunities for skill development. |
| 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: Candidate Acquisition Costs (e.g., advertising expenses, recruitment agency fees)  Maximize: Candidate Engagement and Application Rates  Business Constraints: Budgetary Constraints, Data Security and Privacy |
| 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 gaps, compliance violations, and skill deficiencies.  Maximize: the effectiveness of training programs in ensuring policy compliance, skill development, and career advancement.  Business Constraints: Ensure that training programs align with organizational goals, meet certification requirements, and are cost-effective while addressing the specific needs of employees. |
| 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: attrition risk by identifying patterns and addressing underlying issues.  Maximize: employee retention and engagement through data-driven insights.  Business Constraints: Ensure that data collection and analysis methods comply with privacy 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:  Minimize: the administrative burden and potential delays in resolving HR-related issues.  Maximize: efficiency and responsiveness in addressing employee inquiries and requests.  Business Constraints: Ensure data privacy and security in handling sensitive employee information |
| 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: unplanned downtime, maintenance costs, and production disruptions.  Maximize: production efficiency and machine uptime through data-driven insights.  Business Constraints: Ensure data security, integrate data science solutions with existing manufacturing processes, and align asset management strategies with production goals. |
| 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, and unnecessary human effort in production.  Maximize: the effectiveness of the DMAIC framework in identifying and addressing issues in initial processes.  Business Constraints: prioritize areas with the highest impact on quality, and allocate resources efficiently to achieve overall quality improvement in products and services. |
| 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: Minimize production slowdowns due to lengthy inspection processes and the risk of undetected flaws.  Maximize: defect detection accuracy and efficiency through advanced inspection technologies.  Business Constraints: Ensure the cost-effectiveness of advanced inspection methods, integrate them seamlessly into the production process . |
| 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 risk of investing in features that do not resonate with customers.  Maximize: Maximize product consumption and brand loyalty by identifying and prioritizing features that align with customer preferences.  Business Constraints: Ensure a thorough understanding of customer behavior, preferences, and interests through data analysis, surveys, and market research |
| 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: the risk of making incorrect choices that may lead to customer dissatisfaction.  Maximize: customer satisfaction and confidence in product development choices by providing data-driven validation.  Business Constraints: Ensure data collection and validation processes are transparent, reliable, and comprehensive, covering factors such as value for money, quality, reliability, and service to meet customer expectations and build trust. |
| 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: Minimize production bottlenecks, unprofitable lines, and inefficiencies throughout the value chain.  Maximize: operational efficiency, cost savings, and profitability by gaining insights into all aspects of production, logistics, inventory, assets, and supply chain management.  Business Constraints: Ensure that data analysis covers all relevant areas of the manufacturing process, packaging, and distribution. |
| 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 negative impact of skill shortages on the labor market, job seekers, and employers.  Maximize: the accuracy and effectiveness of skill shortage identification through comprehensive data analysis and research.  Business Constraints:vacancy availability, job postings, applicant qualifications, and regulatory requirements |
| 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: the risk of falling behind in a rapidly evolving sports landscape.  Maximize: the ability to anticipate and adapt to emerging trends and technological advancements to stay relevant and engaging for the audience.  Business Constraints: Data Privacy Compliance, Regulatory Requirements, Algorithm Fairness, and Data Security. |
| 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: the risk of inaccurate predictions and financial losses.  Maximize: Accuracy  Business Constraints: Data Privacy Compliance, Regulatory Requirements, Algorithm Fairness, and Data Security. |
| 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: Ineffective Advertising, Wasted Resources, and Audience Disengagement  Maximize: Audience Engagement, and Revenue from Sponsorships  Business Constraints: Budget Constraints |