**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: Maximize market share within the telecommunications industry.  Providing dicounts and new services for new customers.  Minimize: Minimize marketing and advertising costs. And customers negative review  Business Constraints: Competition within the telecommunications market. And Availability of exact data of custoemrs and preferences.  Business success Criteria: 1.Achieve a specific market share target  2. Increase customer satisfaction scores by a specific margin  ML success Criteria: Develop accurate predictive models for customer needs, preferences, and reactions.  Economic Success Criteria: Achieve cost savings in marketing and advertising spend while maintaining or increasing revenue. |
| 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 satisfication index over the network  Business Constraints: Overlook of unseen events like environmental conditions, pricing limits due to competitive conditions.  Business success Criteria:  ML success Criteria:  Economic Success Criteria: |
| 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 products and its services  Maximize: customer care personel so as to provide high quality performnace  Business Constraints: If customer support increased, then product 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: faulty data and its wrong inference  Maximize: Quality of the product  Business Constraints: The correct reactions, may it be positive or negative through maximum possible sources so as to improve the accuracy of predictions.  And 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 subscribers 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 services 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: customers switching rate  Maximize:customers life time value of the network  Business Constraints: Designing dynamic modelling 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: the frauds at various points  Maximize: the profit of the company  Business Constraints: some time it is not possible the data at various points which leads to trapdoors for frauds. |
| 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 potential threats and attached to the network  Maximize: Endpoints securities  Business Constraints: Appling various security mechanisms and monitors across various points increases the cost of operation and hence 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 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 satisfactions. |
| 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 cost of products  **Maximize:** optimize the cost of product so that both side there will be win-win situation.  **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:** customer satisfication index about the delivery and proper conditions  **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: customers complaint about the products  Maximize: customer base and profit in turn  Business Constraints: getting customer’s reviews 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 sales 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: Operational costs related to flight operations, maintenance, and customer service.  Maximize: Sales revenue for airlines and flight operators.  Business Constraints: Competition within the airline industry and the need to balance pricing strategies with market dynamics. |
| 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: Reduce flight delays to improve customer satisfaction and operational efficiency.  Maximize: increase the number of flights to reduce delay flights  Business Constraints: Ensure that the system can scale to accommodate increasing volumes of flights and passengers. |
| 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: Reducing number of fraudulent cases by taking correct action  Maximize: Cost savings by preventing fraudulent transactions.  Business Constraints: Need to reduce fraudulent cases by blocking suspicious credit cards transactions for saving cost |
| 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: Minimize the workload on crew members  Maximize: Increase the number of crew members to share the workload and increase productive time  Business Constraints: Consider crew preferences, such as preferred routes or home base locations, to improve job satisfaction and retention. |
| 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: Reduce negative perceptions about the enterprise in the community  Maximize: Increase the goodwill of person by giving attraction of potential candidates to apply for jobs within the enterprise.  Business Constraints: Continuously monitor and analyze feedback, reviews, and data related to the enterprise's image in the community and adjust recruitment strategies accordingly. |
| 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: Minimize job vacancies and delays in filling these positions due to a lack of interested candidates.  Maximize: Availability of candidates willing to apply for and accept jobs  Business Constraints: Consider opportunities for job redesign to make tasks more engaging, less monotonous, or safer. |
| 21 | One of the greatest challenges that an HR leader could face is keeping the staff satisfied.  Business Objective:  Minimize: Reduce negative feedback from staff by providing good facilities.  Maximize: Increase employee satisfaction and engagement  Business Constraints: Align strategies for employee satisfaction with the organization's culture and values. |
| 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: minimize the costs associated with employee turnover  Maximize: employee retention by creating an environment that encourages employees to stay with the organization  Business Constraints: Offer competitive compensation packages and benefits to attract and retain talent in a competitive job market. |
| 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: costs associated with traditional recruitment methods  Maximize: volume of traffic directed towards the company's hiring page  Business Constraints: Ensure that AI-driven candidate attraction strategies align with the available budget for recruitment and talent acquisition. |
| 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: costs associated with designing, developing, and delivering training programs  Maximize: The process of training programs by providing new skillset  Business Constraints: Ensure that training programs are cost-effective and aligned with the available budget for employee development and training. |
| 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: Reduce negative feedback from staff by providing good facilities.  Maximize: Increase employee satisfaction and engagement  Business Constraints:  Train and support managers and leaders to effectively engage with and support their teams. |
| 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: Reducing delay in solving their issues.  Maximize: employee satisfaction by providing efficient and responsive support for their requests  Business Constraints: Integrate request and query handling systems with other HR for seamless process |
| 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: Reduce maintenance costs by implementing cost-effective preventive maintenance measures  Maximize: Maximize the utilization of manufacturing assets to minimize downtime and increase output.  Business Constraints: Ensure that investments in data science and asset management align with the available budget for maintenance and manufacturing improvements. |
| 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: unnecessary manual efforts  Maximize: quality of products and services  Business Constraints: implementation of strategies for quality assessment and impact analysis aligns with the available budget for process improvement and quality control. |
| 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: occurrence of defects in products  Maximize: quality of products  Business Constraints: investments in inspection technology, training, and processes align with the available budget for quality control |
| 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: Customer dissatisfaction by addressing any issues  Maximize: Increase the brand image and reputation  Business Constraints: investments in design enhancements and customer understanding align with the available budget for product development |
| 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: cost of gathering and managing data to ensure cost-effectiveness.  Maximize: customer satisfaction  Business Constraints: Provide customers with transparent information about the factors considered in product development choices and the validation process. |
| 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: waste in materials, resources, and time through optimized production  Maximize: generation of high-value insights that uncover potential opportunities for improvement in manufacturing  Business Constraints: investments in data analysis and process improvement align with the available budget for operations optimization. |
| 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: Optimize data collection processes to minimize the associated costs while gathering relevant information.  Maximize: identification and recognition of skill gaps in the labor force to inform workforce development  Business Constraints: data quality control processes to ensure the accuracy and reliability of labor market data used for analysis. |
| 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: disruption caused by rapid technological changes  Maximize: audience engagement by staying ahead of the curve and adopting new technologies and trends  Business Constraints: Implement new technologies and trends seamlessly into sports operations without causing significant disruptions. |
| 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: disruption to the audience's viewing  Maximize: The effectiveness of targeted advertisements placed within stadium  Business Constraints: investments in targeted advertising and strategic placements align with the available budget for stadium management and broadcasting. |
| 37 | Collection of positive & negative feedback to the services provided by college hostel. Considering student feedback about services and making changes can increase the student satisfaction.  Business Objective:  Minimize:  reduce the number of negative reactions and complaints from students regarding the services provided by the college hostel by providing good facilities.  Maximize:  Positive feedback by providing good and needful facilities on the daily basis to the student.  Business Constraints:  Identification of exact problems or needful facilities and providing such facilities and providing them for student satisfactions. |