**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:

**Name: Dhanashri Pawar Batch ID:** \_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: To enhance customer engagement and sales by using advanced targeting to segment  the market and deliver personalized telecommunication products and services.  Maximize: \_\_customer satisfaction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Minimize: \_\_\_\_\_churn rate, data privacy\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: market competition, customer response\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To improve service quality by leveraging network management and optimization to identify and address root causes of issues.  Minimize: \_\_\_\_\_\_\_network downtime\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_network performance and reliability\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_avalability of skilled technical staff\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To use smart data solutions to make sure products meet customer requirements with high quality.  Minimize: \_\_\_\_\_time and cost of quality\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_data quality and reliability\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_ Integration with existing systems and workflow\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To collect and analyze customer opinions from social media and trends to respond quickly and improve services.  Minimize: \_\_\_\_\_Negative customer sentiment\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_Positive brand engagement\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_Accuracy of sentiment analysis algorithms\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To gain more subscribers while using pricing strategies to manage congestion and increase revenue.  Maximize: \_\_\_\_\_\_Subscriber retention\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Minimize: \_\_\_\_\_Customer churn\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_Market competition and customer price 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: To predict and improve customer lifetime value by analyzing their behavior, activities, and purchases in real time.  Minimize: \_\_\_\_\_\_\_ Customer churn\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_\_ Customer lifetime value (CLV)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_\_ Data privacy and compliance\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To detect and stop bypass fraud by analyzing call sources, costs, and destinations using big data.  Minimize: \_\_\_\_\_operation delay identifying fraud\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_accuracy of fraud\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_legal and privacy regulation user data usage\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To prevent security threats using machine learning to find patterns, predict issues, and fix them before damage occurs.  Minimize: \_\_\_\_\_\_\_Downtime due to cyberattacks\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_Accuracy of threat detection\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_\_\_Real-time data processing capacity\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To use AI to study product and sales data and find the best strategies to increase profits.  Minimize: \_\_\_errors in decision making\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_profit margins\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_data privacy and security compliance\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To set prices by analyzing customer spending ability.  Minimize: \_\_\_\_\_\_\_\_\_Time spent on manual pricing decisions\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_\_\_\_Profit margins\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_Competitor price fluctuations\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To keep the right products in stock so they are available at the right time and in good condition.  Minimize: \_\_\_\_storage cost\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_customer satisfaction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_budget limitations\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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 improve store profits and satisfaction by making changes based on customer feedback.  Minimize: \_\_\_\_\_\_\_ negative reviews and customer complaints\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_shop profits, customer satisfaction and loyalty\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_employee training analyze the feedback\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To choose the best store location by studying the market and nearby competitors.  Minimize: \_\_\_\_\_\_low sales\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize:\_\_\_\_\_profit margins\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_\_budget limitations\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To use AI to calculate the right amount of fuel needed for each flight based on various factors.  Minimize: \_\_\_\_\_\_\_ Fuel consumption\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_\_ Flight efficiency\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_ Aircraft fuel capacity limits\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To use AI-powered dynamic pricing to maximize sales revenue and reduce long-term operational costs for airlines and flight operators.  Minimize: \_\_\_\_\_ Ticket underpricing and last-minute empty seats\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_\_\_\_ Sales revenue\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_ Legal regulations \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To use real-time data analysis to predict flight delays and quickly rebook passengers to reduce inconvenience.  Minimize: \_\_\_\_\_ Flight delays and passenger inconvenience\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_\_ On-time performance and customer satisfaction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_ rebooking policies\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 17 | 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: To detect and stop fraudulent transactions by analyzing customer flight and purchase patterns with historical data.  Minimize: \_\_\_\_\_ financial losses\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_ Accuracy of fraud detection\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_ Data privacy and security compliance\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To schedule airline crews in a way that maximizes productivity while balancing working hours to improve retention.  Minimize: \_\_\_\_ overtime costs\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_ employee satisfaction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_ Flight schedule changes or delays\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To improve recruitment by maintaining a good public image of the company.  Minimize: \_\_\_ low applicant interest\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_\_\_\_\_\_ quality of job applicants\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_ Public reviews and social media presence\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To make jobs safer, more interesting, and with better growth opportunities to attract more applicants.  Minimize: \_\_\_\_\_\_employee turnover\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_job satisfaction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_\_\_ Scope for redesigning roles\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 21 | One of the greatest challenges that an HR leader could face is keeping the staff satisfied.  Business Objective: To keep staff happy and motivated to improve productivity and reduce turnover.  Minimize: \_\_\_\_employee dissatisfaction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_employee satisfaction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_scope for redesigning roles\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To lower the high costs of employee turnover and including training.  Minimize: \_\_\_\_\_ training costs\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_\_\_ Employee retention\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_\_\_\_\_budget from programs and training\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To use AI to attract job seekers and drive traffic to the company’s hiring page.  Minimize: \_\_\_\_\_ irrelevant traffic\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_ application conversion rate\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_ Ad budget and job market competition\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To run training and certification programs that improve skills and ensure policy compliance.  Minimize: \_\_\_\_ Training costs, skill gaps\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_ Employee skill development\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_ Budget and time available for 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: To find patterns that show which employees might leave the company and why.  Minimize: \_\_ Employee turnover\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_ workforce stability\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_ Accordable Budget for platforms\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To handle employee HR queries like leave, pay, and scheduling quickly and efficiently.  Minimize: \_\_\_ HR workload\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_ Employee satisfaction, process satisfaction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_ Budget limitations for HR services\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To monitor machines in real time and use data to prevent breakdowns and improve maintenance.  Minimize: \_\_\_ Unplanned downtime\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_ Machine uptime\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_ sensor installations\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To find which products have the biggest impact, reduce errors, and improve quality by streamlining processes.  Minimize: \_\_\_\_\_ Process errors, product losses\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_ Product quality\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_ coordination and collaboration  (Define, Measure, Analyze, Improve, 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: To use technology to detect tiny product defects faster and more accurately than humans.  Minimize: human error and production delays \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: accuracy in identifying product defects \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_limitations of human vision\_\_\_ |
| 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 identify the most-used features and customer preferences to improve the product and boost brand image.  Minimize: \_\_\_\_\_\_ low value features\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_\_\_ customer engagement\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_\_ incomplete customer feedback\_\_\_\_\_\_\_\_ |
| 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 collect and analyze data on value, quality, reliability, and service to justify product development decisions to customers.  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: To find and fix production issues, improve logistics, inventory, and supply chain, and discover opportunities in packaging and distribution.  Minimize: defective lines\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: the production of each production line and Output from 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: To study job market data and factors like qualifications, licensing, and experience to identify areas with a shortage of skilled workers.  Minimize: the diversified field of interest\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: the skilling of people\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: lakh of skills\_and Lack of standardized skill sets or certifications\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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: To use data and technology to predict future trends in sports that will attract audiences.  Minimize: \_\_\_\_\_\_ Investment in outdated ideas\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: \_\_\_ Audience engagement,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: \_\_\_\_\_ Rapid changes in audience preferences and budget limitation\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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 use machine learning to predict outcomes of sports events based on large amounts of data.  Minimize: sudden game changes and prediction errors\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: the promotion of sport (most liked sports) and promotion\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: Player/team changes affecting prediction accuracy\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 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 study audience profiles and place targeted ads in stadiums and broadcasts for maximum impact.  Minimize: The less famous sports and low-engagement sports\_\_\_\_\_\_\_\_\_\_\_\_  Maximize: Promotion the sport through advertisment\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Business Constraints: Audience type may not be constant budget from the broadcast\_\_\_\_\_\_\_\_ |