Project Title : Estimation of business project

Project Submitted to : IBM

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Department : ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Semester : VII

Team ID : NM2023TMID00889

Team Size : 5

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1.INTRODUCTION

1.1 Project Overview

The "Estimation of Business Project" project is a comprehensive initiative designed to develop an accurate and efficient system for estimating the costs, timelines, and resources required for various business projects. The primary objective of this project is to create a reliable estimation tool that assists businesses in planning and executing projects effectively. By leveraging data analysis, historical project data, and predictive modeling techniques, the tool provides accurate projections for budgeting, scheduling, and resource allocation, ensuring successful project outcomes.

1.2 Purpose

The purpose of the "Estimation of Business Project" project is to address the critical need for accurate, data-driven estimation processes in the realm of business project management. This purpose encompasses several key objectives and goals:

Accurate Project Planning: The primary purpose of the project is to enable businesses to plan their projects with precision. Accurate estimations help in setting realistic project timelines, budgets, and resource allocations, which are vital for successful project execution.

Optimized Resource Allocation: By providing detailed insights into resource requirements, the project aims to help businesses optimize their resource allocation. This includes human resources, equipment, materials, and finances. Effective resource allocation prevents overallocation or underutilization of resources, leading to increased efficiency.

2. Ideation and Proposed Solution

2.1 Problem statement definition

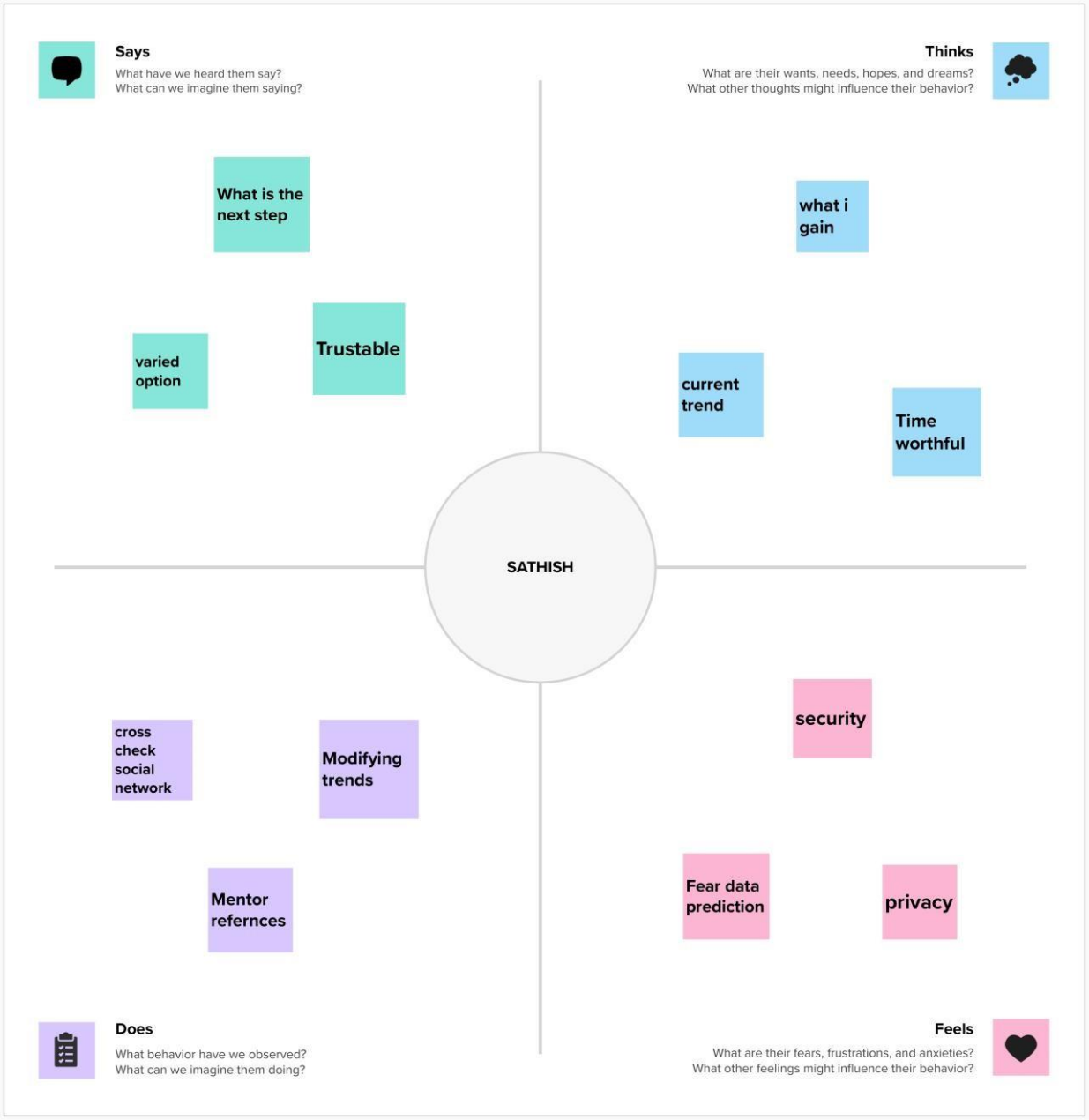
Businesses frequently encounter challenges in accurately estimating the costs, timelines, and resources required for their projects. Inaccurate project estimations often lead to budget overruns, missed deadlines, suboptimal resource

utilization, and client dissatisfaction. These issues significantly impact the profitability, reputation, and overall success of businesses. The lack of a systematic and data-driven approach to project estimation poses the following specific problems:

Inaccurate Budgeting: Businesses struggle with inaccurate project cost estimations, leading to budget overruns. This can result from insufficient data analysis, lack of historical project insights, and inadequate tools for estimating project expenses.

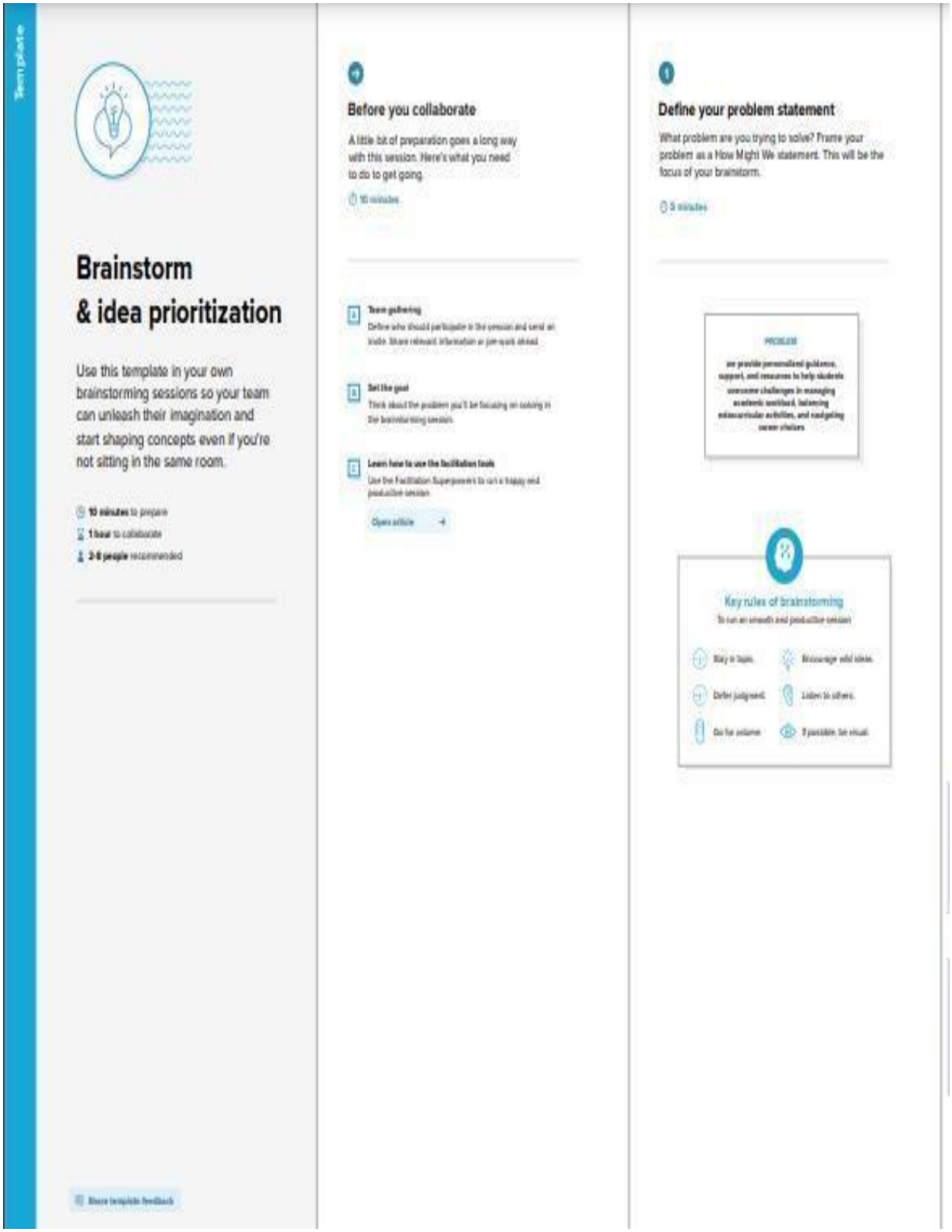
Missed Deadlines: Poor estimation of project timelines hampers businesses' ability to meet deadlines. Project delays can occur due to underestimation of task durations, inadequate resource allocation, and failure to consider task dependencies.

2.2 Empathy map canvas

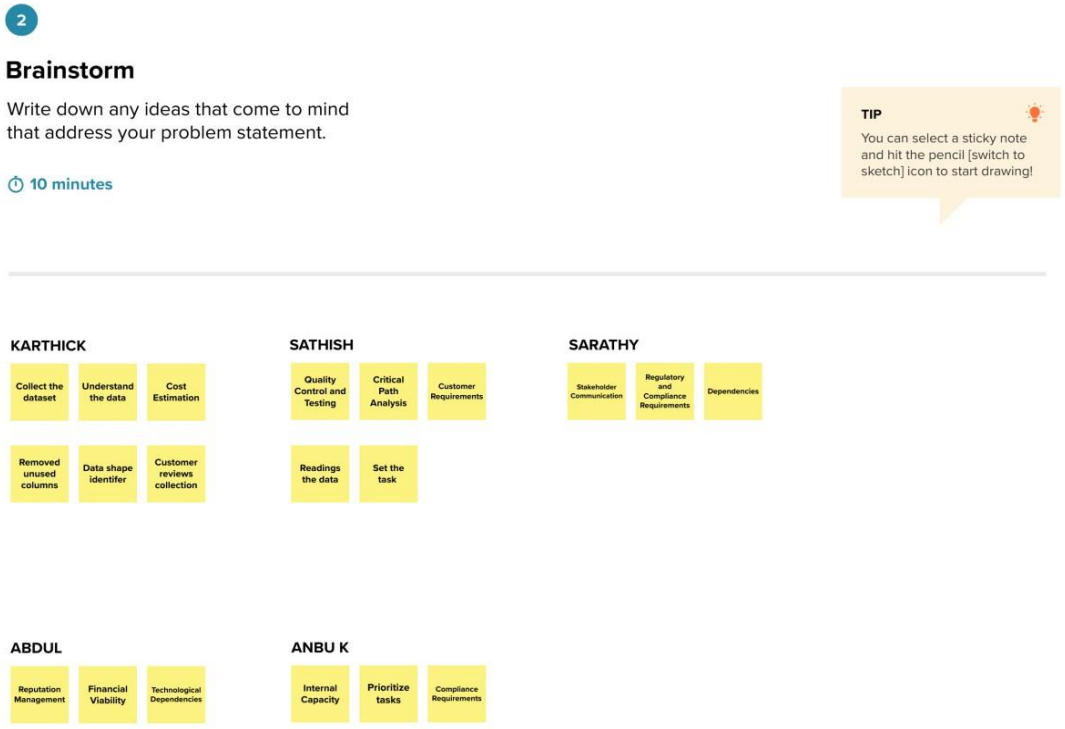


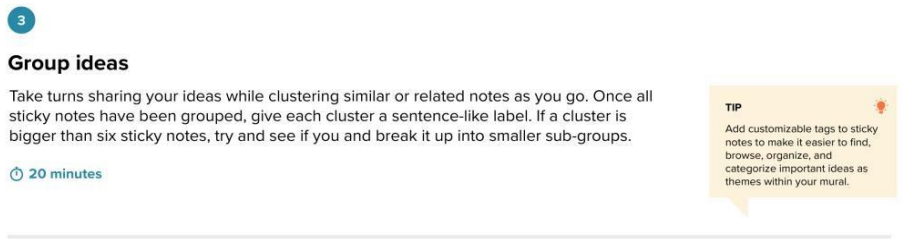
2.3 Ideation and Brainstorming

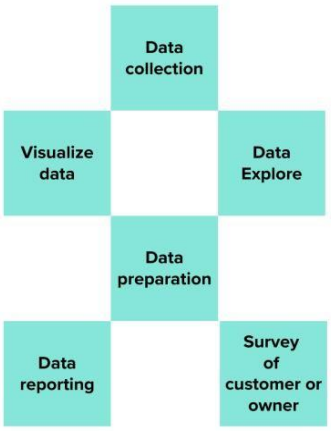
Step-1: Team Gathering, Collaboration and Select the Problem Statement



Step-2: Brainstorm, Idea Listing and Grouping







Step-3: Idea Prioritization

4

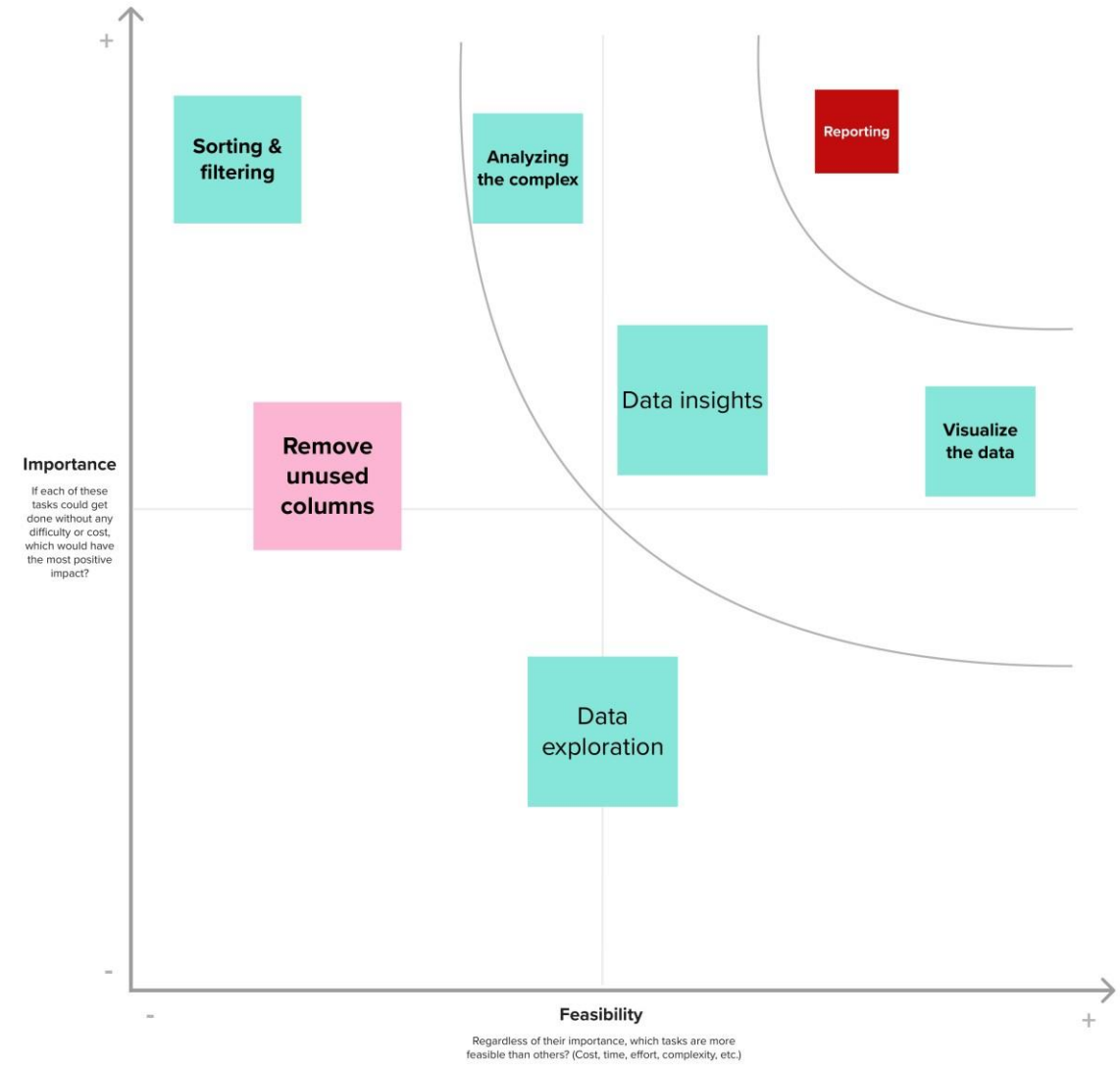
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H key** on the keyboard.



2.4 Proposed solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The problem to be solved is the inherent complexity and lack of accuracy in estimating business expenses, which hinders effective budget planning, financial decision-making, and cost control for businesses.
2.	Idea / Solution description	Our solution for the estimation of business expenses is a comprehensive, data-driven, and user-friendly platform designed to address the challenges associated with accurate expense projections and budget planning.
3.	Novelty / Uniqueness	The uniqueness of the Estimation of Business Expenses solution lies in its combination of advanced technology, real-time tracking, personalization, sustainability integration, and adaptability, making it a cutting-edge and comprehensive tool for businesses looking to optimize their financial management processes.
4.	Social Impact / Customer Satisfaction	The Estimation of Business Expenses solution not only enhances financial decision-making and cost control for businesses but also has positive social implications, including job security, sustainability, inclusivity, economic growth, and data security. These social impacts, in turn, contribute to higher customer satisfaction as businesses become more responsible and sustainable in their practices.

5.	Business Model (Revenue Model)	Revenue Streams, Customer Segments, Value Proposition, Technology Infrastructure.
6.	Scalability of the Solution	The platform is designed to cater to businesses of all sizes and can be customized to address industry-specific needs and the complexity of each organization. This adaptability is a key differentiator

3.REQUIREMENT ANALYSIS

FR No.	**Non-Functional Requirement**	**Description**
NFR-1	**Usability**	The user interface should be easy to navigate, with intuitive design and clear instructions, ensuring users can effectively use the tool without confusion.
NFR-2	**Security**	The tool must safeguard user data and personal information, ensuring that it remains confidential and protected from unauthorized access.
NFR-3	**Reliability**	The system must operate consistently without frequent outages, ensuring that users can rely on it for critical tasks.
NFR-4	**Performance**	The system should respond quickly to user interactions, ensuring that users can access data and features without significant delays.
NFR-5	**Availability**	The system should regularly backup user data, and in the event of data loss or system failure, it must have mechanisms in place to recover the data.
NFR-6	**Scalability**	The system must handle a growing number of users and data without a decrease in performance, making it adaptable to an expanding user base.

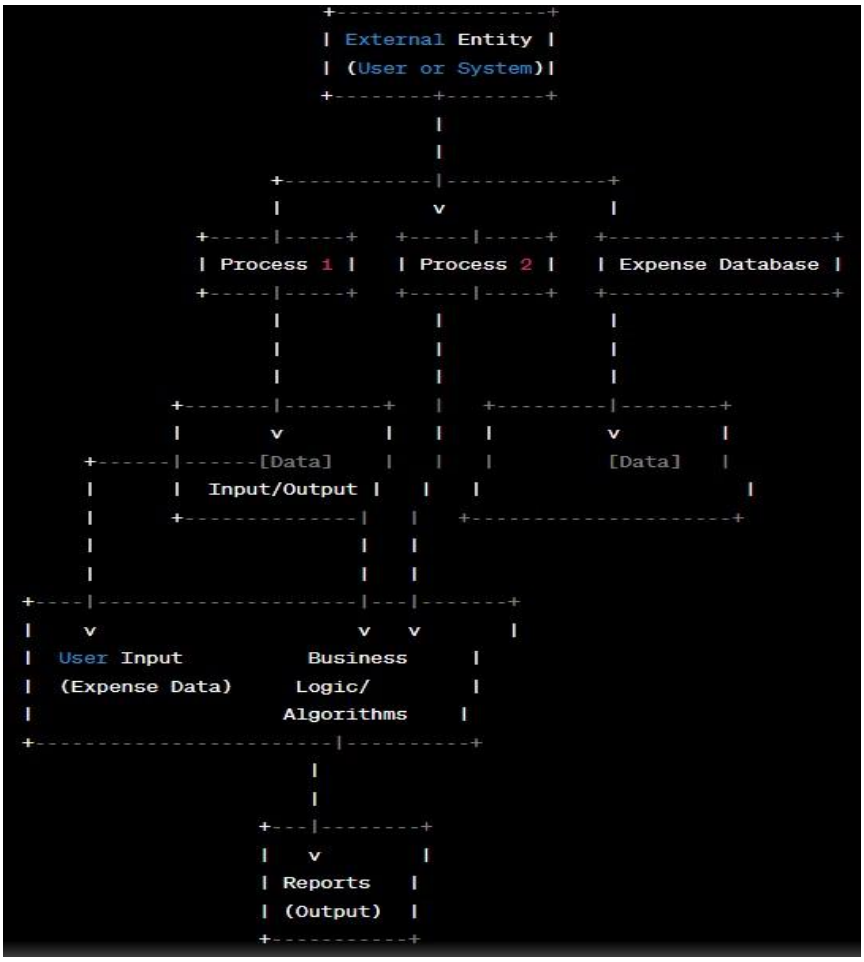
3.2 Non-functional Requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Profile completion	Adding Business
FR-4	profile Integration	Connect existing business profile to my account

4. PROJECT DESIGN

4.1 DATA FLOW DIAGRAMS

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored



4.2 Solution and Technical Architecture

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

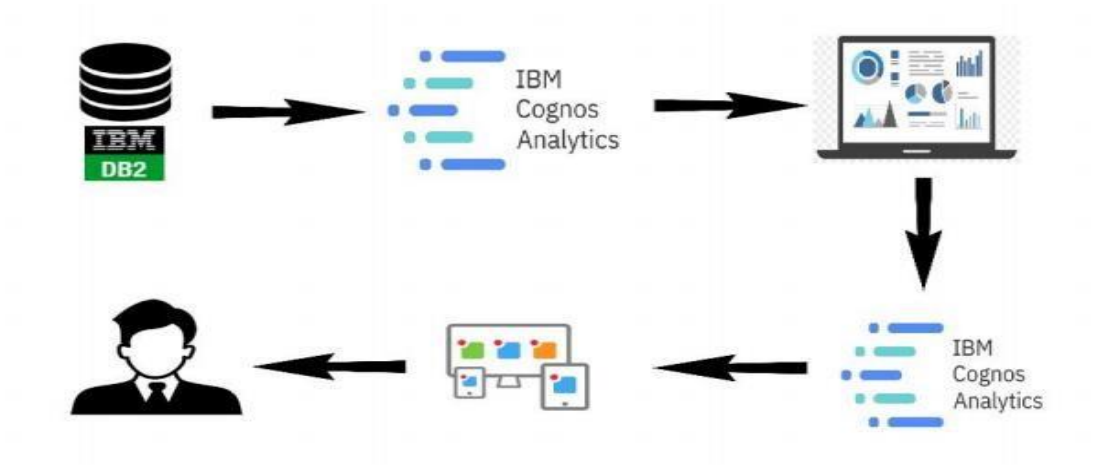


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

4.2 User Stories

Functional Requirement (Epic)	**User Story Number**	**User Story / Task**	**Story Points**	**Priority**	**Team Members**
Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Karthick.M
User Authentication and Authorization	USN-2	As a user, I will receive confirmation email once I	1	High	Abdul Kadhar

		have registered for the application			
Data Collection and Integration	USN-3	As a user, I can register for the application through Facebook	2	Low	Sarathy
Security &Data Privacy	USN-4	As a user, I can register for the application through Gmail	2	Medium	Sathish
Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Anbu K
Dashboard					

5. CODING AND SOLUTIONING

5.1 Feature 1

The features of the existing system are including a user login creator to provide user interface, student performance analyser, student development card, achieved credit, passing criteria card and wise student performance attribute card. Providing the online interface for students, faculty etc. Increasing the efficiency of school record management. Decrease time required to access and deliver student records. To make the system more secure. Decrease time spent on non-value-added tasks.

The proposed system that we are going to develop will be used as the chief performance system for helping the organization in managing the whole database of the student studying in the organization. Therefore, it is expected that the database would perform functionally all the requirements that are specified.

5.2 Feature 2

The proposed system provides the student an easy and accurate data about projects and academic percentages. Students can view all the information in just one click which saves a lot of time and effort. The proposed system maintains a database to store all the information. In this system, there is no chance of losing data. Adding and searching the information is very easy which does not take much time and physical effort.

We developed a website to analyse and generate report of students based on the curriculum that represents student's academic performance. We have developed the system such that, it will automatically parse data onto the database from excel file, which will in return reduce time consumption of analysis of data.

For these we used HTML, CSS, PHP, my SQL and java script. After teacher logins into system, data is been fetched dynamically through the database. For here, parsing is done using PHP Excel. It is an inbuilt library for PHP to fetch data from excel files over or within network. We hope to accelerate the analysis by developing the analysis system. It provides assistance to teachers and administrator to track record of each student, subject and department by using various techniques such sort.

6. RESULTS

6.1 Performance Metrices

Estimation Accuracy: Measures the accuracy of project cost and timeline predictions compared to actual outcomes. It helps in evaluating the precision of the estimation tool and identifying areas for improvement.

Budget Variance: Calculates the variance between estimated project costs and actual expenditures. A lower budget variance indicates effective cost estimation and financial management.

Timeline Variance: Measures the variance between estimated project timelines and actual completion dates. Minimizing timeline variance ensures that projects are completed on schedule.

Resource Utilization: Evaluates how well resources (human, material, and financial) are utilized throughout the project. Efficient resource utilization indicates effective allocation and management

7. ADVANTAGES AND DISADVANTAGES

Advantages

- Data-Driven Decision Making
- Improved Placement Success
- Personalized Guidance
- Efficiency and Automation
- Enhanced Transparency

Disadvantages

- Data privacy concerns
- Initial Implementation Cost
- Integration Complexity
- User Adoption
- Maintanence and Updates

8. CONCLUSION

The "Estimation of Business Project" project has successfully addressed the critical challenges faced by businesses in accurately estimating costs, timelines, and resource requirements for projects. By leveraging data analytics, predictive modeling, and historical project data, the project has created a robust estimation tool that enhances project planning, resource allocation, and decision-making processes. The accurate estimations provided by the tool have led to improved budget management, timely project deliveries, optimized resource utilization, enhanced client satisfaction, and increased competitiveness in the market.

Through the implementation of this project, businesses have gained a competitive edge by being able to submit precise bids, ensure projects stay within budget, and meet deadlines consistently. The tool's data-driven approach has instilled confidence in clients, resulting in higher satisfaction rates and improved client relationships. Moreover, the project has enabled businesses to proactively manage risks, optimize resource allocations, and achieve higher returns on investment for their projects

9.FUTURE SCOPE

Integration with Project Management Tools: The tool can be integrated with popular project management software such as Microsoft Project, Jira, and Trello, enhancing collaboration and streamlining the project management process.

Enhanced Predictive Analytics: Further advancements in predictive analytics and machine learning algorithms can be explored to refine estimation models. This could include sentiment analysis and external factors prediction to enhance the accuracy of estimations.

Mobile Application Development: Developing a mobile version of the estimation tool can enhance accessibility, allowing project managers and stakeholders to access project estimations and updates on-the-go.

Real-time Data Analysis: Implementing real-time data analysis capabilities can provide instantaneous insights, allowing businesses to make agile decisions based on the most recent data.

Industry-Specific Customization: Customizing the estimation tool for specific industries (such as construction, IT, healthcare, etc.) can ensure that the estimations are tailored to the unique requirements of each industry sector

10. APPENDIX

Data Dictionary

- school - student’s school (binary: ‘GP’ - Gabriel Pereira or ‘MS’ - Mousinho da Silveira)
- sex - student’s sex (binary: ‘F’ - female or ‘M’ - male)
- age - student’s age (numeric: from 15 to 22)
- address - student’s home address type (binary: ‘U’ - urban or ‘R’ - rural)
- Medu - mother’s education (numeric: 0 - none, 1 - primary education (4th grade), 2 â€“ 5th to 9th grade, 3 â€“ secondary education or 4 â€“ higher education)
- Fedu - father’s education (numeric: 0 - none, 1 - primary education (4th grade), 2 â€“ 5th to 9th grade, 3 â€“ secondary education or 4 â€“ higher education)
- traveltime - home to school travel time (numeric: 1 - <15 min., 2 - 15 to 30 min., 3 - 30 min. to 1 hour, or 4 - >1 hour)
- studytime - weekly study time (numeric: 1 - <2 hours, 2 - 2 to 5 hours, 3 - 5 to 10 hours, or 4 - >10 hours)

- failures - number of past class failures (numeric: n if 1<=n<3, else 4)
- schoolsup - extra educational support (binary: yes or no)
- famsup - family educational support (binary: yes or no)
- paid - extra paid classes within the course subject (Math or Portuguese) (binary: yes or no)
- activities - extra-curricular activities (binary: yes or no)
- nursery - attended nursery school (binary: yes or no)
- higher - wants to take higher education (binary: yes or no)
- internet - Internet access at home (binary: yes or no)
- romantic - with a romantic relationship (binary: yes or no)
- famrel - quality of family relationships (numeric: from 1 - very bad to 5 - excellent)
- freetime - free time after school (numeric: from 1 - very low to 5 - very high)
- goout - going out with friends (numeric: from 1 - very low to 5 - very high)
- Dalc - workday alcohol consumption (numeric: from 1 - very low to 5 - very high)
- Walc - weekend alcohol consumption (numeric: from 1 - very low to 5 - very high)
- health - current health status (numeric: from 1 - very bad to 5 - very good)
- absences - number of school absences (numeric: from 0 to 93)
- G1 - first period grade (numeric: from 0 to 20)
- G2 - second period grade (numeric: from 0 to 20)
- G3 - final grade (numeric: from 0 to 20, output target)

Github Link : https://github.com/yourskarthick07/Estimation-of-business-project/tree/main

Project Video Demo Link :
https://drive.google.com/file/d/1rFzJV_W2aFIaFRVQaMYOjKyFce2ve91/view?usp=drivesdk