Capstone Project 1- Part 1

Q1. Business Process Model:

A. Goal:To facilitate farmers with the website that will help to buy seeds, pesticide, and fertilizer.

To develop an online platform that connects farmers with manufacturers of agricultural products (fertilizers, seeds, pesticides) to improving agricultural efficiency and accessibility for remote farmers.

B. Inputs- The farmers requirements and their needs, Budget allocation for the project(2crores)

User Requirements:(Farmers, Manufacturers, Committee Members)

Product Data :(Fertilizers, Seeds, Pesticides – specifications, pricing, availability)

Budget & Timeline: (INR 2 Crores, 18 months)

Human Resources:(Developers, Testers, BA, Project Manager, Delivery Head, Network & DB Admins)

C. Resources-

Technology: Java, Database, Cloud Infrastructure

Human Resources: Developers, Testers, Business Analysts, Project Managers, Network & DB Admins

Financial Resources: Funding of INR 2 Crores

Data Sources: Agricultural Manufacturers, Logistics Providers, Farmer Registrations

D. Output-

Website for farmer for purchasing of order.

E. Activities-

Requirement Gathering,Analysis,Design,Development,Testing,Quality Assurance,Deployment.

F. Value Created for End Customer (Farmers):

Easy Access to Agricultural Products – Farmers can buy fertilizers, seeds, and pesticides online without visiting physical stores

Time & Cost Efficiency – Farmers save travel time and expenses by ordering online.

Q2. SWOT Analysis:

1. Strengths (Internal Positive Factors)
   A. Strong Financial Backing – Project is backed by INR 2 Crores budget.
   B. Clear Business Vision – Well-defined goal of solving farmers' procurement problems.
   C. Experienced Development Team – Skilled professionals including Project Manage
   D. Java Developers, Testers, DB Admin, and Network Admin.
   E. Social Impact – The project aims to support farmers in remote areas, creating goodwill for both SOONY and APT IT SOLUTIONS.

2. Weaknesses:

Lack of Experience in Agriculture Domain – APT IT SOLUTIONS may not have prior expertise in agri-tech solutions.

Internet Dependency – Farmers need stable internet connectivity, which is still an issue in some rural areas.

3. Opportunities:

Growing Agri-Tech Industry – Increasing government and private sector investment in digital agriculture solutions.
This kind of project they are launching for the first time this is opportunity to capture whole market.

4. Threats:

High Competition – Existing platforms like AgriBazaar, DeHaat, BigHaat, and Amazon Kisan Store are already in the market.
Farmer Adoption Challenges – Farmers may hesitate to shift from traditional buying methods to an online system.

Budget constraint(allocated budget is very less.)

Q3.Feasibility Study:

1. Hardware Feasibility: Identify Hardware and Software Requirements needed for project such as server, storage, development tools.

2. Trained Resources Availability: Available Team in APT IT SOLUTIONS
   - Project Manager: Mr. Vanadium
   - Senior Java Developer: Ms. Juhi
   - Java Developers: Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo
   - Network Admin: Mr. Mike
   - DB Admin: Mr. John
   - Testers: Mr. Jason, Ms. Alekya

3. Budget Feasibility:
   - Determine the budget required for the project , including hardware and software costs,   salaries of resources, and other expenses such as marketing, legal formalities
   - Ensure that the budget is feasible and project can be completed within allocated funds.

4. Time Frame:
   - Determine the time frame required for the project , including development, testing, and deployment phases.
   - Ensure that time frame is realistic and achievable within constraints of the available resources and budget.

Q4.Gap Analysis

As a Business Analyst, to showcase the Gap Analysis, we need to compare the AS-IS existing process with the TO-BE future process. Here are some points to be considered:

AS-IS Process:
- Farmers have to physically visit the market to buy agricultural products such as fertilizers, seeds, and pesticides.
- Farmers have to rely on intermediaries for the procurement of these products, which results in higher prices and sometimes even low-quality products.
- Farmers often face difficulty in finding the right products according to their specific crop requirements.
- The lack of communication between the farmers and the manufacturers results in farmers not being able to procure the latest and most effective product.

TO-BE Process:
- Farmers will be able to order the required agricultural products online, saving their time and efforts.
- Farmers can buy products directly from the manufacturers at affordable prices, eliminating intermediaries.
- The Online store will have a search functionality to filter products based on crop types, specific requirements, and other parameters, which will help farmers to find the right products easily.
- Through the Online store, the manufacturers can communicate with farmers and provide them with the latest products and technologies, resulting in higher productivity and better crop yield.

Q5. Risk

Risk factors are categorised into BA Risks and Project Risks. Here are some of the risk factors that can be involved in this project:

BA Risks:
- Insufficient resources and budget allocated for the project
- Farmers and manufacturers may not clearly define their needs, leading to misaligned features
- Unclear project objectives and scope
- Insufficient knowledge of the technology required to develop the online agriculture product store.
- Difficulty in gathering and managing stakeholder requirements due to their remote location.
- Government policies on pesticide/fertilizer sales and digital transactions may affect the business model.

Project Risks:

- Technical risks associated with the development and implementation of the online store such as software bugs or system crashe.\
- Resistance to change from farmers who are accustomed to traditional methods of purchasing agricultural products.
- Additional feature requests may extend timelines and increase costs.
- Developers or testers may lack experience with agricultural e-commerce.

Q6.Stakeholder analysis (RACI Matrix):

Stakeholder analysis helps to identify the stakeholders involved in a project and their roles and responsibilities.

R - Responsible

A - Accountable

C - Consulted

I - Informed

Based on the Case study information provided, the stakeholders in this project and their roles in the RACI Matrix are as follows:

Activity / Task	Activity / Task	Mr. Pandu	Mr. Dooku	Peter,Kevin,Ben	Mr. Karthik	Mr. Vandanam	BA
Initiating the Project	A	C	C	C	R	I	I
Requirement Gathering	I	I	I	C	I	A	R
Finalizing Requirements	A	C	C	C	I	A	R
Budget Planning & Approval	C	A	C	I	I	I	I
Timeline & Resource Planning	I	C	A	I	R	R	C
System Design / Architecture	I	I	I	I	C	A	R

Activity / Task	Activity / Task	Mr. Pandu	Mr. Dooku	Peter,Kevin,Ben	Mr. Karthik	Mr. Vandanam	BA
Development	I	I	I	I	I	A	C
Go-Live & Post-launch Monitoring	I	I	I	I	I	A	C
Progress Reporting & Updates	R	R	R	I	R	A	C

Q7. Business Case Document:

1. Executive Summary:
   The Online Agriculture Products Store aims to bridge the gap between farmers and agricultural product manufacturers. Farmers, especially in remote areas, struggle to procure fertilizers, seeds, and pesticides efficiently. This platform will provide an e-commerce solution where farmers can directly purchase essential agricultural products from manufacturers. The project is sponsored by SOONY Company under its CSR initiative, with a budget of 2 Crores and a timeline of 18 months.

2. Problem Statement:
   Farmers in remote areas face difficulties in procuring fertilizers, seeds, and pesticides, which are essential for farming. These products are not readily available in the market and farmers often have to travel long distances to procure them. This leads to wastage of time and money, which could have been utilised in farming activities. Therefore, there is a need for a platform that can facilitate the purchase of these products for farmers.

3. Solution:
   - Direct farmer-to-manufacturer online marketplace.
   - Elimination of middlemen to reduce costs and increase transparency.
   - Secure and user-friendly digital platform for ease of access.
   - Efficient logistics to deliver products to remote locations.
   - The application will have a user-friendly interface for easy.

4. Benefits: The Online Agriculture Products Store will provide the following benefits:
   - Farmers will be able to purchase necessary products without facing difficulties in procuring them.
   - Companies manufacturing fertilizers, seeds, and pesticides will have a platform to reach out to farmers directly.
   - The pesticides will be available in quick time to farmer.

5. Costs:

   The estimated budget for the project is 2 crores INR. This includes the cost of

   development, testing, deployment, and maintenance. The project is expected to be

completed within 18 months.

6. Key Stakeholders:
   - Mr. Henry, who proposed the project and is a key stakeholder
   - Peter, Kevin, and Ben, who shared their requirements for the project and are stakeholders
   - Mr. Pandu, who is the Financial Head and a key stakeholder
   - Mr. Dooku, who is the Project Coordinator and a key stakeholder
   - Mr. Karthik, who is the Delivery Head in APT IT SOLUTIONS company and a key stakeholder
   - Mr. Vandanam, who is the Project Manager and a key stakeholder
   - Ms. Juhi, Mr. Teyson, Ms. Lucie, Mr. Tucker, and Mr. Bravo, who are Java Developers and stakeholders
   - Mr. Mike, who is the Network Admin and a stakeholder
   - Mr. John, who is the DB Admin and a stakeholder
   - Mr. Jason and Ms. Alekya, who are Testers and stakeholders
   - The farmers and companies manufacturing fertilizers, seeds, and pesticides who will use the application

7. Risks:
   - The application may face technical issues during development and deployment.
   - There may be delays in development due to unforeseen circumstances.
   - The application may not be user-friendly, leading to low adoption by farmers.
   - There may be issues with product quality and delivery, leading to dissatisfaction among farmers.
   - Competitors may develop similar applications, leading to a loss of market share.

Conclusion:

The Online Agriculture Products Store is a high-impact initiative that will transform agriculture procurement for farmers, improve market efficiency.

Q8. SDLC Methodologies:

SDLC, which stands for Software Development Life Cycle, is a process used by software development teams to plan, design, build, test, and deploy software. SDLC consists of several methodologies or approaches that can be used to develop software applications. These methodologies include Sequential, Iterative, Evolutionary, and Agile.

A. Sequential Methodologies (Waterfall and V-model):
   - Approach: Linear, step-by-step progression from one phase to the next
   - Pros: Clear documentation, structured approach, good for well-defined projects
   - Cons: No flexibility, difficult to make changes once development starts
   - Best Use Case: Projects with fixed requirements (e.g., government projects, manufacturing software)

B. Iterative Methodologies:
- Approach: Development occurs in cycles (iterations), allowing repeated refinements.
- Pros: Early working versions of the system, issues identified early.
- Cons: Can become resource-intensive due to multiple revisions.
- Best Use Case: Systems needing gradual improvements (e.g., ERP systems, online portals).

C. Evolutionary Methodologies:
- Approach: The system evolves over time based on user feedback and real-world use
- Pros: Highly adaptable, enables real-time improvements
- Cons: Can be unpredictable in scope and budget
- Best Use Case: Complex systems that must evolve (e.g., AI-driven applications, e-commerce)

D. Agile Methodologies:
- Approach: Divides the project into small, incremental cycles (sprints) with frequent deliveries
- Pros: High flexibility, continuous feedback, quick issue resolution
- Cons: Requires active customer involvement, needs a strong agile mindset
- Best Use Case: Dynamic projects with changing requirements (e.g., SaaS products, mobile applications)

Q9.

1.Waterfall: Waterfall model is the oldest and most structured method. In this model, each phase depends on the outcome of the previous phase and all the phases runs sequentially. This model provides discipline.

2.Iterative: In the iterative process, each development cycle produces an incomplete but deployable version of the software. The first iteration implements a small set of the software requirements, and each subsequent version adds more requirements. The last iteration contains the complete requirement set.

3.Spiral: Spiral model is an SDLC methodology which combines Iterative development and Waterfall model. It is used for Risk management. This SDLC model is mostly used for large and complicated projects. In this Software project repeatedly passes through these phases in iterations called spirals.

4.Agile: The agile methodology produces ongoing release cycles, each featuring small, incremental changes from the previous release. At each iteration, the product is tested. The agile model helps teams identify and address small issues in projects before they evolve into more significant problems.

5.V shaped: In the V-shaped model, verification phases and validation phases are run in parallel. Each verification phase is associated with a validation phase, and the model is run in a V-shape, where each phase of development has an associated phase of testing.

As a business analyst, I would consider the characteristics and requirements of the project to determine which methodology would be better suited: the V model or the waterfall model.

Considering the available information and the stable nature of requirements in this project, I would lean towards recommending the waterfall model. This model is suitable for projects with clear and well-defined requirements, which is the case for the online agriculture product store project.

Q10.Waterfall model and V mode

Waterfall Model:

- Linear & sequential
- Testing starts after development is complete
- Rigid, difficult to make changes once a phase is completed
- High risk as issues are identified late
- Errors are detected in the testing phase (late in the process)
- Suitable for small to medium projects with well-defined requirements
- High, as issues are found late in the process
- Fixing errors late increases cost
- Simple, well-defined projects where changes are minimal
- Moderate documentation required
- Customer involvement is minimal during development

V-Model:

- Verification & validation occur in parallel
- Testing is done at every stage alongside development
- Less flexible but allows early defect detection
- Lower risk due to early testing
- Errors are caught early during verification phases
- Best for projects requiring strong validation and regulatory compliance
- Lower, as defects are caught in earlier phases
- Early defect detection reduces cost
- Complex, safety-critical, or regulated projects like medical, automotive, or banking systems
- Extensive documentation is required
- Customer involvement is limited but more structured than Waterfall

Q11.Reason for choosing model for the project

As a business analyst, my recommendation would be to use the Waterfall model for this project.

The Waterfall model is a linear sequential approach where each phase of the software development process is completed before moving onto the next phase. This model is suitable for projects with clear and well-defined requirements, which is the case for the

online agriculture product store project. The project has a clear objective of developing an e-commerce platform for farmers to buy agriculture products, and the requirements for the project have been shared by the stakeholder.

On the other hand, the V model is an extension of the Waterfall model, and it is used for testing and verification. It is useful when the requirements are clear and well-defined. However, it is not an appropriate approach for software development projects as it does not provide a framework for design and development.
Therefore, based on the project's clear requirements, I recommend the Waterfall model for this project.

Q12.Gantt Chart

	3M	6M	12M	15M	18M
PM	██████████████████████████████████████
BA	██████████████████████████████████████
Java Developer		████████████████████████████████
Testers				██████████
DB Admin			████████████████████
NW Admin				████████████████

Q13.Fixed Bid Vs Billing

The Fixed Bid model is a pricing model used in software development projects, where a fixed price is agreed upon by the client and the vendor for the entire project scope. In this model, the vendor bears the risk of delivering the project within the agreed scope and timeline, and any deviation from the scope or timeline results in additional costs or penalties. The Fixed Bid model provides a clear understanding of the project cost and timeline upfront, and is suitable for well-defined projects with a clear scope and requirements.

On the other hand, the Billing Model is a pricing model based on the time and resources spent on the project. In this model, the vendor charges the client based on the number of hours worked and the hourly rate of each team member involved in the project. This model provides more flexibility to the client to make changes to the project scope and

requirements, and the vendor is compensated for the time and effort spent on the project. However, the Billing Model may result in additional costs if the project takes longer than expected.

In this project, the Committee has chosen the Billing Model to release funds based on the timesheets submitted by the development team every two weeks. This model provides more flexibility to the client, as they can make changes to the project scope and requirements as necessary. The Committee will also conduct a quarterly audit to ensure that the project is progressing as planned and to identify any issues that need to be addressed. This approach is suitable for an Agile development approach, where the project scope and requirements may evolve over time.

Q14.Timesheets

By accurately tracking your time spent on these activities, the project management team can better understand the effort involved in each phase and make informed decisions regarding resource allocation, project timelines, and progress tracking.

Design Stage

Date	Task	Duration
YYYY-MM-DD	Requirement Gathering Sessions	4
YYYY-MM-DD	Documenting Functional Requirements	4
YYYY-MM-DD	Use Case & Process Flow Design	3
YYYY-MM-DD	Reviewing & Finalizing Documents	1

Development Phase

Date	Task	Duration
YYYY-MM-DD	Reviewing Development Progress	3
YYYY-MM-DD	Coordinating with Developers	4
YYYY-MM-DD	Updating Documents for Changes	2
YYYY-MM-DD	Stakeholder Communication	3

Testing Phase

Date	Task	Duration
YYYY-MM-DD	Reviewing Test Cases	3
YYYY-MM-DD	Conducting Business Logic Testing	4
YYYY-MM-DD	Coordinating with QA Team	3
YYYY-MM-DD	Defect Review & Impact Analysis	2

UAT (User Acceptance Testing) Phase

Date	Task	Duration
YYYY-MM-DD	Preparing UAT Test Cases	3
YYYY-MM-DD	Conducting UAT Sessions	4
YYYY-MM-DD	Logging & Prioritizing Issues	3
YYYY-MM-DD	Updating Business Documentation	2

Deployment & Implementation Phase

Date	Task	Duration
YYYY-MM-DD	Assisting in Go-Live Support	4
YYYY-MM-DD	Coordinating with IT & DevOps	3
YYYY-MM-DD	Finalizing User Training Materials	2
YYYY-MM-DD	Post-Deployment Review	2