Henry, after being successful as a businessman and has become one of the wealthiest persons in the city. Now, Mr. Henry wants to help others to fulfil their dreams. One day, Mr. Henry went to meet his childhood friends Peter, Kevin and Ben. They live in a remote village and do farming. Mr. Henry asked his friends if they are facing any difficulties in their day-to-day work. Peter told Mr. Henry that he is facing difficulties in procuring fertilizers which are very important for farm. Kevin said that he is also facing the same problem in-case of buying seeds for farming certain crops. Ben raised his concern on lack of pesticides which could help in greatly reducing pests in crops. After listening to all his friends’ problems, Mr. Henry thought that this is a crucial problem faced not only by his friends but also by so many other farmers. So, Mr. Henry decided to make an online agriculture product store to facilitate remote area farmers to buy agriculture products. Through this Online Web / mobile Application, Farmers and Companies (Fertilizers, seeds and pesticides manufacturing Companies) can communicate directly with each other. The main purpose to build this online store is to facilitate farmers to buy seeds, pesticides, and fertilizers from anywhere through internet connectivity. Since new users are involved, Application should be user friendly. This new application should be able to accept the product (fertilizers, seeds, pesticides) details from the manufacturers and should be able to display them to the Farmers. Farmers will browse through these products and select the products what they need and request to buy them and deliver them to farmers location. Mr. Henry has given this project through his Company SOONY. In SOONY Company, Mr Pandu is Financial Head and Mr Dooku is Project Coordinator. Mr. Henry , Mr Pandu , and Mr Dooku formed one Committee and gave this project to APTIT SOLUTIONS company for Budget 2 Crores INR and 18monthsDuration under CSR initiative.Peter,Kevin and Ben are helping the Committee and can be considered as Stakeholders share requirements for the Project. Mr Karthik is the Delivery Head in APT IT SOLUTIONS company and he reached out to Mr Henry through his connects and Bagged this project. APT IT SOLUTIONS company have Talent pool Available for this Project. Mr Vandanam is project Manager, Ms. Juhi is Senior Java Developer, Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravoare Java Developers. Network Admin is Mr Mike and DB Admin is John. Mr Jason and Ms Alekya are the Tester. And you joined this team as a BA.

Q1. BPM

Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)

Answers

**Goal:** To facilitate farmers in remote areas to easily purchase agricultural products (fertilizers, seeds, pesticides) through an online platform.

**Inputs:**

* User requirements from farmers and manufacturers
* Product information (details, pricing) from manufacturers
* Technical specifications for application development
* Funding of 2 Crores INR
* Time frame of 18 months

**Resources:**

* SOONY Company team (Mr. Henry, Mr. Pandu, Mr. Dooku)
* APTIT SOLUTIONS development team (project manager, developers, testers)
* Technology infrastructure (servers, databases)
* Online platform (web/mobile application)
* Network and database administration support

**Outputs:**

* Fully functional online agriculture product store
* User accounts for farmers and manufacturers
* Product listings (fertilizers, seeds, pesticides)
* Order management system
* Delivery tracking system

**Activities:**

1. **Requirement Gathering:** Conduct interviews with stakeholders to understand their needs.
2. **Application Design:** Create wireframes and prototypes for the user interface.
3. **Development:** Build the application, integrating all necessary functionalities.
4. **Testing:** Conduct usability testing and ensure all features work as intended.
5. **Deployment:** Launch the application and make it accessible to users.
6. **Training:** Provide training sessions for farmers and manufacturers on how to use the platform.
7. **Support and Maintenance:** Establish ongoing support for users and maintain the application.

**Value Created to the End Customer:**

* **Accessibility:** Farmers can easily access and purchase essential agricultural products from their homes.
* **Direct Communication:** Facilitates direct interaction between farmers and manufacturers, improving supply chain efficiency.
* **Cost Savings:** Potential reduction in costs due to better pricing from manufacturers.
* **Time Efficiency:** Saves time for farmers who would otherwise have to travel to procure products.
* **Empowerment:** Provides farmers with more options and resources, helping them improve their farming practices and productivity.

Q2. SWOT

|  |  |
| --- | --- |
| **Strengths**Clear Vision and SponsorshipDefined Budget and TimelineTalent Pool Availability | **Weaknesses**New DomainUser Base ChallengesDependency on Manufacturers |
| **Opportunities**Growing Digital AdoptionSocial ImpactMarket Expansion | **Threats**Technological ChallengesCompetitionData Security |

Q3. Feasibility Study

A **feasibility study** is an in-depth analysis and evaluation of a proposed project or idea to determine whether it is viable, practical, and achievable. It helps decision-makers assess whether the project is worth pursuing by considering various factors like technical requirements, financial implications, timelines, and risks.

**Hardware (HW)**: Server Requirements, Devices for Development and Testing, Network Infrastructure.

**Software (SW)**: Development Tools, Frameworks and Libraries, Testing Tools.

**Resources**: Evaluate the availability and skillsets of the team members, Identify skill gaps and arrange for training or hiring as needed.

**Budget**: Development Costs, Licensing Costs, Logistics and Maintenance.

**Time Frame**: Project Duration, Team Allocation, Risk Assessment.

Q4. Gap Analysis

A **Gap Analysis** is a tool used to compare the current state (**AS-IS**) of processes, systems, or operations with the desired future state (**TO-BE**). It helps identify the gaps or differences between the two states and provides insights into areas for improvement. The objective is to determine what changes are required to bridge these gaps and achieve the desired outcomes.

**AS-IS (Current Process)**

Procurement Challenges

Communication Issues

Accessibility Barriers

Cost Inefficiency

Customer Support Gaps

### ****TO-BE (Proposed Future Process)****

Streamlined Procurement

Direct Communication

Enhanced Accessibility

Cost Efficiency

Improved Customer Support

Q5. Risk Analysis

**Risk Analysis** is the process of identifying, assessing, and prioritizing potential risks in a project or process to mitigate their impact and likelihood. It involves understanding what could go wrong, evaluating the likelihood of such risks occurring, and developing strategies to prevent or manage them effectively.

In the context of Business Analysis (BA) and project management, risk analysis helps ensure project objectives are achieved on time, within budget, and meet quality expectations.

**Types of Risk factors**

**Internal risk**: Resource Risks like lack of skilled personnel’s, such as developers, testers or network admin. Budget Risks, Technology Risks, Communication Risks.

**External Risks**: Stakeholder Risk, Environmental Risk, Regulatory Risks and Market Risks.

**BA Risks**: Requirement elicitation Risk, Scope Risk, Documentation Risks and Validation Risks.

**Project based Risks**: Scope Risks, Schedule Risk, Quality Risks and Operational Risks.

Q6. Stakeholder Analysis (RACI Matrix) Perform stakeholder analysis (RACI Matrix)

Below is a **Stakeholder Analysis with a RACI Matrix** for the project to identify key stakeholders, their roles, and their responsibilities in terms of **Decision-Making (Responsible & Accountable)** and **Influence (Consulted & Informed)**.

|  |  |  |  |
| --- | --- | --- | --- |
| **R/A/C/I** | **Name** | **Designation**  | **Details** |
| Responsible | Mr. Karthik | Delivery Head | Ensures project delivery, monitors execution. |
| APT IT Team | Developers/Testers/Admins | Implements the platform, conducts testing. |
| Accountable | Mr. Henry | Sponsor | Approves vision, funding, and final deliverables. |
| Mr. Pandu | Financial Head | Approves and manages the budget. |
| Consulted | Mr. Dooku | Project Coordinator | Coordinates between committee and delivery team. |
| Peter, Kevin, Ben | Farmer Representatives | Provide feedback on requirements and usability. |
| Manufacturers | Suppliers | Input on product details and platform usability. |
| Informed | Farmers | End Users | Informed about progress and trained for usage. |
| SOONY Committee | Oversight Team | Updated on the project’s status and milestones. |

Q7. Business Case Document.

**Summary:** This project aims to develop an **Online Agriculture Product Store** to address the challenges faced by farmers in remote areas in procuring fertilizers, seeds, and pesticides. The platform will connect farmers directly with manufacturers, enabling seamless transactions and delivery of agricultural products. The initiative, spearheaded by Mr. Henry through SOONY Company, is a Corporate Social Responsibility (CSR) project with a budget of **2 Crores INR** and a timeline of **18 months**.

1) Why is this project initiated?

This project is initiated to address the critical challenges faced by farmers in remote areas in procuring essential agricultural inputs such as fertilizers, seeds, and pesticides. The current process is inefficient, time-consuming, and costly for farmers, often leading to reduced productivity and increased hardship. By creating an **Online Agriculture Product Store**, the project aims to:

1. **Facilitate farmers** with easier access to agricultural products by enabling direct communication with manufacturers.
2. **Eliminate intermediaries**, thereby reducing costs and ensuring fair pricing.
3. **Leverage technology** to bridge the gap between farmers and suppliers, ensuring convenience and efficiency.
4. **Contribute to the agricultural community** under SOONY's CSR initiative, empowering farmers and enhancing their livelihoods.

This project will help solve widespread issues faced by farmers and improve their productivity while aligning with SOONY's mission to support communities in need.

2) What are the current problems?

The current problems faced by farmers, especially in remote areas, include:

1. **Difficulty in Procuring Fertilizers**: Farmers struggle to access fertilizers critical for crop growth due to limited availability in remote locations.
2. **Lack of Access to Quality Seeds**: Farmers face challenges in sourcing high-quality seeds needed for specific crops, affecting crop yields.
3. **Unavailability of Pesticides**: The inability to obtain effective pesticides leads to increased pest infestations, reducing crop productivity and quality.
4. **Dependency on Intermediaries**: Farmers rely heavily on intermediaries, leading to higher costs and potential delays in receiving agricultural inputs.
5. **Limited Market Connectivity**: Farmers lack direct connections with manufacturers, resulting in fewer options and limited bargaining power.
6. **Geographical Barriers**: Remote locations often lack access to physical agricultural product stores, creating logistical challenges.
7. **Low Awareness of Alternatives**: Farmers are often unaware of modern agricultural products and solutions that could improve productivity.

These challenges highlight the need for a centralized, user-friendly platform to connect farmers directly with manufacturers and provide them with affordable, high-quality agricultural inputs.

3) With this project, how many problems could be solved?

With this project, several problems faced by farmers can be effectively solved, including:

1. **Easy Access to Fertilizers, Seeds, and Pesticides**: Farmers will have direct access to essential agricultural products through the online platform, eliminating availability issues.
2. **Elimination of Intermediaries**: By connecting farmers directly with manufacturers, the platform reduces dependency on intermediaries, leading to cost savings and better pricing.
3. **Improved Market Connectivity**: The platform bridges the gap between farmers and manufacturers, providing a centralized marketplace for agricultural inputs.
4. **Overcoming Geographical Barriers**: Remote farmers can order products online, ensuring accessibility despite their location.
5. **Time and Cost Savings**: The platform streamlines the procurement process, reducing the time and effort required to purchase products and minimizing additional costs.
6. **Enhanced Awareness of Product Options**: Farmers gain exposure to a variety of fertilizers, seeds, and pesticides, empowering them to make informed decisions.
7. **Improved Productivity**: With access to quality inputs, farmers can enhance crop yields and reduce losses due to pests or poor-quality seeds.
8. **Convenience through Doorstep Delivery**: The inclusion of delivery services ensures that farmers receive their products without needing to travel, saving time and effort.

By addressing these issues, the project has the potential to resolve **most of the critical challenges** faced by farmers, significantly improving their farming practices and productivity.

4) What are the resources required?

The resources required for successfully implementing the **Online Agriculture Product Store** project can be categorized as follows:

1. Human Resources: Project Manager, Java Developers, Sr. Java Developer, System Administrator, Tester, Business Analyst and Other Support Teams.
2. Technological Resources: Hardware, Software, Testing tools ect.
3. Financial Resources
4. Time Resources
5. Stakeholder Involvement

5) How much organizational change is required to adopt this technology?

Adopting the **Online Agriculture Product Store** will require moderate organizational change, depending on the roles and processes involved. Here's a breakdown of the changes needed:

### ****1. For SOONY (Initiating Organization):****

**Current Setup:** SOONY operates in a business environment and does not directly handle technology-heavy projects like this.

**Required Changes:**

* **Integration of a CSR Technology Initiative:** SOONY will need to oversee a technology project for the first time. This includes regular progress reviews and ensuring alignment with CSR goals.
* **Resource Allocation:** Internal resources like the SOONY committee (Mr. Henry, Mr. Pandu, Mr. Dooku) must dedicate time to support the project, including approving budgets, tracking progress, and liaising with stakeholders.
* **Collaboration with Technology Vendors:** Processes will need to be established for communication and collaboration with APTIT Solutions.

### ****2. For APT IT Solutions (Technology Provider):****

**Current Setup:** APTIT Solutions has technical expertise in Java and project delivery.

**Required Changes:**

* **Enhanced Focus on Farmer-Friendly Design:** Developing a user-friendly platform for farmers, many of whom may not be tech-savvy.

Testing must consider usability and accessibility for first-time users.

* **Stakeholder Engagement:** The team must work closely with the SOONY committee and end-users (farmers and manufacturers). A process for capturing and implementing feedback will need to be established.
* **Resource Utilization:** Existing resources like developers, testers, and administrators will need to focus on this project for 18 months.
* **Training Support:** Post-deployment, the organization may need to assist SOONY in training farmers and manufacturers.

### ****3. For Farmers (End Users):****

**Current Setup:** Farmers rely on traditional methods for procuring agricultural inputs, with no experience using online platforms.

**Required Changes:**

* **Digital Awareness and Training:** Farmers must learn to use the platform to browse products, place orders, and make payments.

Training programs or awareness campaigns may be necessary to teach farmers about the benefits and functionality of the application.

* **Shift from Intermediaries to Direct Procurement:** Farmers need to trust the platform and adapt to the new procurement process.

### ****4. for Manufacturers (Product Suppliers):****

**Current Setup:** Manufacturers primarily rely on physical sales or distributors to reach farmers.

**Required Changes:**

* **Adopting a Digital Sales Channel:**
	+ Manufacturers must provide product information, including specifications, pricing, and availability, on the platform.
* **Order Management:**
	+ A process for receiving, processing, and fulfilling online orders needs to be established.
* **Engagement with Farmers:**
	+ Manufacturers may need to engage directly with farmers to answer queries and build trust.

### ****Overall Organizational Changes Required:****

* **Cultural Shift:** Stakeholders need to embrace the shift from traditional methods to a technology-driven solution.
* **Training and Capacity Building:** Farmers, manufacturers, and even SOONY’s internal team will require capacity-building efforts to understand and use the platform effectively.
* **Change Management Process:** A structured approach to managing resistance, educating stakeholders, and ensuring smooth adoption of the new technology.
* **Monitoring and Feedback Mechanism:** Establishing a system for continuous feedback and improvements to address issues post-implementation.

### ****Impact Level:****

While the organizational change is **moderate**, most of the effort lies in **training end-users (farmers and manufacturers)** and ensuring usability. Internal changes for SOONY and APTIT Solutions are mostly related to project coordination and support.

6) What is the time frame to recover the ROI?

The **time frame to recover the Return on Investment (ROI)** for the **Online Agriculture Product Store** project depends on several factors, including the cost of development, operational expenses, expected revenue, and adoption rate by farmers and manufacturers.

The **ROI recovery time frame** is estimated to be **1.5 to 2 years** after the platform goes live. To ensure timely recovery, strong marketing and user engagement strategies will be critical to encourage adoption by farmers and manufacturers.

7) How to identify stakeholders?

**Identifying stakeholders** is a critical step in project planning to ensure that all parties who have an interest in or impact on the project are properly considered. Here's a step-by-step guide to identifying stakeholders:

### ****1. Understand the Project Scope and Objectives****

* Start by defining the goals, deliverables, and scope of the project.
* Ask: Who will benefit from this project? Who will contribute to its success? Who might be impacted negatively or positively?

### ****2. Categorize Stakeholders****

Classify stakeholders into categories to ensure no one is overlooked:

* **Internal Stakeholders:** Individuals or teams within the organization, such as management, employees, or specific departments.
* **External Stakeholders:** Parties outside the organization, such as clients, suppliers, regulators, or the general public.
* **End Users:** Those who will directly use the product or service.
* **Decision-Makers:** Key leaders who have the authority to approve, reject, or fund the project.

### ****3. Analyze the Project Lifecycle****

Identify stakeholders relevant to each phase of the project:

* **Initiation Phase:** Stakeholders involved in funding or approving the project (e.g., sponsors, senior management).
* **Planning Phase:** Teams providing inputs for requirements and design (e.g., business analysts, users).
* **Execution Phase:** Developers, testers, and operational teams.
* **Closure Phase:** Stakeholders involved in reviewing deliverables or signing off on the project.

### ****4. Conduct Stakeholder Interviews and Workshops****

* Meet with senior leaders or project sponsors to identify key stakeholders.
* Organize brainstorming sessions with project teams to list potential stakeholders.

### ****5. Use Stakeholder Mapping Tools****

* **Stakeholder Register:** A document listing all stakeholders with their roles, responsibilities, and interests.
* **Stakeholder Matrix:** Categorize stakeholders based on their **interest** (low/high) and **influence** (low/high).

### ****6. Consider External Influences****

* Identify regulatory authorities or government agencies relevant to the project.
* Include customers, suppliers, or industry organizations that may interact with or be impacted by the project.

### ****7. Identify Key Roles and Responsibilities****

For this project (**Online Agriculture Product Store**), some key stakeholders could include:

* **Project Sponsor:** Mr. Henry (approves the project and provides funding).
* **End Users:** Farmers and agricultural product manufacturers (primary users of the platform).
* **Delivery Team:** Developers, testers, network admins, and business analysts.
* **Regulators:** Compliance authorities for online commerce or agriculture.
* **Trainers:** Responsible for educating farmers and manufacturers.

### ****8. Use Documentation and Historical Data****

* Refer to past similar projects to identify typical stakeholders.
* Use organizational charts to identify departments or individuals who might be involved.

### ****9. Validate the Stakeholder List****

* Review the list with key project sponsors or managers to ensure no one is missed.
* Regularly update the list during the project lifecycle as new stakeholders may emerge.

Q8. Four SDLC Methodologies

The Committee of Mr. Henry, Mr Pandu , and Mr Dooku and Mr Karthik are having a discussion on Project Development Approach.

Mr Karthik explained to Mr. Henry about SDLC. And four methodologies like Sequential Iterative Evolutionary and Agile. Please share your thoughts and clarity on Methodologies.

The four SDLC methodologies—**Sequential, Iterative, Evolutionary, and Agile**—to help Mr. Karthik clarify their differences and suitability for the project:

### ****1. Sequential Methodology (Waterfall Model)****

#### ****Overview:****

* Follows a **linear and structured approach**.
* Each phase (Requirements, Design, Development, Testing, Deployment, and Maintenance) is completed **one after the other**, with no overlap.
* Progress is considered **final and irreversible**—no going back to previous phases.

#### ****Advantages:****

* Easy to understand and manage due to its clear structure.
* Works well when requirements are well-defined and unlikely to change.
* Suitable for small or straightforward projects.

#### ****Disadvantages:****

* Not flexible—any changes in requirements during development are costly.
* Delays testing until the later phases, which may result in late discovery of issues.
* Unsuitable for complex or uncertain projects.

#### ****Suitability for This Project:****

* **Not ideal** since farmers and manufacturers may provide feedback or change requirements after using the platform and flexibility is key.

### ****2. Iterative Methodology****

#### ****Overview:****

* Development is done in **repeated cycles (iterations)**, with each cycle delivering a part of the system.
* Feedback from one iteration is used to improve and refine the next.
* Each iteration includes planning, design, development, and testing.

#### ****Advantages:****

* Allows partial functionality to be delivered quickly.
* Encourages ongoing stakeholder feedback.
* Identifies issues early by building and refining incrementally.

#### ****Disadvantages:****

* Requires strong planning and control to avoid scope creep.
* Initial iterations may not be fully functional, leading to incomplete feedback.

#### ****Suitability for This Project:****

* **Somewhat suitable**, as partial deliverables like a prototype can be developed and refined based on feedback from farmers and manufacturers.

### ****3. Evolutionary Methodology****

#### ****Overview:****

* Focuses on **developing the system incrementally** based on evolving requirements.
* Combines iterative cycles with a focus on evolving the product in response to feedback.
* Often used in projects where the requirements are **not fully understood upfront**.

#### ****Advantages:****

* Accommodates changing requirements and uncertainty.
* Continuous delivery of working versions builds trust with stakeholders.
* Promotes user feedback and engagement throughout development.

#### ****Disadvantages:****

* Requires close communication with stakeholders.
* May involve higher costs due to ongoing refinement.

#### ****Suitability for This Project:****

* **Highly suitable**, as the project involves uncertain user needs (e.g., farmer usability) that will evolve over time. Allows the platform to be built in stages based on actual user feedback.

### ****4. Agile Methodology****

#### ****Overview:****

* A modern, flexible approach that breaks development into **short sprints** (typically 1-4 weeks).
* Encourages collaboration between cross-functional teams, stakeholders, and end-users.
* Prioritizes continuous delivery of working software, with flexibility to adapt to changes.

#### ****Advantages:****

* Highly responsive to changing requirements.
* Stakeholders are continuously involved, ensuring alignment with their needs.
* Delivers small, functional parts of the product frequently, allowing early testing and feedback.

#### ****Disadvantages:****

* Requires a high level of communication and collaboration.
* Can be difficult to manage for large teams without clear discipline.
* Requires stakeholders to be available for frequent reviews and input.

#### ****Suitability for This Project:****

* **Ideal choice** for this project as it involves:
	+ Farmers who may need significant training and may change requirements during development.
	+ A need for rapid delivery of usable features (e.g., product browsing, purchasing options) in small increments.
	+ Collaboration with stakeholders such as manufacturers, farmers, and committee members.

### ****Recommendation for the Project:****

For the **Online Agriculture Product Store**:

* **Agile Methodology** is the most suitable approach due to its flexibility, collaboration, and ability to deliver incremental results.
* If the committee prefers a slightly structured approach, **Evolutionary Methodology** could also work well, as it balances iterative development with evolving needs.

By adopting **Agile**, the project team can:

* Release key features like product listings and payment functionality early for testing.
* Continuously incorporate feedback from farmers and manufacturers, ensuring a user-friendly platform.

Q9. Waterfall RUP Spiral and Scrum Models

They discussed models in SDLC like waterfall RUP Spiral and Scrum. You put forth your understanding on these models When the APT IT SOLUTIONS company got the project to make this online agriculture product store, there is a difference of opinion between a couple of SMEs and the project team regarding which methodology would be more suitable for this project. SMEs are stressing on using the V model and the project team is leaning more onto the side of waterfall model. As a business analyst, which methodology do you think would be better for this project?

### ****Waterfall Model****

* A linear and sequential model where each phase (Requirements, Design, Development, Testing, Deployment, Maintenance) must be completed before moving to the next.
* Changes are difficult to implement once a phase is completed.

#### ****Advantages:****

* Clear structure and easy to manage.
* Works well for projects with well-defined and stable requirements.
* Best suited for small, simple projects.

#### ****Disadvantages:****

* Not flexible to accommodate changes in requirements.
* Testing is done late in the process, which may result in discovering critical issues late.
* Unsuitable for projects with uncertain or evolving requirements.

### ****RUP (Rational Unified Process)****

* An iterative and incremental development framework.
* Focuses on multiple phases (Inception, Elaboration, Construction, and Transition) with iterative cycles within each phase.
* Heavily relies on documentation and stakeholder involvement.

#### ****Advantages:****

* Flexible and allows changes throughout the project.
* Continuous testing and feedback during iterations.
* Suited for medium-to-large projects with moderate complexity.

#### ****Disadvantages:****

* Requires experienced teams familiar with the framework.
* Can be resource-intensive and time-consuming due to extensive documentation.

### ****Spiral Model****

* Combines iterative development with risk management.
* Each cycle involves four phases: Planning, Risk Analysis, Engineering, and Evaluation.
* Focuses on risk identification and mitigation at each iteration.

#### ****Advantages:****

* Ideal for projects with high uncertainty or complexity.
* Risk is minimized as it’s analyzed and addressed at each iteration.
* Stakeholders can review progress at every phase.

#### ****Disadvantages:****

* Expensive and time-intensive.
* Requires specialized skills for risk analysis.
* Unsuitable for small or low-budget projects.

### ****Scrum Model (Agile Framework)****

* A lightweight, flexible methodology where work is divided into short, time-boxed sprints (1-4 weeks).
* Focuses on delivering incremental functionality with stakeholder collaboration and adaptability.

#### ****Advantages:****

* Highly flexible and adaptive to changing requirements.
* Ensures continuous delivery of value to stakeholders.
* Encourages collaboration and feedback.

#### ****Disadvantages:****

* Requires high stakeholder involvement throughout the project.
* May lack documentation and structure compared to other methodologies.
* Needs experienced teams to manage and execute properly.

### ****V Model****

* A variation of the Waterfall model with a heavy emphasis on testing.
* For every development phase, there is a corresponding testing phase (e.g., Requirements Validation, Design Validation).
* Testing begins early in the project lifecycle.

#### ****Advantages:****

* Ensures robust and systematic testing.
* Early detection of defects due to the focus on validation and verification.
* Works well for projects with clear and stable requirements.

#### ****Disadvantages:****

* Rigid structure; changes in requirements are difficult to manage.
* Requires significant upfront planning and clear documentation.
* Not suitable for projects with evolving or unclear requirements.

### ****Analysis: Choosing the Right Methodology for This Project****

The **Online Agriculture Product Store** project involves uncertain and evolving requirements. Farmers and manufacturers, who are the primary users, may provide feedback during development, requiring flexibility to adapt. With this in mind:

#### ****Why V Model May Not Be Suitable:****

* V Model is rigid and does not accommodate changing requirements well.
* It requires comprehensive and finalized requirements upfront, which may not be feasible given the diverse needs of farmers and manufacturers.
* Early testing is beneficial, but the lack of flexibility could hinder project success.

#### ****Why Waterfall May Not Be Suitable:****

* Like the V Model, Waterfall does not support iterative feedback or accommodate changes in requirements.
* Testing occurs late in the process, which risks delivering a product that might not meet user expectations.

#### ****Recommended Methodology: Agile (Scrum Model):****

* Agile methodologies like **Scrum** are better suited for this project as they allow iterative and incremental development.
* Features can be released in short sprints, tested by stakeholders (farmers and manufacturers), and adjusted based on feedback.
* It provides flexibility to adapt to evolving requirements while ensuring continuous delivery of usable functionality.
* Encourages collaboration between the project team, SMEs, and end-users, addressing their concerns proactively.

#### ****Alternative Option: RUP:****

* If the team is not fully comfortable with Agile, **RUP** offers a middle ground with iterative development cycles while maintaining structure.
* RUP is particularly suitable for projects with moderate complexity and a need for formal documentation, which may reassure SMEs.

### ****Conclusion:****

As a **Business Analyst**, I recommend using the **Scrum model (Agile)** for this project due to its flexibility, adaptability to changing requirements, and focus on continuous stakeholder collaboration. However, if the team prefers a more structured iterative approach, **RUP** would be the next best choice. The **V Model** or **Waterfall Model** are less ideal given the dynamic nature of this project.

Q10. Waterfall Vs V-Model

Write down the differences between waterfall model and V model.

### ****Differences between Waterfall Model and V-Model****

|  |  |  |
| --- | --- | --- |
| **Aspect** | **Waterfall Model** | **V-Model** |
| **Definition** | A linear and sequential model where each phase must be completed before moving to the next. | An extension of the Waterfall model where every development phase is paired with a testing phase. |
| **Focus** | Focuses on completing development phases in a sequence. | Focuses equally on development and corresponding testing phases. |
| **Structure** | Sequential and linear. | Sequential with a V-shaped verification and validation structure. |
| **Testing Phase** | Testing is performed only after the development phase is completed. | Testing is integrated into every phase of development. |
| **Flexibility** | Rigid structure; changes are difficult to implement once a phase is completed. | Similarly rigid, but testing in early stages provides room to detect defects earlier. |
| **Cost of Changes** | High cost of changes because issues are detected late during testing. | Slightly reduced cost of changes due to early validation and verification. |
| **Error Detection** | Errors are typically detected late in the testing phase. | Errors can be detected early through validation at each development phase. |
| **Documentation** | Requires detailed documentation at every phase. | Requires even more detailed documentation to support early testing and validation. |
| **Use Cases** | Suitable for small, straightforward projects with well-defined requirements. | Suitable for projects where robust and systematic testing is critical. |
| **Complexity** | Less suited for complex projects due to lack of flexibility. | Handles complexity better by integrating testing into all phases. |
| **Customer Involvement** | Customer involvement is typically limited to the requirements phase and final delivery. | Customer feedback can be integrated during validation stages, though involvement remains limited. |
| **Applicability** | Best for projects with clear, Unchanging requirements. | Best for projects where early defect detection is crucial. |

### ****Key Takeaway****

* Use **Waterfall** if requirements are stable, the project is small, and the risk of changes is low.
* Use **V-Model** if **early testing and defect detection** are essential and you can afford the upfront cost of detailed documentation and validation efforts.

Q11. Justify your choice

As a BA, state your reason for choosing one model for this project.

As a Business Analyst, after considering the **Waterfall**, **RUP**, **Spiral**, and **Scrum** models, I recommend using the **Scrum (Agile Framework)** methodology for this project. Here’s why:

### ****Why Scrum Is the Most Suitable Choice****

#### 1. ****Dynamic Requirements and Feedback****

* The requirements for this project are likely to evolve as stakeholders (farmers and manufacturers) gain a better understanding of how the platform can meet their needs.
* Scrum's iterative and incremental approach allows changes to be made during development based on stakeholder feedback after each sprint. This ensures the final product aligns with user expectations.

#### 2. ****Frequent Deliverables****

* Farmers and manufacturers can start using parts of the system (e.g., browsing products, placing orders) as soon as they are developed.
* Continuous delivery of working functionality keeps stakeholders engaged and ensures the system adds value even during development.

#### 3. ****Collaboration and Transparency****

* Scrum fosters continuous communication and collaboration between the development team and stakeholders.
* Daily standups, sprint reviews, and retrospectives create transparency, ensuring stakeholders like Mr. Henry and the project committees are always informed about the progress.

#### 4. ****Risk Mitigation****

* By delivering functionality in short iterations (sprints), risks (technical, usability, and business-related) are identified and addressed early in the project.
* This minimizes the chance of project failure or delays.

#### 5. ****Adapting to Diverse User Needs****

* Farmers and manufacturers may have varying levels of familiarity with technology. Scrum's flexibility allows the team to prioritize features like ease of use and accessibility early on and adjust based on user feedback.

#### 6. ****Team Strengths****

* The APT IT Solutions team has a strong talent pool, including experienced developers, testers, and a network administrator. Scrum leverages the team’s collective expertise, encouraging cross-functional collaboration to deliver quality output.

### ****Conclusion****

The **Scrum model (Agile Framework)** is the best choice for this project due to its flexibility, focus on collaboration, iterative delivery, and ability to adapt to evolving requirements. It will ensure that the online agriculture product store meets the needs of farmers, manufacturers, and other stakeholders while delivering value early and continuously.

Q12. Gantt Chart

The Committee of Mr. Henry, Mr Pandu, and Mr Dooku discussed with Mr Karthik and finalised on the V Model approach (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT)

Mr Vandanam is mapped as a PM to this project. He studies this Project and Prepares a Gantt chart with V Model (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) as development process and the Resources are PM, BA, Java Developers, testers, DB Admin, NW Admin.

To create a Gantt chart based on the V Model approach you mentioned (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4, and UAT), let's break down each phase and resource allocation in the development process:

### 1. ****V Model Phases:****

* **RG**: Requirements Gathering (Initial phase where the project’s needs are collected)
* **RA**: Requirements Analysis (Analyzing the collected requirements)
* **Design**: System design phase, where technical architecture is outlined.
* **D1, T1, D2, T2, D3, T3, D4, T4**: These likely represent different development and testing stages (Design phase and corresponding Testing phases).
* **UAT**: User Acceptance Testing (Final testing phase to validate with end users)

### 2. ****Resources Allocation:****

* **PM (Project Manager)**: Oversees the entire project.
* **BA (Business Analyst)**: Works on RG and RA to gather and analyze requirements.
* **Java Developers**: Involved in design, development, and implementation of the system.
* **Testers**: Perform testing across various stages (D1, T1, D2, etc.).
* **DB Admin (Database Administrator)**: Responsible for the database aspects throughout the design, development, and testing phases.
* **NW Admin (Network Administrator)**: Manages network infrastructure for development and testing.

### 3. ****Gantt Chart Breakdown:****

A **Gantt chart** is typically structured in a timeline format with tasks/activities on the vertical axis and time periods (days/weeks) on the horizontal axis. For the V Model approach, the tasks could be aligned with timeframes and the resources needed for each phase.

Here’s a simplified Gantt chart structure for your project:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Phase/Task** | **PM** | **BA** | **Java Developers** | **Testers** | **DB Admin** | **NW Admin** | **Time Period** |
| **RG (Requirements Gathering)** | X | X |   |   |   |   | Week 1 - Week 2 |
| **RA (Requirements Analysis)** | X | X |   |   |   |   | Week 2 - Week 3 |
| **Design** | X |   | X |   |   |   | Week 3 - Week 4 |
| **D1 (Development Phase)** | X |   | X |   | X |   | Week 4 - Week 5 |
| **T1 (Testing Phase)** |   |   |   | X |   |   | Week 5 - Week 6 |
| **D2 (Development Phase)** | X |   | X |   | X |   | Week 6 - Week 7 |
| **T2 (Testing Phase)** |   |   |   | X |   |   | Week 7 - Week 8 |
| **D3 (Development Phase)** | X |   | X |   | X |   | Week 8 - Week 9 |
| **T3 (Testing Phase)** |   |   |   | X |   |   | Week 9 - Week 10 |
| **D4 (Development Phase)** | X |   | X |   | X |   | Week 10 - Week 11 |
| **T4 (Testing Phase)** |   |   |   | X |   |   | Week 11 - Week 12 |
| **UAT (User Acceptance Testing)** | X |   |   | X |   |   | Week 12 - Week 13 |

### Notes:

* Each phase has a specific resource (BA, Java Developer, etc.) assigned to it.
* The Gantt chart shows a simplified weekly schedule for the project based on the V Model approach.
* The overlapping phases (D1, T1, D2, T2, etc.) show parallel development and testing activities

Q13. Fixed Bid Vs Billing

Explain the difference between Fixed Bid and Billing projects

The difference between **Fixed Bid** and **Billing** projects primarily revolves around how the cost of the project is determined and how the pricing model works during the course of the project. Here's a detailed explanation:

### ****1. Fixed Bid (Fixed Price)****

A **Fixed Bid** project is a contract where the total cost is agreed upon before the work begins. This cost is fixed, meaning that regardless of the time, effort, or resources required, the client will pay the agreed amount for the project completion.

#### ****Key Characteristics:****

* **Upfront Agreement**: The total price for the entire project is set before the work starts, based on the agreed-upon scope, deliverables, and timelines.
* **No Change in Price**: The price does not change unless there are major changes to the scope or requirements of the project (e.g., new features added).
* **Clear Deliverables and Timelines**: Both the service provider and the client agree on what will be delivered and when it will be delivered.
* **Risk to the Service Provider**: If the project takes longer than expected or requires more resources, the vendor bears the additional cost.

#### ****When to Use:****

* The project scope, timeline, and deliverables are well-defined and unlikely to change.
* The client needs a predictable and fixed budget for planning and financial purposes.
* The project is relatively straightforward, with minimal uncertainty or complexity.

#### ****Advantages:****

* Predictable cost and budget for the client.
* Clear and defined deliverables and timelines.
* The service provider takes on the risk if the project overruns.

#### ****Disadvantages:****

* Less flexibility in accommodating scope changes or new requirements during the project.
* Risk of quality issues if the vendor is pressured to stay within the fixed price, leading to potential shortcuts.
* Scope creep can result in additional charges if not properly managed.

### ****2. Billing (Time and Materials)****

In a **Billing** (Time and Materials) contract, the client is billed based on the actual time spent (usually hourly or daily rates) and any materials or resources used during the project. The total cost is not fixed and will depend on how much time and effort the project requires to complete.

### ****Comparison Summary:****

| **Aspect** | **Fixed Bid (Fixed Price)** | **Billing (Time and Materials)** |
| --- | --- | --- |
| **Cost** | Agreed upfront, fixed for the entire project. | Based on time worked and materials used, no fixed cost. |
| **Budget Predictability** | High – the client knows the total cost from the start. | Low – the final cost depends on how long the project takes. |
| **Flexibility** | Low – any changes to scope or requirements may require renegotiation. | High – the scope can evolve as needed without renegotiation. |
| **Risk** | Risk is on the service provider (vendor). | Risk is on the client (for cost overruns). |
| **Scope Definition** | Must be clearly defined and unlikely to change. | Can evolve over time as needs change. |
| **Project Type** | Best for well-defined, straightforward projects. | Best for projects with unclear or changing requirements. |
| **Timeframe** | Fixed timeline agreed upfront. | Timeline can change based on how long the work takes. |
| **Management** | Requires detailed upfront planning and scope definition. | More ongoing communication and monitoring to track progress. |

### ****When to Choose Which:****

* **Fixed Bid** is ideal when:
	+ The scope, timeline, and deliverables are well understood.
	+ The client prefers cost predictability and does not expect significant changes.
	+ The project is more straightforward with minimal risks of scope creep.
* **Billing (Time and Materials)** is ideal when:
	+ The scope of the project is unclear, evolving, or expected to change during the execution.
	+ The project is complex or innovative, where the exact effort is hard to predict.
	+ The client needs flexibility and wants to make adjustments to the project as it progresses.

Q14. Preparer Timesheets of a BA in various stages of SDLC

Timesheets for a Business Analyst (BA) across various stages of the Software Development Life Cycle (SDLC) is important for tracking their work activities and managing project timelines.

* Design Timesheet of a BA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr No** | **Task Description** | **Actionable** | **Start Time** | **End Time** | **Duration** |
| 1 | Requirement Analysis | Review of functional requirements | 10:00 AM | 11:00 AM | 1 hours |
| 2 | Design Specifications | Worked on design documents for UI/UX and system flow | 11:30 AM | 1:30 PM | 2 hours |
| 3 | Business Process Mapping | Created process flow diagrams for the system | 2:30 PM | 3:30 PM | 1 hours |
| 4 | Stakeholder Meetings | Discussed design expectations with the client | 4:00 PM | 5:00 PM | 1 hours |
| 5 | Review of Use Case Scenarios | Reviewed and updated use cases for system design | 5:00 PM | 7:00 PM | 2 hours |

* Development Timesheet of a BA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr No** | **Task Description** | **Actionable** | **Start Time** | **End Time** | **Duration** |
| 1 | Requirement Gathering and Clarification | Clarified ambiguities with developers | 10:00 AM | 11:00 AM | 1 hours |
| 2 | Functional Design Documentation | Created functional specifications for development | 11:30 AM | 1:30 PM | 2 hours |
| 3 | Collaboration with Developers | Worked with the development team on technical feasibility | 2:30 PM | 3:30 PM | 1 hours |
| 4 | Change Request Management | Managed change requests and assessed impact on development | 4:00 PM | 5:00 PM | 1 hours |
| 5 | User Story Definition | Defined user stories for backlog refinement | 5:00 PM | 7:00 PM | 2 hours |

* Testing Timesheet of a BA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr No** | **Task Description** | **Actionable** | **Start Time** | **End Time** | **Duration** |
| 1 | Test Case Preparation | Prepared test cases from requirements | 10:00 AM | 11:00 AM | 1 hours |
| 2 | Test Scenario Review | Validated test scenarios with QA team | 11:30 AM | 1:30 PM | 2 hours |
| 3 | Test Environment Setup | Collaborated with QA to set up test environment | 2:30 PM | 3:30 PM | 1 hours |
| 4 | User Acceptance Testing (UAT) Preparation | Defined UAT test plan with stakeholders | 4:00 PM | 5:00 PM | 1 hours |
| 5 | Issue Documentation | Documented bugs and testing issues | 5:00 PM | 7:00 PM | 2 hours |

* UAT Timesheet of a BA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr No** | **Task Description** | **Actionable** | **Start Time** | **End Time** | **Duration** |
| 1 | UAT Planning and Coordination | Coordinated with users for UAT testing | 10:00 AM | 12:00 PM | 2 hours |
| 2 | UAT Test Case Review | Reviewed test cases with users | 12:30 PM | 1:30 PM | 1 hours |
| 3 | Facilitating UAT Sessions | Assisted end-users during UAT process | 2:30 PM | 5:30 PM | 3 hours |
| 4 | UAT Feedback Collection | Collected and documented feedback from users | 6:00 PM | 7:00 PM | 2 hours |
| 5 | Issue Resolution and Retesting | Collaborated with the development team to resolve UAT issues | 7:00 PM | 9:00 PM | 2 hours |

* Deployment & Implementation Timesheet of a BA

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr No** | **Task Description** | **Actionable** | **Start Time** | **End Time** | **Duration** |
| 1 | Deployment Planning | Coordinated deployment plan with IT and development teams | 10:00 AM | 12:00 PM | 2 hours |
| 2 | User Training Preparation | Prepared training materials for end-users | 12:30 PM | 1:30 PM | 1 hours |
| 3 | Post-Deployment Support | Provided support during the initial deployment phase | 2:30 PM | 5:30 PM | 3 hours |
| 4 | System Handover to Operations | Handover meeting with operations team | 6:00 PM | 7:00 PM | 2 hours |
| 5 | Monitoring Deployment Issues | Monitored system for issues after deployment | 7:00 PM | 9:00 PM | 2 hours |