**Question 1: Business Process Model**

***Identify the business process model for the online agriculture store – (Goal, Input, Resources, Outputs, Activities, Value Created to the End Customer)***

|  |  |
| --- | --- |
| **Goal**  | To create an online platform that connects the farmers in remote areas with manufacturers of agricultural products (fertilizers, seeds and pesticides) to streamline the procurement process, making it easier for the farmers to access necessary products and enhance their farming efficiency.  |
| **Inputs**  | 1. ***Product Information:*** Details of Fertilizers, seeds and pesticides from manufacturers
2. ***Farmer requirements:*** Specific needs and challenges faced by farmers gathered through the stakeholder input (Peter, Kevin and Ben).
3. ***Budget and time frame:*** 2 crores INR, 18 months
4. ***User Feedback:*** Continuous input from farmers and manufacturers to improve the platform.
 |
| **Resources**  | 1. ***APT IT Solutions Team:***
	1. Project Manager: Mr. Vandanam
	2. Senior Java Developer: Ms. Juhi
	3. Java Developers: Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo
	4. Network Admin: Mr. Mike
	5. DB Admin: Mr. John
	6. Testers: Mr. Jason and Ms. Alekya
2. ***Stakeholders:***
	1. SOONY Company committee (Mr. Henry, Mr. Pandu, Mr. Dooku)
	2. Farmers: Peter, Kevin and Ben
3. ***Technology Stack:*** Java, Database Systems, Network Infrastructure
4. ***Financial Resources:*** 2 Crores INR Budget provided by SOONY company under CSR initiative
 |
| **Outputs**  | 1. ***Online Agriculture Store Application***
	1. A web/mobile platform accessible via the internet
	2. Product listings for fertilizers, seeds and pesticides
	3. Communication interface between farmers and manufacturers
	4. Order and delivery management system.
2. ***Reports and Analytics:***
	1. Usage data and feedback from farmers and manufacturers
	2. Sales and delivery reports
	3. Inventory and supply chain tracking
 |
| **Activities** | 1. ***Requirement Gathering:***
	1. Conduct interviews with stakeholders (Peter, Kevin, Ben) to understand their needs.
	2. Document the required functionalities and features for the application
2. ***Design and development:***
	1. Create wireframes and mockups of the online store interface.
	2. Develop backend functionalities to manage project information, user accounts and order processing
	3. Implement a user-friendly user interface
	4. Ensure application is optimized for both web and mobile use
3. ***Testing:***
	1. Perform Unit, Integration and System Testing
	2. Conduct user acceptance testing with farmers and manufacturers
4. ***Deployment:***
	1. Set Up Hosting and Deploy Application on a Live Server
	2. Ensure Network Security and Database Management
5. ***Training and Support:***
	1. Provide Training Materials and Sessions for farmers and manufacturers on how to use the platform
	2. Offer ongoing technical support
6. ***Monitoring and Maintenance:***
	1. Regularly monitor application performance and user feedback
	2. Implement updates and improvements based on feedback
 |
| **Value Created to the End Customer**  | 1. ***For Farmers:***
	1. Easier access to necessary agricultural products
	2. Reduced time and effort in procuring products
	3. Ability to compare products and prices from different manufacturers
	4. Direct communication with manufacturers for better product information
2. ***For Manufacturers:***
	1. Expanded market reach, especially in remote areas
	2. Better understanding of farmer needs and demand trends
	3. Increased sales opportunities
 |

This business process model ensures that the Online Agriculture Store meets the needs of both farmers and manufacturers, creating a sustainable platform that benefits the entire agricultural community.

**Question 2: SWOT**

***Mr. Karthick is doing SWOT analysis before he accepts this project. What aspects should he consider as strength, weakness, opportunity and threats)***

|  |  |
| --- | --- |
| **Strengths** | 1. ***Experienced Team:***
	1. APT IT Solutions has a skilled and well-rounded team including senior Java developers, experienced Java developers, Network Admin, DB Admin and testers ensuring robust development.
2. ***Strong Leadership and Coordination:***
	1. The leadership of experienced professionals like Mr. Vandanam (Project Manager) and Mr. Karthick (Delivery Head) enhances the chances of successful project management.
3. ***Direct stakeholder involvement:***
	1. Close collaboration with stakeholders (Peter, Kevin, Ben) ensures that real needs of end users are addressed effectively.
4. ***CSR initiative:***
	1. The Project aligns with SOONY company’s CSR goals, giving it strong executive backing and a positive social media impact narrative.
5. ***Sufficient budget and timeframe:***
	1. With 2 crores INR and 18 months available, there is ample financial and temporal buffer to address unforeseen challenges and deliver a quality product.
 |
| **Weakness**  | 1. ***Limited understanding of rural farming needs:***
	1. APT IT Solutions may have limited experience in agriculture sector and the specific challenges faced by remote area farmers, leading to potential misalignment with user needs.
2. ***Geographical and technological barriers:***
	1. Farmers in remote areas might have limited internet access or familiarity with digital tools which could hinder application’s adoption.
3. ***Dependency on multiple stakeholders:***
	1. The involvement of diverse groups (farmers, manufacturers, committee members) may lead to conflicting requirements and slow decision making.
4. ***Complex supply chain management:***
	1. Managing logistics, order fulfillment and delivery in remote areas may pose operational challenges that could delay project timelines or add unexpected costs.
 |
| **Opportunities**  | 1. ***Expanding market potential:***
	1. The platform could be a one stop solution for agricultural procurement across many remote areas, leading to widespread adoption and growth.
2. ***Scalability:***
	1. The application could be expanded to include additional features like crop advisory, weather alerts, and financial services for farmers, enhancing its value proposition
3. ***First mover advantage:***
	1. There may be limited competition in the remote agriculture e-commerce space, giving the platform an early advantage.
4. ***Government partnerships and support:***
	1. Potential to collaborate with government initiatives focused on rural development and digital agriculture could provide additional resources and legitimacy.
 |
| **Threats**  | 1. ***Technological resistance:***
	1. Resistance to digital adoption among farmers due to lack of trust, digital literacy level could impede user onboarding.
2. ***Regulatory challenges:***
	1. Agricultural products like fertilizers, seeds and pesticides are subject to stringent regulations, and any compliance issues could cause delays and fines.
3. ***Supply chain disruptions:***
	1. Unreliable logistics or delivery infrastructure in remote areas could lead to delays, damaging the platform’s reputation.
4. ***Competition from established players:***
	1. Large Agri-tech companies or e-commerce companies could enter this space, leveraging their resources and brand trust to outcompete the new platform.
 |

**Question 3: Feasibility Study**

***Mr. Karthick is trying to do a feasibility study on doing this project in technology (Java), please help him with points (HW and SW trained resources, budget and time frame) to be considered in the feasibility study.***

|  |  |
| --- | --- |
| **Hardware requirements** | 1. ***Development machines:***
	1. High performance systems for developers (minimum 16 GB of RAM, multi core processors and SSD storage) to handle Java based application and testing
2. ***Servers and hosting:***
	1. Consider cloud-based solutions (Azure, AWS) or on premise servers with high availability, security and scalability to host the application
	2. Staging environment:
		1. Separate servers for testing and staging the application before deployment
3. ***Network infrastructure:***
	1. Robust network setup for seamless communication, especially for remote developers or stakeholders accessing the application during testing and feedback.
 |
| **Software requirements**  | 1. ***Java development environment***
	1. Java JDK (latest version), spring framework for backend development, and IDEs like IntelliJ IDEA or Eclipse
2. ***Database systems:***
	1. MySQL, PostgreSQL, or Oracle database for storing product details, user data, orders, etc.
3. ***Application servers:***
	1. Apache Tomcat or similar java-based servers for running the web applications
4. ***Web frameworks:***
	1. Spring boot for rapid development, along with front end technologies like Angular, React or plain HTML/CSS/JS for responsive UI
5. ***DevOps Tools:***
	1. CI/CD pipelines (Jenkins, GitLab CI), docker for containerization, and Kubernetes for deployment management.
6. ***Testing tools:***
	1. Junit for testing, Selenium for automated UI testing, and postman for API testing
 |
| **Trained resources**  | 1. ***Java developers***
	1. Skilled in spring boot, REST API development, microservices, and working with databases
2. ***UI/UX designers:***
	1. Experienced in building user friendly interfaces for web and mobile applications that are easy to navigate for non tech savvy users.
3. ***Database administrators:***
	1. Proficient in database design, management and optimization, with experience in handling large volumes of data
4. ***Network and system administrators:***
	1. Expertise in managing servers, networks, and ensuring the security and uptime of the platform
5. ***Testers:***
	1. Manual and automated testing skills, particularly in Java environments to ensure application stability
6. ***Project management:***
	1. A project manager to oversee timelines, resource allocation, and ensure that the project stays within budget and meet the goals.
 |
| **Budget considerations**  | 1. ***Development costs:***
	1. Salaries of the development team, including Java developers, testers and database admins and network admins
2. ***Software licenses:***
	1. Cost of the IDEs, database management systems (if opting for enterprise editions) and other paid tools.
3. ***Infrastructure costs:***
	1. Cloud hosting, server maintenance and network infrastructure costs
4. ***Training costs:***
	1. Training programs for the team if they need to upskill on the new framework, tools or technologies.
5. ***Miscellaneous:***
	1. Contingency funds for unforeseen issues, third party services, and post launch maintenance.
6. ***Time frame:***
	1. Requirement gathering and analysis:
		1. 2 to 3 months
	2. Design and prototyping:
		1. 2 to 3 months
	3. Development phase:
		1. 8 to 10 months
		2. Backend development, frontend design, database integration and API development
	4. Testing phase:
		1. Includes unit testing, integration testing, user acceptance testing (UAT), and performance testing.
	5. Deployment and training:
		1. 1 month
		2. Deployment of the application and training of stakeholders (farmers and manufacturers)
	6. Post launch and maintenance:
		1. Continuous
		2. Ongoing maintenance, bug fixes, updates based on user feedback.
7. ***Additional feasibility considerations:***
	1. *Scalability:*
		1. The system should be designed to handle future expansion (example: more product categories and additional regions)
	2. *User adoption:*
		1. Consider ease of use and localization (support for multiple languages) to carter farmers in different regions
	3. *Risk management:*
		1. Identify risks like delays, budget overruns, and plan mitigation strategies, such as buffer periods in the timeline or phased rollouts.
 |

**Question 4: Gap analysis**

***Mr. Karthick must submit gap analysis to Mr. Henry to convince to initiate this project. What points (compare AS-IS existing process with TO-BE future process) to showcase in the gap analysis.***

|  |  |
| --- | --- |
| **Procurement process**  | 1. ***AS-IS:***
	1. Farmers especially in remote areas, struggle to access essential agriculture products like seeds, fertilizers and pesticides.
	2. The current process involves travelling long distances to reach physical stores, which are time consuming and costly.
	3. Limited product options due to reliance on local vendors, leading to suboptimal choices and higher prices.
	4. Farmers face inconsistent product availability and delayed access, affecting crop yield and overall productivity.
2. ***TO-BE:***
	1. Farmers will access a wide range of agricultural products online through a single platform.
	2. The platform allows farmers to browse, compare, and order products without leaving their village, saving time and effort.
	3. Manufacturers can list their products directly, giving farmers access to more options and competitive pricing.
	4. Improved product availability and faster delivery times, ensuring timely farming operations.
 |
| **Communication and negotiation**  | 1. ***AS-IS:***
	1. Farmers rely on middle men and local vendors, leading to higher prices and limited bargaining power.
	2. Communication is often fragmented, with delays and misunderstanding between farmers and suppliers.
	3. Lack of direct interaction with manufacturers prevent farmers from accessing accurate product information.
2. ***TO-BE:***
	1. The platform enables direct communication between farmers and manufacturers, cutting out intermediates
	2. Farmers can receive accurate product information, technical details and usage instructions directly from manufacturers.
	3. Enhanced negotiation power for farmers due to transparent pricing and direct interaction.
 |
| **Information and awareness**  | 1. ***AS-IS:***
	1. Farmers have limited access to reliable information about latest agricultural products, technological advancements, and best practices.
	2. Dependence on vendors for information, which can be biased or incomplete.
	3. Inconsistent access to market trends, affecting decision making and profitability.
2. ***TO-BE:***
	1. The platform provides comprehensive product details, expert advice, and user reviews to help farmers make informed decisions.
	2. Regular updates on new products, promotions, and trends ensure farmers stay informed.
	3. Opportunities for learning from digital content like guides, tutorials and expert blogs.
 |
| **Ordering and fulfilment process**  | 1. ***AS-IS:***
	1. The ordering process is manual, with farmers visiting multiple stores and waiting for stock availability.
	2. Delivery logistics are inefficient, leading to delays and potential spoilage of products.
	3. Farmers have limited visibility on order status, leading to uncertainty and poor planning.
2. ***TO-BE:***
	1. Farmers can place orders online, track order status, and receive timely delivery to their location.
	2. The platform offers real time inventory updates, so farmers know what is in stock before placing orders.
	3. Reliable logistics and delivery management ensure products reach farmers in good condition and on time.
 |
| **Cost efficiency** | 1. **AS-IS:**
	1. High costs due to middlemen and transportation, especially for farmers in remote areas.
	2. Reduced transportation costs as products are delivered directly to farmer’s locations
	3. Improved product quality due to direct sourcing from manufacturers, minimizing the need for repeated purchases.
2. ***TO-BE:***
	1. Competitive pricing as farmers can compare prices from multiple manufacturers and choose the best deal.
	2. Reduced transportation costs as products are delivered directly to farmer’s locations.
	3. Improved product quality due to direct sourcing from manufacturers, minimizing the need for repeated purchase.
 |
| **User experience and accessibility**  | 1. ***AS-IS:***
	1. The current process is time consuming, requiring significant effort from farmers to obtain basic products.
	2. Limited access to modern digital solutions, leading to low efficiency and high frustration.
2. ***TO-BE:***
	1. A user-friendly platform designed with non tech savvy farmers in mind ensuring easy navigation and accessibility.
	2. Mobile and web accessibility with features like local language support, voice search, and simplified payment options.
	3. Improved convenience enabling farmers to focus more on farming activities rather than procurement challenges.
 |
| **Conclusion**  | The gap analysis clearly shows that the current procurement process is fragmented, inefficient and expensive, especially for farmers in remote areas. The TO-BE process, powered by proposed online agriculture store, addresses the gaps providing a streamlined, accessible and cost effective solution. This will not only empower farmers but also create a more efficient agriculture supply chain, making it a crucial investment for SOONY company’s CSR initiative.  |

**Question 5: Risk Analysis**

**List down the different risk factors that may be involved (BA risks and process / project risks)**

|  |  |
| --- | --- |
| **Business analysis (BA) risks** | 1. **Incomplete or inaccurate requirements:**
	1. Misunderstanding stakeholder needs or missing out on key requirements can lead to a product that doesn’t fully resolve the farmers’ problems.
	2. Lack of clear communication with stakeholders, especially those from non-technical backgrounds like farmers can result in incorrect assumptions.
2. **Scope creep:**
	1. Additional features or changes requested during the project life cycle can lead to scope creep, causing delays and budget overruns.
	2. Uncontrolled expansion of the project’s scope without proper change management.
3. **Stakeholder misalignment:**
	1. Conflicting requirements or expectations between stakeholders (example: farmers, manufacturers, project sponsors) can lead to delays and dissatisfaction.
	2. Difficulty in coordination with geographically dispersed stakeholders like farmers from remote areas.
4. **Poor requirement prioritization:**
	1. Ineffective prioritization can lead to the development of less critical features at the expense of more important ones.
	2. Focusing on low value functionalities early in the project can jeopardize timelines and deliverables.
5. **Lack of domain knowledge:**
	1. The business analyst may lack knowledge about agriculture sector or ecommerce, leading to ineffective requirement gathering and documentation.
	2. Challenges in understanding farmers’ pain points and dynamics of the agricultural supply chain.
6. **Inefficient communication channels:**
	1. Miscommunication or delayed feedback from stakeholders, particularly in rural areas with limited access to technology, can slow down the project.
	2. Language barriers or the inability to convey the technical aspects in a simplified manner to non tech savvy users.
 |
| **Process / Project risks** | 1. **Technical and feasibility risks:**
	1. Integration challenges between the online platform and various systems like payment gateways, delivery tracking, etc.
	2. Compatibility issues with different devices and operating systems, diverse user base.
	3. Potential technological limitations in rural areas like low internet bandwidth affecting platform performance.
2. **Resource availability and skillset risks:**
	1. Inadequate availability of skilled resources like experienced Java developers, testers, and UI/UX designers.
	2. Dependence on key team members (e.g., senior developers) may lead to project delays if they become unavailable.
	3. Insufficient training for the development team on new technologies and tools.
3. **Budget overruns:**
	1. Unexpected additional costs, such as hardware upgrades, third party licenses, or unforeseen technical challenges, can lead to budget overruns.
	2. Insufficient allocation of funds for post launch maintenance and support.
4. **Time management risks:**
	1. Delays in requirement gathering, development, testing or deployment phases due to unforeseen complexities.
	2. Ineffective time estimation for different phases of the project, leading to misdeed deadlines.
5. **User adoption and usability risks:**
	1. Farmers and manufacturers may face difficulties adapting to the new platform due to lack of familiarity with digital tools
	2. Platform’s user interface may be too complex or not intuitive enough for rural farmers with limited digital literacy.
6. **Data security and privacy risks:**
	1. Risks related to unauthorized access, data breaches or sensitive information like farmer details, payment information, etc.
	2. Compliance with legal and regulatory standards for data protection, especially considering that users may be from different locations.
7. **Infrastructure and operational risks:**
	1. Server downtimes and performance issues peak during usage periods, leading to the loss of trust and adoption.
	2. Inconsistent delivery services due to logistics challenges in remote areas, affecting user satisfaction.
8. **Vendor and third-party dependency risk:**
	1. Dependence on third party service providers for critical functions like payment processing, cloud hosting, or logistics can introduce risk if those vendors face issue.
	2. Delays or quality issues from vendors providing fertilizers, seeds, or pesticides listed on the platform.
9. **Regulatory and compliance risk:**
	1. Potential changes in agriculture, e-commerce or digital transaction regulations that could impact the business model.
	2. Compliance with local laws and regulations related to selling agricultural products online.
10. **Change management and stakeholder resistance:**
	1. Resistance from stakeholders to adopt new system due to comfort with traditional process.
	2. Challenges in managing organizational changes or transitioning farmers from manual procurement to online systems.
 |
| By identifying the risks early, appropriate mitigation strategies can be planned to ensure the project is successfully executed and delivers value to all stakeholders.  |

**Question 6: Stakeholder analysis (RACI Matrix)**

**Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take the decisions and who are the influencers.**

The RACI matrix is a tool used to identify key stakeholders and define their roles and responsibilities within a project. The roles in the RACI matrix are:

1. **R: Responsible:** The person who does the work to complete the task.
2. **A: Accountable:** The person who is ultimately answerable for the correct completion of the task.
3. **C:** **Consulted:** The person(s) whose input is sought before making a decision or taking action.
4. **I:** **Informed:** The person(s) who need to be kept informed of the progress or decisions.

The below is the RACI matrix for the online agriculture store project:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Project activity / decision***  | ***Mr. Henry (Sponsor / Decision Maker)*** | ***Mr. Pandu (Finance Head)***  | ***Mr. Dooku (Project Coordinator)*** | ***Peter, Kevin, Ben (Farmers / Stakeholders)*** | ***Mr. Karthick (delivery head)***  | ***APT IT Solutions (Development Team)*** | ***End Users – Farmers and manufacturers*** |
| ***Project vision and scope definition***  | A | C | C | C | R | I  | I |
| ***Budget allocation and approval***  | A | R | C | I | C | I  | I |
| ***Requirement gathering and analysis***  | I | I | C | C | A | R  | I |
| ***Technology selection (Java, etc.)*** | I | I | C | I | A | R | I |
| ***Development planning and execution***  | I  | I | C | I | A | R  | I  |
| ***Testing and quality assurance***  | I | I | C  | I  | A  | R  | I |
| ***User acceptance and feedback collection***  | I  | I | I | C | C | R  | C |
| ***Go-Live decision***  | A  | C  | C | I  | R | I | I |
| ***Post Launch Support Updates***  | I  | I  | C  | I  | A  | R  | I  |

**Analysis of key stakeholders:**

|  |  |
| --- | --- |
| ***Decision makers***  | 1. ***Mr. Henry (Sponsor):***
	1. Ultimately responsible and accountable for the project. Makes final decisions regarding scope, budget and go-live. Strong influence as he is the driving force behind the project
2. ***Mr. Pandu (Finance Head):***
	1. Responsible for budget approval and financial oversight. Influences the project through budgetary constraints and allocation.
 |
| ***Influencers***  | 1. ***Mr. Dooku (Project coordinator):***
	1. Acts as a bridge between Mr. Henry, the finance team and the development team. His input is critical in aligning the project goals with practical execution.
2. ***Peter, Kevin, Ben (Farmers):***
	1. As primary stakeholders and end-users, their feedback influences requirement gathering, user acceptance and overall project success.
 |
| ***Execution team***  | 1. ***Mr. Karthick (Delivery Head):***
	1. Accountable for overall project execution and responsible for ensuring the project stays on track, both technically and managerially.
2. ***APT IT solutions (development team):***
	1. Responsible for designing, developing, testing and deploying the application. They are crucial to the technical success of the project.
 |
| ***Informed and supporting stakeholders***  | 1. ***End-users (Farmers and Manufacturers):***
	1. Although not directly involved in decision making, they are informed throughout the project lifecycle and play a significant role during user acceptance and feedback phases.
 |
| This stakeholder analysis helps in identifying who should be consulted and who holds the authority to make critical decisions, ensuring the smooth and efficient execution of the project.  |

**Question 7: Business Case Document**

**Help Mr. Karthick to prepare a business case document.**

1. **Why is the project initated?**
	1. **Addressing farmers challenges in procurement:**
		1. Farmers, especially in remote areas, face difficulties in accessing essential agricultural inputs due to limited availability of stores and high dependency on intermediaries.
		2. Traveling long distances to buy fertilizers, seeds, and pesticides is time-consuming and costly for farmers.
		3. There is no centralized platform where farmers can directly purchase products from manufacturers.
	2. **Eliminating Middlemen & Reducing Costs**
		1. Currently, farmers rely on middlemen who increase prices and reduce profit margins.
		2. A direct-to-farmer e-commerce platform removes intermediaries, ensuring fair pricing and affordability.
	3. **Empowering Farmers with Digital Accessibility**
		1. Many farmers lack access to technology-driven solutions for purchasing agricultural products.
		2. The online platform will be user-friendly and cater to digitally inexperienced users, helping them embrace technology.
	4. **Enhancing Transparency & Quality Assurance**
		1. Farmers often lack information on product quality, pricing, and supplier credibility before purchasing.
		2. The platform will provide verified product details, reviews, and supplier ratings to help farmers make informed decisions.
	5. **Corporate Social Responsibility (CSR) Initiative by SOONY Company**
		1. Mr. Henry, after achieving success in business, wants to give back to the farming community.
		2. Through his company, SOONY, he is investing ₹2 Crores under CSR funding to launch the platform and uplift farmers.
	6. **Market Expansion for Agricultural Companies**
		1. Fertilizer, seed, and pesticide manufacturers will get a direct sales channel to reach rural farmers.
		2. The platform provides better demand forecasting and efficient inventory management for suppliers.
	7. **Government & Industry Alignment**
		1. The project aligns with India’s digital transformation initiatives in the agricultural sector.
		2. Supports the Make in India movement by connecting local agricultural manufacturers with farmers.
	8. **Conclusion:**
		1. The project is initiated to bridge the gap between farmers and suppliers, ensuring easy access, fair pricing, and quality assurance while leveraging digital technology to transform the agricultural supply chain.
2. **What are the current problems?**
	1. **Current Problems Faced by Farmers (AS-IS Scenario)**
		1. The Online Agriculture Store project is initiated to solve several key challenges faced by farmers in remote areas while procuring essential agricultural products like fertilizers, seeds, and pesticides.
	2. **Limited Access to Agricultural Inputs**
		1. Farmers in remote villages struggle to find nearby stores selling essential products.
		2. They often have to travel long distances, leading to time loss and additional transportation costs.
		3. Unavailability of required fertilizers, seeds, or pesticides at the right time affects crop production.
	3. **Dependence on Middlemen and High Costs**
		1. Farmers rely on local dealers and middlemen, who increase prices due to commissions.
		2. Price fluctuations make it difficult for farmers to plan their budget.
		3. Middlemen control product availability, limiting farmers' choices.
	4. **Lack of Product Information & Quality Assurance**
		1. Farmers have limited knowledge about product quality, brands, and usage instructions.
		2. Fake or low-quality agricultural products in the market lead to poor crop yields.
		3. No direct way for farmers to verify product authenticity or manufacturer details.
	5. **No Digital Platform for Direct Purchasing**
		1. Farmers lack an easy-to-use platform to compare and purchase fertilizers, seeds, and pesticides.
		2. Many existing platforms are complex and not farmer-friendly.
		3. There is no direct connection between farmers and manufacturers, restricting choice and pricing transparency.
	6. **Payment & Logistics Issues**
		1. Farmers struggle with cash payments and lack secure online payment options.
		2. Logistics challenges make it difficult for suppliers to deliver products efficiently to remote locations.
		3. Tracking deliveries is difficult, causing uncertainty in product arrival times.
	7. **Lack of Government & Private Sector Integration**
		1. Many government schemes provide subsidized agricultural products, but farmers don’t have easy access to them.
		2. No centralized system for private manufacturers and government programs to collaborate on supply chain management.
3. **With this project how many problems could be solved?**
	1. **Limited Access to Agricultural Inputs – solved:**
		1. Farmers in remote areas often struggle to find nearby stores selling fertilizers, seeds, and pesticides.
		2. Solution: The online platform connects farmers directly with manufacturers, allowing them to order products anytime from anywhere via a web or mobile app.
	2. **Dependence on Middlemen & High Costs – Solved**
		1. Farmers rely on local dealers and middlemen who increase prices through commissions.
		2. Solution: The platform eliminates middlemen, allowing direct purchase from manufacturers at fair prices.
	3. **Lack of Product Information & Quality Assurance – Solved**
		1. Farmers have limited knowledge about product quality, brands, and usage instructions.
		2. Farmers can view detailed product descriptions, manufacturer details, and verified reviews before purchasing.
		3. The system allows product comparisons so farmers can choose the best quality inputs.
		4. Only genuine, verified agricultural products are listed, reducing the risk of fake or low-quality products.
	4. **No Digital Platform for Direct Purchasing – Solved**
		1. The project creates a dedicated e-commerce platform for agricultural products.
		2. The platform is user-friendly and accessible via mobile, making it easy for farmers to browse and order.
	5. **Payment & Logistics Issues – Solved**
		1. Secure online payment options (UPI, mobile wallets, debit cards, bank transfers) ensure convenience.
		2. Real-time order tracking allows farmers to monitor delivery status and estimated arrival time.
	6. **Lack of Government & Private Sector Integration – Solved**
		1. The platform can integrate government subsidies and private sector offers, ensuring farmers get the best deals.
		2. Government agencies and private companies can use the platform to reach rural farmers directly.
4. **What are the resources required?**

|  |
| --- |
| **Human Resources (Project Team & Stakeholders)** |
| **Key Stakeholders (Decision Makers & Users)** |
| **Role** | **Responsibility** |
| Mr. Henry (Sponsor & Initiator) | Funds the project under CSR, provides vision & approvals. |
| Mr. Pandu (Financial Head, SOONY) | Manages budget allocation & financial planning. |
| Mr. Dooku (Project Coordinator, SOONY) | Coordinates between SOONY & APT IT SOLUTIONS |
| Farmers (Peter, Kevin, Ben & Others) | End users who will use the platform to purchase products. |
| Agricultural Companies (Suppliers) | Suppliers of fertilizers, seeds & pesticides. |
| **Development Team (APT IT SOLUTIONS)** |
| Mr. Karthik (Delivery Head) | Oversees project execution & delivery. |
| Mr. Vandanam (Project Manager) | Manages timeline, risks, and overall project scope. |
| Business Analyst | Collects requirements, documents processes, and ensures business alignment. |
| Ms. Juhi | Leads development efforts. |
| Java Developers (Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo) | Develop the platform (frontend & backend). |
| Mr. Mike (Network Administrator) | Manages network security and hosting infrastructure. |
| Mr. John (Database Administrator) | Handles database design and management. |
| Mr. Jason & Ms. Alekya (Testers) | Conduct quality assurance, testing, and UAT. |
| **Software & Technology Resources** |
| **Resource** | **Purpose** |
| Programming Languages | Java (Spring Boot for backend), React/Angular for frontend. |
| Database | MySQL / PostgreSQL for storing user & product data. |
| Cloud Hosting | AWS / Azure / Google Cloud for scalable deployment. |
| Payment Gateway | Razorpay / PayU / Stripe for secure online transactions |
| Security Tools | SSL encryption, OAuth authentication, and cybersecurity measures. |
| Testing Tools | Selenium, JUnit for automation and performance testing. |
| Project Management Tools | Jira, Trello for task tracking & collaboration. |
| Communication Tools | Slack, Microsoft Teams for team discussions. |
| **Hardware & Infrastructure** |
| **Resource** | **Purpose** |
| High-Speed Internet | Ensures seamless development and testing. |
| Development Machines | High-performance laptops/desktops for developers & testers. |
| Cloud Servers / On-Premise Servers | To host the website & database. |
| Mobile Devices (For Testing) | To test mobile app usability across Android & iOS. |
| **Financial Resources (Budget Allocation: ₹2 Crore INR)** |
| **Category** | **Estimated Budget (INR)** |
| Software Development | ₹80 Lakhs (Developing the Web & Mobile Application) |
| Cloud Hosting & Infrastructure | ₹25 Lakhs |
| Testing & QA | ₹15 Lakhs |
| Payment Gateway & Security | ₹10 Lakhs |
| Marketing & Farmer Awareness | ₹20 Lakhs |
| Training & Support | ₹10 Lakhs |
| Operational & Maintenance | ₹20 Lakhs |
| Contingency Fund | ₹20 Lakhs (For unforeseen costs) |

**How much organizational change is required to adopt this technology?**

1. **Technology Adoption (High Impact):**
	1. Develop a user-friendly e-commerce platform for farmers and suppliers.
	2. Implement secure payment gateways, product listing, and order tracking features.
	3. Ensure system integration with logistics providers for deliveries.
2. **Process & Workflow Transformation (Moderate to High Impact)**
	1. Define new workflows for order processing, inventory management, and supplier onboarding.
	2. Automate order tracking, delivery, and financial transactions.
	3. Ensure real-time inventory updates and product availability.
3. **Employee Training & Digital Literacy (High Impact)**
	1. Train farmers & suppliers on how to navigate the platform, place orders, and track deliveries.
	2. Upskill SOONY & APT IT SOLUTIONS teams on handling digital customer service and order fulfilment
	3. Provide multi-language support & easy tutorials for farmers.
4. **Cultural Shift (High Impact)**
	1. Run awareness campaigns to build trust in online transactions.
	2. Encourage early adoption with incentives (discounts for first-time users).
	3. Ensure customer support is accessible for farmers via call/chat support.
5. **Business Model & Revenue Strategy (Moderate Impact)**
	1. Define a revenue model (e.g., commission-based, subscription fees for suppliers).
	2. Establish logistics partnerships to ensure product delivery.
	3. Implement customer grievance redressal & refund policies.

**What is the timeframe to recover ROI?**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Projected Revenue (INR)** | **Cumulative Revenue** | **ROI Recovery** |
| Year 1 | ₹80 Lakhs - ₹1 Cr | ₹80 Lakhs - ₹1 Cr | 40-50% Recovery |
| Year 2 | ₹1.2 Cr - ₹1.5 Cr | ₹2 Cr - ₹2.5 Cr | Full ROI Recovery |
| Year 3 | ₹1.5 Cr - ₹2 Cr | ₹3.5 Cr - ₹4.5 Cr | Profitable Phase |

* By Year 2, the platform is expected to break even and recover the ₹2 Crore investment.
* Profits start in Year 3 as the platform scales across more farmers and suppliers.

**How to identify stakeholders?**

* **Step 1:** Identify Key Areas of Influence
	+ Who is funding the project?
	+ Who will use the system?
	+ Who will develop, test, and deploy the solution?
	+ Who will be impacted by the project outcomes?
* **Step 2:** Categorize Stakeholders
	+ Primary Stakeholders: Directly impacted by the project.
	+ Secondary Stakeholders: Indirectly involved but still affected.
	+ Key Decision-Makers: Those who approve, fund, or manage the project.
* **Step 3:** Conduct Stakeholder Analysis
	+ Interviews & Meetings: Engage with sponsors, end-users, and technical teams.
	+ Surveys & Feedback: Gather inputs from farmers and suppliers.
	+ Process Mapping: Identify all departments/functions affected.
* **Step 4:** Document Stakeholders in a RACI Matrix
	+ Responsible (R): Who executes tasks?
	+ Accountable (A): Who makes key decisions?
	+ Consulted (C): Who provides expert input?
	+ Informed (I): Who needs updates?

**Question 8: Four SDLC Methodologies**

***The committee of Mr. Henry, Mr. Pandu, and Mr. Dooku and Mr. Karthick are having discussions on the project development approach. Mr. Karthick explained to Mr. Henry about SDLC. And four methodologies like sequential, iterative, evolutionary and agile. Please share your thoughts and clarity on methodologies.***

SDLC methodologies guide the planning, creation, testing and deployment of software projects. The four common methodologies used are:

1. Sequential
2. Iterative
3. Evolutionary
4. Agile

Each has its own approach to managing project phases and handling changes.

1. ***Sequential methodology (waterfall model):***
	1. *Overview:*
		1. The sequential or waterfall model follows a linear, step by step process where each phase must be completed before the next phase begins. Once a phase is completed, it cannot be revisited.
	2. *Phases:*
	3. *Advantages:*
		1. Simple and easy to understand
		2. Well suited for projects with well-defined requirements
		3. Easier to manage due to rigid structure
	4. *Disadvantages:*
		1. Inflexible:
			1. Changes are difficult to accommodate once the project is in progress
		2. Late testing phase:
			1. Defects are detected only at the end
		3. High risk of failure if the requirements are not well understood at the beginning.
	5. *Best for:*
		1. Projects with clear and unchanging requirements
		2. Smaller, less complex projects
2. ***Iterative methodology:***
	1. *Overview:*
		1. In iterative model the software is refined in small increments.
		2. Each iteration involves going through SDLC phases repeatedly, allowing continuous improvements and testing.
	2. *Phases (repeated in cycles):*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Business modelling***  |  |  |  |  |  |  |  |  |
| ***Requirements***  |  |  |  |  |  |  |  |  |
| ***Analysis and design***  |  |  |  |  |  |  |  |  |
| ***Implementation and testing***  |  |  |  |  |  |  |  |  |
| ***Deployments***  |  |  |  |  |  |  |  |  |
| ***Configuration and change management***  |  |  |  |  |  |  |  |  |
| ***Project management***  |  |  |  |  |  |  |  |  |
|  | ***Initial*** | ***Elab 1*** | ***Elab 2*** | ***Const 1*** | ***Const 2*** | ***Const N***  | ***Tran 1*** | ***Tran 2*** |

* 1. *Advantages:*
		1. Allows feedback and improvements after each iteration
		2. Early detection of issues and risks
		3. Flexibility to change of enhance features based on feedback
	2. *Disadvantages:*
		1. Requires more time and resources due to repeated iterations.
		2. Risk of scope creep if requirements keep evolving.
	3. *Best for:*
		1. Projects where requirements are not fully understood initially.
		2. Projects that need gradual enhancements or frequent updates.
1. ***Evolutionary methodologies (Prototyping / Spiral Model):***
	1. *Overview:*
		1. The evolutionary model is a combination of iterative and waterfall models, focused on developing a working prototype early.
		2. The system evolves based on stakeholder feedback and refinements.
	2. *Phases:*
		1. Initial planning.
		2. Prototyping.
		3. Refinement through iteration.
		4. Final implementation.
		5. Testing and deployment.

Evaluation of alternatives, and risk analysis happens here in this phase

Determine objectives, alternatives – requirement gathering phase.

Planning of the next phase of the project happens at this level.

Development and verification of projects happen at this level.

* 1. *Advantages:*
		1. High user involvement and feedback integration.
		2. Early visibility of product features through prototypes.
		3. Risk reduction through iterative refinement.
	2. *Disadvantages:*
		1. Can be expensive due to continuous refinement.
		2. Difficult to manage if requirements change frequently.
		3. Can lead to never ending loop if feedback is not controlled.
	3. *Best for:*
		1. Complex projects with unclear requirements.
		2. Projects requiring constant user interaction and validation.
1. ***Agile Methodology:***
	1. *Overview:*
		1. Agile is a flexible, adaptive methodology focused on delivering small, workable parts of software in short cycles called sprints. It emphasizes collaboration, customer feedback and incremental progress.
	2. *Phases (in each sprint):*
		1. Sprint planning.
		2. Design and development.
		3. Testing.
		4. Review and retrospective.
	3. *Advantages:*
		1. Highly flexible and adaptable changes.
		2. Continuous customer involvement and feedback.
		3. Early delivery of usable software.
	4. *Disadvantages:*
		1. Requires strong team collaboration and communication.
		2. Difficult to predict timelines and costs accurately.
		3. Can lead to scope creep if changes are not managed well.
	5. *Best for:*
		1. Projects with dynamic evolving requirements.
		2. Projects requiring rapid deployment and frequent updates.
		3. Large, complex projects with multiple teams.

***Comparison table:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Aspect**  | **Sequential (waterfall)** | **Iterative**  | **Evolutionary**  | **Agile**  |
| **Flexibility to change**  | Low  | Medium  | High  | Very high  |
| **Customer involvement**  | Low  | Medium  | High  | Very high  |
| **Risk management**  | Low  | Medium  | High  | High  |
| **Cost and time efficiency** | High initially, low if changes needed | Medium  | Low initially, but better long term  | High, if scope is well controlled |
| **Best for** | Simple, static projects  | Projects needing gradual improvement  | Complex, high-risk projects  | Dynamic projects with evolving needs.  |

* ***Recommendation for the online agriculture store project:***
	+ Agile would be the most suitable methodology.
		- Recommendation made considering that agriculture store may evolve overtime due to feedback from stakeholders like farmers and manufacturers.
	+ Platform can adopt to user needs making it scalable and user-friendly because of Agile’s focus on:
		- Flexibility
		- Customer feedback
		- Iterative progress

**Question 9: 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 APT IT Solutions 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 will be more suitable for this project. SMEs are stressing on using the V model and the project team is leaning more on to the side of waterfall model. As a business analyst, which methodology do you think will be better for this project?***

* **Waterfall model:**
	+ ***Linear and sequential process:***
		- The waterfall model is a straightforward path where each phase (Requirement, Design, Implementation, Testing, Deployment, and Maintenance) is completed before moving to the next.
	+ ***Pros:***
		- Simple to manage, clear milestones, well suited for projects with stable, well understood requirements.
	+ ***Cons:***
		- Inflexible, changes are difficult to accommodate once the project is underway, testing happens late in the process.
* **Rational unified process (RUP):**
	+ ***Iterative and unified approach:***
		- RUP divides the project into multiple iterations, allowing adjustments based on feedback after each phase.
	+ ***Phases:***
		- Inception
		- Elaboration
		- Construction
		- Transition
	+ ***Pros:***
		- Risk management
		- Adaptability to changes
		- Continuous integration
		- Customer involvement
	+ ***Cons:***
		- Complex to implement
		- Requires skilled resources
* **Scrum (Agile Framework):**
	+ ***Flexible and adaptive:***
		- Scrum is an agile methodology focused on delivering functional increments of the product in timed boxed sprints (typically 2 to 4 weeks).
	+ ***Pros:***
		- High adaptability
		- Continuous customer feedback
		- Faster delivery of working software
	+ ***Cons:***
		- Requires strong team collaboration and experienced scrum roles (product owner and scrum master)

**Comparing Waterfall Vs V-Model for the online agriculture store project:**

|  |  |
| --- | --- |
| **Waterfall model**  | **V Model (Verification and Validation Model)** |
| * ***Sequential process:***
	+ Requirements are gathered once at the beginning, followed by design, development, testing and deployment.
* ***Limited flexibility:***
	+ Changes are difficult to accommodate as the process is linear.
* ***Late testing phase:***
	+ Testing is done only after the development phase is complete, which can lead to high defect costs if issues are discovered late.
 | * ***Enhanced version of waterfall:***
	+ The V Model is similar to waterfall but with a focus on early validation and testing at each stage.
* ***Test planning in parallel:***
	+ For every development stage, there is a corresponding testing phase.
	+ Testing starts as soon as requirements are defined, reducing risks of defects, and ensuring early validation.
* ***Better quality control:***
	+ Because of the parallel testing, defects can be caught early, ensuring better product quality.
* ***Less flexibility:***
	+ Similar to waterfall, the V model is rigid and the changes are difficult to manage.
 |

**Recommendation: V model Vs Waterfall Model:**

For this project, considering the nature of requirements (e-commerce platform) and the involvement of multiple stakeholders:

***Why the V model is more suitable:***

|  |  |
| --- | --- |
| ***Early testing and validation***  | The V model structure ensures that testing is planned alongside each phase, which is crucial for a platform where performance, user experience and security are essential.  |
| ***Reduced defect costs***  | By catching the defects through early testing, the V model minimizes the risk of delivering a flawed product.  |
| ***Alignment with SMEs’ expectations***  | Since SMEs are concerned with and ensuring the platform meets the farmers’ needs, the V Model’s focus on verification and validation at every stage is beneficial.  |
| **User focused requirements**  | The V Model ensures that the user requirements are validated early reducing the risk of missing critical features that farmers and manufacturers might need.  |
| ***Conclusion:*** While the waterfall model offers simplicity, the V Model’s early testing and validation structure is better suited for this project especially when quality, performance, and stakeholder satisfaction are priorities.  |

**Question: Justify your choice**

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

The **Waterfall Model** follows a **linear and sequential** approach where each phase is **completed before moving to the next.** This model is well-suited for **projects with well-defined requirements, stable scope, and structured execution needs.**

Since this project involves **developing an e-commerce platform for farmers and suppliers,** a **phased approach** is beneficial to maintain **clarity, documentation, and quality assurance** at each step.

* **Key Reasons to Choose Waterfall Model**
	+ **Clearly Defined Requirements (No Frequent Changes Expected)**
		- The **core functionalities** (product listing, order placement, payment gateway, delivery tracking) are **well-defined from the start.**
		- Farmers and suppliers need a **standardized platform** with a **fixed scope of work.**
		- Waterfall allows the **BA to document requirements in detail** before development begins, reducing misalignment later.
* **Structured & Phased Development (Predictability & Control)**
	+ Waterfall **ensures each phase is completed before moving to the next.**
	+ Since the project involves **multiple stakeholders (SOONY, APT IT SOLUTIONS, farmers, suppliers),** a structured plan avoids confusion.
* **Fixed Budget & Timeline (SOONY Requires Predictability)**
	+ **Budget: ₹2 Crores** is allocated upfront under CSR.
	+ **Duration: 18 months** is fixed.
	+ Waterfall works best when **time and cost are pre-determined**, as scope changes are minimized.
* **Strong Documentation for Compliance & Future Enhancements**
	+ **Detailed Requirement Documents** help developers build exactly what is required.
	+ Government bodies **may require compliance reports**, which Waterfall supports through thorough documentation.
* **Risk Mitigation Through Early Planning & Testing**
	+ Waterfall ensures **rigorous testing after development** before deployment, reducing system failures.
	+ Since **this is a critical platform for farmers and suppliers, a failure at launch can be damaging.**
* **Low Client Involvement Post-Requirement Gathering**
	+ Farmers and suppliers **may not have the technical expertise** to provide continuous feedback.
	+ Waterfall allows stakeholders to **finalize requirements early**, so they don't need to engage frequently during development.

**Question 12: Gantt Chart**

***The committee of Mr. Henry, Mr. Pandu, and Mr. Dooku discussed with Mr. Karthick and finalized on 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 the project and prepares a Gnatt 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.***

For the project based on V Model approach (requirements gathering, requirements analysis, design development (D1, D2, D3, D4), testing (T1, T2, T3, T4), and user acceptance testing (UAT), Mr. Vandanam can prepare a Gantt chart that lays out the timeline for each phase, the dependencies and the resources involved. Here is an overview of how the Gantt chart might be structured:

|  |
| --- |
| **Phases and activities in V model approach** |
| ***Requirements gathering***  | * Activities:
	+ Collecting detailed requirements from stakeholders like farmers, manufacturers, SMEs, etc.
* Resources:
	+ Business Analyst
	+ Project Manager
* Duration:
	+ Typically, 2 – 3 weeks
 |
| ***Requirement analysis*** | * Activities:
	+ Analyzing requirements
	+ Identifying gaps
	+ Creating detailed requirement specifications
* Resources:
	+ Business Analyst
	+ Project Manager
* Duration:
	+ 2 – 3 weeks
 |
| ***Design*** | * Activities:
	+ Creating system architecture
	+ Database design
	+ Interface design
* Resources:
	+ Business Analyst
	+ Java developers
	+ Database admin
	+ Network admin
* Duration:
	+ 3 – 4 weeks
 |
| ***Development phases (D1, D2, D3, D4)*** | * D1:
	+ Core functionalities (Example: listing products, user management)
* D2:
	+ Order management and payment gateways
* D3:
	+ Delivery tracking and communication features
* D4:
	+ Final integrations
	+ Reporting
	+ Analytics
* Resources:
	+ Java developers
	+ Database admin
	+ Network admin
* Duration:
	+ Each phase typically lasts for 4 to 5 weeks
 |
| ***Testing phase (T1, T2, T3, T4)*** | * T1:
	+ Unit testing (parallel to D1)
* T2:
	+ Integration testing (parallel to D2)
* T3:
	+ System testing (parallel to D3)
* T4:
	+ Regression testing (parallel to D4)
* Resources:
	+ Testers
	+ Project managers
* Duration:
	+ Each testing phase usually last between 2 – 3 weeks
 |
| ***User acceptance testing***  | * Activities:
	+ Validating entire system with end users (Farmers, manufacturers and SMEs)
* Resources:
	+ Project manager
	+ Business analyst
	+ Testers
	+ Subject matter experts
* Duration
	+ 3 – 4 weeks
 |

|  |
| --- |
| **Resource allocation** |
| ***Project manager (PM)*** | * Overseeing the project
* Managing timelines
* Ensuring communications across teams
 |
| ***Business analyst (BA)*** | * Gathering and analyzing requirements
* Ensuring project meets business objectives
 |
| ***Java developers***  | * Implementing design and development activities across four development stages
 |
| ***Testers***  | * Conducting various testing activities:
	+ Unit testing
	+ Integration testing
	+ System testing
	+ Regression testing
	+ User acceptance testing
 |
| ***Database administrators (DB Admin)*** | * Managing database design
* Optimization
* Security
 |
| ***Network administrators (NW Admin)*** | * Ensuring network setup
* Security
* Connectivity
 |

***Dependencies and milestones:***

* RG and RA (requirement gathering and requirement analysis) must be completed before moving to design stages.
* Each testing phase (T1 to T4) is dependent on the corresponding development phase (D1 to D4).
* UAT only begins after all development and testing phase are completed.

This structure ensures that each phase is meticulously planned and resources are effectively utilized, leading to a smooth and well organized project timeline.

**Question 13: Fixed Bill Vs Billing Projects**

***Explain the difference between fixed bit and billing projects***

Two primary pricing models in project management are Fixed Bid (also known as fixed price) and billing (often Time and Material) projects. Here is the breakdown of each:

|  |  |
| --- | --- |
| ***Fixed Bid Projects*** | ***Billing projects*** |
| In a fixed bid project, the client and the service provider agree on the fixed price for the entire project before the work begins.  | In a billing project, also known as time and material (T and M) the client pays on the actual time and resources used to complete the work.  |
| * ***Characteristics:***
	+ Fixed costs:
		- The total cost of the project is agreed upon upfront and remains unchanged unless the scope changes.
	+ Scope driven:
		- The project scope is clearly defined in advance, and any changes to it typically require a formal change request and may involve additional costs.
	+ Risk management:
		- The service provider bears the risk of project overruns (time or cost) because they are committed to delivering the project at the agreed price.
	+ Well defined requirements:
		- Fixed bid projects work best when requirements are well understood, stable and unlikely to change.
	+ Vendor accountability:
		- The vendor is responsible for managing resources, timelines and risks to meet the defined project goals within the agreed budget.
 | * ***Characteristics:***
	+ Variable costs:
		- The client is billed according to the hours worked, resources used, and materials consumed during the project.
	+ Flexible scope:
		- The project scope can evolve over time, making this model suitable for projects where requirements are likely to change.
	+ Client risk:
		- The client assumes the risk of the project overruns since the cost is directly tied to the time spent.
	+ Continuous collaboration:
		- Frequent communication and collaboration between the client and the project team help align ongoing work with projects evolving needs.
	+ No fixed deliverables:
		- The project deliverables and timelines can be adjusted based on the project’s progress and changing priorities.
 |
| * ***Example use cases:***
	+ Projects with clear and stable requirements, like building a specific website with predefined features.
	+ Government or public sector projects where budgeting and scope are tightly controlled.
 | * ***Example use cases:***
	+ Projects with evolving unclear requirements, like software development using Agile methodology.
	+ Research and development projects where outcomes are uncertain.
 |
| * ***Advantages:***
	+ Budget predictability for the client.
	+ Encourages efficient project management since the service provider benefits from completing the project early.
 | * ***Advantages:***
	+ High flexibility to accommodate changing requirements.
	+ Suitable for iterative and exploratory projects.
	+ Clients can control and adjust priorities throughout the project.
 |
| * ***Disadvantages***
	+ Less flexibility if requirements change
	+ Vendors might overestimate the bid to mitigate risk, leading to higher initial costs.
	+ Scope creep difficult to manage.
 | * ***Disadvantages:***
	+ Budget unpredictability since costs are tied to actual time spent
	+ Potential risk of project delays or extended timelines.
	+ Requires close monitoring by the client to avoid excessive costs.
 |

|  |
| --- |
| **Key differences** |
| ***Aspect***  | ***Fixed Bid Project***  | ***Billing (T and M) Project***  |
| ***Cost structure***  | Fixed costs regardless of time spent  | Billed based on actual hours and materials  |
| ***Scope flexibility***  | Rigid: changes require formal change requests  | Flexible: scope can change dynamically |
| ***Risk*** | Service provider bears costs and timeline risks  | Client bears risk of overruns  |
| ***Requirement Stability***  | Requires stable and well defined requirements  | Suitable for evolving and unclear requirements  |
| ***Budget control***  | Client has predictable and fixed costs  | Budget can vary based on project needs  |
| ***Time management***  | Focus on efficiency to meet deadlines  | Time is less critical: focus is on quality and iterations |
| ***Project control***  | Vendor management with defined deliverables  | Requires continuous client involvement and feedback  |

***Choosing between fixed bid and billing:***

* Fixed Bid is ideal when the project scope is well defined and unlikely to change. It is suited straightforward projects with clear deliverables and where budget control is crucial.
* Billing (T and M) is better when the project scope is uncertain, likely to change, or requires flexibility. It is often used in Agile environments, where the project evolves iteratively based on client feedback.

Selecting the right price model depends on the nature of the project, stability of the requirements, and the level of flexibility desired.

**Question 14: Prepare timesheets of BA in various stages of SDLC**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Date**  | **Task Description**  | **Start Time**  | **End Time**  | **Hours Worked**  | **Comments**  |
| ***Design Stage*** |
| 01-09-2024 | Review and refine requirements with stake holders  | 09:00:00 | 13:00:00 | 04:00:00 | Discussed key functional requirements with SMEs and stakeholders |
| 01-09-2024 | Create functional specifications | 13:00:00 | 17:00:00 | 04:00:00 | Drafted initial specifications for the online agriculture store |
| 02-09-2024 | Conduct stakeholder workshop | 09:00:00 | 15:00:00 | 06:00:00 | Facilitated a workshop to align on user stories and requirements |
| 02-09-2024 | Document use cases and workflows | 15:00:00 | 17:00:00 | 02:00:00 | Mapped out primary workflows based on stakeholder inputs |
| 03-09-2024 | Prepare process flow diagrams and data models | 09:00:00 | 17:00:00 | 08:00:00 | Created UML diagrams and data flow models for review |
| 04-09-2024 | Requirements validation session | 09:00:00 | 15:00:00 | 06:00:00 | Presented requirements and design to project team for feedback |
| 04-09-2024 | Update requirements document and design specs | 15:00:00 | 17:00:00 | 02:00:00 | Adjusted documentation based on feedback from validation session |
| 05-09-2024 | Collaborate with developers on initial design plan | 09:00:00 | 14:00:00 | 05:00:00 | Discussed design feasibility with Java developers and DB admin |
| 05-09-2024 | Finalize functional design specifications | 14:00:00 | 17:00:00 | 03:00:00 | Completed first draft of the functional design document |
| 08-09-2024 | Review technical design with development team | 09:00:00 | 14:00:00 | 05:00:00 | Participated in design discussions to align functional and technical designs |
| 08-09-2024 | Create user interface wireframes | 14:00:00 | 17:00:00 | 03:00:00 | Drafted wireframes for the online store interface |
| 09-09-2024 | Prepare traceability matrix | 09:00:00 | 13:00:00 | 04:00:00 | Linked requirements to design specifications |
| 09-09-2024 | Requirements review with stakeholders | 13:00:00 | 17:00:00 | 04:00:00 | Conducted review sessions with Peter, Kevin, and Ben |
| 10-09-2024 | Document non-functional requirements | 09:00:00 | 13:00:00 | 04:00:00 | Specified performance, security, and scalability requirements |
| 10-09-2024 | Revise design documents based on feedback | 13:00:00 | 17:00:00 | 04:00:00 | Incorporated stakeholder feedback into final design documents |
| 11-09-2024 | Prepare for design handoff meeting | 09:00:00 | 12:00:00 | 03:00:00 | Prepared documentation for formal handoff to development team |
| 11-09-2024 | Conduct design handoff meeting | 12:00:00 | 17:00:00 | 05:00:00 | Presented final design to project manager, developers, and testers |
| 12-09-2024 | Support development team during initial setup | 09:00:00 | 13:00:00 | 04:00:00 | Provided clarifications on requirements during setup |
| 12-09-2024 | Update and finalize traceability matrix | 13:00:00 | 17:00:00 | 04:00:00 | Completed the final traceability matrix linking all requirements |
| ***Development Stage*** |
| 01-10-2024 | Assist in sprint planning and prioritization | 09:00:00 | 13:00:00 | 04:00:00 | Participated in planning meetings to prioritize features for the development cycle |
| 01-10-2024 | Clarify requirements and answer developer queries | 13:00:00 | 17:00:00 | 04:00:00 | Provided detailed clarifications on key user stories and requirements |
| 02-10-2024 | Review development progress and resolve issues | 09:00:00 | 15:00:00 | 06:00:00 | Attended daily stand-ups and addressed issues raised by developers |
| 02-10-2024 | Update requirements document based on new insights | 15:00:00 | 17:00:00 | 02:00:00 | Modified the requirements document based on change requests and discussions |
| 03-10-2024 | Collaborate with testers on test case design | 09:00:00 | 14:00:00 | 05:00:00 | Worked closely with testers to ensure test cases align with requirements |
| 03-10-2024 | Perform impact analysis for change requests | 14:00:00 | 17:00:00 | 03:00:00 | Assessed the impact of scope changes on development and timelines |
| 04-10-2024 | Conduct walkthrough sessions with the development team | 09:00:00 | 14:00:00 | 05:00:00 | Held walkthrough sessions to align the development team on complex workflows |
| 04-10-2024 | Prepare and maintain traceability matrix | 14:00:00 | 17:00:00 | 03:00:00 | Updated the traceability matrix to link requirements to development progress |
| 05-10-2024 | Support in defect triage and resolution | 09:00:00 | 13:00:00 | 04:00:00 | Participated in defect triage meetings to prioritize and resolve issues |
| 05-10-2024 | Collaborate on UI/UX design changes | 13:00:00 | 17:00:00 | 04:00:00 | Worked with developers and designers to refine the user interface based on feedback |
| 08-10-2024 | Review sprint progress and address blockers | 09:00:00 | 13:00:00 | 04:00:00 | Provided input during sprint review meetings and helped resolve blockers |
| 08-10-2024 | Facilitate communication between stakeholders and developers | 13:00:00 | 17:00:00 | 04:00:00 | Acted as the liaison to ensure stakeholder needs are clearly communicated |
| 09-10-2024 | Conduct a mid-development review session | 09:00:00 | 15:00:00 | 06:00:00 | Organized a review meeting to assess development progress and gather feedback |
| 09-10-2024 | Document and manage change requests | 15:00:00 | 17:00:00 | 02:00:00 | Logged and analyzed new change requests based on stakeholder inputs |
| 10-10-2024 | Collaborate with testers to refine acceptance criteria | 09:00:00 | 13:00:00 | 04:00:00 | Ensured that acceptance criteria are aligned with both business needs and technical capabilities |
| 10-10-2024 | Support in preparing test data for system testing | 13:00:00 | 17:00:00 | 04:00:00 | Helped testers prepare relevant test data based on business scenarios |
| 11-10-2024 | Review and approve intermediate deliverables | 09:00:00 | 13:00:00 | 04:00:00 | Reviewed interim outputs from the development team and provided feedback |
| 11-10-2024 | Monitor development milestones and timelines | 13:00:00 | 17:00:00 | 04:00:00 | Tracked progress against the Gantt chart and identified risks or delays |
| 12-10-2024 | Assist in preparing for demo or release | 09:00:00 | 13:00:00 | 04:00:00 | Helped in organizing demo sessions for stakeholders and prepared release notes |
| 12-10-2024 | Finalize documentation for handoff to QA | 13:00:00 | 17:00:00 | 04:00:00 | Updated documentation to ensure a smooth handoff to the QA team for testing |
| ***Testing Stage*** |
| 15-10-2024 | Review and validate test cases | 09:00:00 | 14:00:00 | 05:00:00 | Ensured that test cases align with the business requirements and covered all critical scenarios |
| 15-10-2024 | Participate in test case walkthrough with QA team | 14:00:00 | 17:00:00 | 03:00:00 | Collaborated with testers to review and refine test cases |
| 16-10-2024 | Support in setting up test environment | 09:00:00 | 13:00:00 | 04:00:00 | Assisted in configuring the test environment and data setup |
| 16-10-2024 | Clarify requirements during test execution | 13:00:00 | 17:00:00 | 04:00:00 | Provided clarifications on requirements to testers during test execution |
| 17-10-2024 | Monitor defect logging and triage | 09:00:00 | 14:00:00 | 05:00:00 | Participated in defect triage meetings to prioritize and resolve issues |
| 17-10-2024 | Assist in re-testing and validation of fixes | 14:00:00 | 17:00:00 | 03:00:00 | Worked with the QA team to re-test and validate the fixes for defects |
| 18-10-2024 | Document test results and update traceability matrix | 09:00:00 | 13:00:00 | 04:00:00 | Updated the traceability matrix and documented the results of the tests conducted |
| 18-10-2024 | Support UAT planning and preparation | 13:00:00 | 17:00:00 | 04:00:00 | Assisted in preparing UAT scenarios and coordinating with business users for UAT |
| 19-10-2024 | Review and sign off on test completion | 09:00:00 | 13:00:00 | 04:00:00 | Reviewed the test completion report and provided sign-off for UAT |
| 19-10-2024 | Prepare for UAT kickoff meeting | 13:00:00 | 17:00:00 | 04:00:00 | Organized and prepared materials for the UAT kickoff meeting with stakeholders |
| 22-10-2024 | Facilitate UAT kickoff meeting | 09:00:00 | 13:00:00 | 04:00:00 | Conducted the UAT kickoff meeting, outlining the process and expectations for UAT |
| 22-10-2024 | Provide support during UAT execution | 13:00:00 | 17:00:00 | 04:00:00 | Acted as the main point of contact for UAT participants, addressing any issues or questions |
| 23-10-2024 | Monitor UAT progress and manage feedback | 09:00:00 | 14:00:00 | 05:00:00 | Tracked UAT progress and gathered feedback from testers and business users |
| 23-10-2024 | Document UAT findings and report issues | 14:00:00 | 17:00:00 | 03:00:00 | Documented issues identified during UAT and reported them to the development team for resolution |
| 24-10-2024 | Validate UAT fixes and sign-off on UAT | 09:00:00 | 14:00:00 | 05:00:00 | Worked with stakeholders to validate fixes and obtain sign-off on UAT |
| 24-10-2024 | Update project documentation based on UAT outcomes | 14:00:00 | 17:00:00 | 03:00:00 | Updated the requirements and project documentation to reflect any changes made during UAT |
| 25-10-2024 | Conduct final review of all project deliverables | 09:00:00 | 14:00:00 | 05:00:00 | Reviewed all deliverables to ensure they meet the project’s objectives and requirements |
| 25-10-2024 | Prepare handover documentation and closeout report | 14:00:00 | 17:00:00 | 03:00:00 | Prepared documentation for project handover and created a closeout report for the project team |
| 26-10-2024 | Organize and conduct the project closure meeting | 09:00:00 | 13:00:00 | 04:00:00 | Held the project closure meeting with stakeholders to discuss outcomes and lessons learned |
| 26-10-2024 | Finalize and archive project documentation | 13:00:00 | 17:00:00 | 04:00:00 | Ensured all project documents were finalized and archived appropriately for future reference |
| ***UAT Stage*** |
| 01-11-2024 | Prepare UAT plan and scenarios | 09:00:00 | 14:00:00 | 05:00:00 | Finalized UAT plan and developed detailed test scenarios in collaboration with stakeholders |
| 01-11-2024 | Coordinate UAT environment setup | 14:00:00 | 17:00:00 | 03:00:00 | Worked with the technical team to ensure the UAT environment is correctly configured |
| 02-11-2024 | Conduct UAT kickoff meeting | 09:00:00 | 13:00:00 | 04:00:00 | Facilitated the UAT kickoff meeting with business users and stakeholders |
| 02-11-2024 | Provide UAT training and support to users | 13:00:00 | 17:00:00 | 04:00:00 | Delivered training sessions and provided hands-on support to UAT participants |
| 03-11-2024 | Monitor UAT progress and address user queries | 09:00:00 | 14:00:00 | 05:00:00 | Acted as the point of contact for UAT testers, resolving queries and ensuring smooth progress |
| 03-11-2024 | Document and report UAT issues | 14:00:00 | 17:00:00 | 03:00:00 | Logged and tracked issues identified during UAT, communicated with the development team |
| 04-11-2024 | Validate fixes for critical UAT issues | 09:00:00 | 13:00:00 | 04:00:00 | Worked with the development team to validate fixes for critical issues and retest them |
| 04-11-2024 | Review UAT feedback and refine test cases | 13:00:00 | 17:00:00 | 04:00:00 | Reviewed feedback from users, refined test cases, and updated documentation as necessary |
| 05-11-2024 | Conduct UAT status meetings with stakeholders | 09:00:00 | 13:00:00 | 04:00:00 | Held daily status meetings to update stakeholders on UAT progress and issue resolution |
| 05-11-2024 | Update UAT traceability matrix | 13:00:00 | 17:00:00 | 04:00:00 | Maintained and updated the traceability matrix to ensure all requirements are covered in UAT |
| 08-11-2024 | Continue monitoring UAT execution | 09:00:00 | 13:00:00 | 04:00:00 | Continued to monitor UAT execution, providing support and resolving issues as they arise |
| 08-11-2024 | Review and validate final UAT outcomes | 13:00:00 | 18:00:00 | 05:00:00 | Reviewed final UAT results with users and validated that all key requirements are met |
| 09-11-2024 | Facilitate UAT sign-off with stakeholders | 09:00:00 | 13:00:00 | 04:00:00 | Organized a meeting with stakeholders to obtain formal UAT sign-off and approval for deployment |
| 09-11-2024 | Prepare UAT summary report | 13:00:00 | 17:00:00 | 04:00:00 | Compiled a comprehensive UAT summary report highlighting key findings, issues, and resolutions |
| 10-11-2024 | Conduct UAT closure meeting | 09:00:00 | 13:00:00 | 04:00:00 | Held a UAT closure meeting to discuss outcomes, gather final feedback, and confirm next steps |
| 10-11-2024 | Finalize and document UAT results | 13:00:00 | 17:00:00 | 04:00:00 | Finalized UAT documentation, including issue logs, test results, and sign-off forms |
| 11-11-2024 | Handover UAT documentation to project team | 09:00:00 | 13:00:00 | 04:00:00 | Transferred all UAT-related documentation to the project team for reference during deployment |
| 11-11-2024 | Prepare and review deployment checklist | 13:00:00 | 17:00:00 | 04:00:00 | Assisted in preparing a checklist for deployment, ensuring all UAT findings are addressed |
| 12-11-2024 | Support deployment planning based on UAT findings | 09:00:00 | 13:00:00 | 04:00:00 | Provided insights and recommendations for deployment based on UAT outcomes |
| 12-11-2024 | Archive UAT documentation | 13:00:00 | 17:00:00 | 04:00:00 | Archived all UAT documentation for future reference and audit purposes |