Online Agriculture Product Store

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**Question 1:** Prepare Business Process Model?

**Goal:** To develop an **Online Agriculture Product Store** that connects farmers with manufacturers of fertilizers, seeds, and pesticides, enabling them to purchase agricultural products conveniently from remote locations.

**Inputs:** Farmer/End user Requirements, Manufacturer Product Details, Financial Investment,

Technical Infrastructure.

**Resources:** Where houses for storing products, Web / Mobile Software, Office Space for employees.

**Outputs:** A fully functional Online Agricultural store, User friendly interface, Sales revenue.

**Activities:** Farmer/Customer Registration, Product Listing by manufacturers, Browsing & Order Placement, Order fulfillment & delivery to farmer and Customer Support for feedbacks & queries.

**Value to the End customer:** Farmers Convenience, Cost-effectiveness, Product Availability and Better Decision-Making.

**Question 2:** SWOT Analysis.

SWOT stands for Strength, Weakness, Opportunities and Threats.

**Strength**:

* Strong Financial Backing
* Clear Business Vision
* Skilled IT Team
* Direct Stakeholder Involvement.

**Weakness**:

* Integration with manufact3urer.
* Limited experience in Agricultural domain
* Logistics & Supply complexity

**Opportunities:**

* Growing digitally in Agricultural field
* Untapped market potential
* Scalability
* Revenue generation possibility.

**Threats:**

* Competition from existing platform.
* Low digital literacy among farmers.
* Logistics & Delivery delays.
* Dependency on Manufacturers.

**Question 3**: Feasibility Study.

**Hardware**: Server Infrastructure, Network & Connectivity, End User device support.

**Software**: Programming Language & Frameworks (java), Development & DevOps tools, Third Party Integration (Payment gateway, Google Maps API, SMS & Email Service)

**Trained Resources**:

Project Manager: Mr. Vandanam

Senior Java Developer: Ms. Juhi

Java Developers: Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo

Network Administrator: Mr. Mike

DB Administrator: Mr. John

Testers: Mr. Jason & Ms. Alekya

Business Analyst: Mr. Venkatesh Dhanana (Myself)

**Budget: (2 Crore INR Allocation)**

Estimated cost breakdown

|  |  |
| --- | --- |
| Components | Estimated Cost in INR |
| Software Development | 80L |
| Server & Cloud Infrastructure | 25L |
| Data Security  | 10L |
| Payment gateway Integration | 15L |
| UI Design & Training | 15L |
| Testing & Quality Assurance | 15L |
| Logistics & Delivery API Integration | 10L |
| Maintenance & Support | 10L |
| 10% Reserve of budget | 20L |
| Total | 2 Cr |

**Time Frame: (18 months plan)**

Estimated time frame for individual department

|  |  |  |
| --- | --- | --- |
| Phase | Duration | Activities |
| Requirement gathering & Planning | 2 months | Business Analysis, documentations, system architecture |
| Backend development | 6 months | Frameworks, Java backend, APIs |
| Frontend & Mobile App development | 4 months | Develop Web & Mobile app and integrate with backend |
| Testing Phase | 3 months | Functional, Security & Functional testing |
| UAT launch & Training to end users | 2 months | Collect feedback, training |
| Deployment & Maintenance | 1 month | Application Live, Maintenance & Support |

**Question 4:** Gap Analysis

**Current state (AS-IS):**

Farmers need to travel physically to cities/ towns to purchase agricultural products.

Farmers relay on local suppliers, leading to limited choices, Knowledge and stock shortages.

Farmers pay high price due to middleman and lack of price comparison.

Mostly Cash transactions, limiting flexibility & security.

Farmers personally transport goods leading to additional cost and effort.

Farmers depends on word-of-mouth or local dealers for advice.

**Desired State (TO-BE):**

Farmers can order products through online from anywhere using web/mobile app.

Farmers have direct access to multiple manufacturers with better quality, Knowledge and products.

Transparent pricing information is available and can compare prices.

Order can be done instantly through online with security and also with other payment options.

Dore step delivery can reduce additional cost and extra travel.

24/7 customer support with agricultural experts available online.

**Gaps Identified:**

Lack of online platform for easy product access.

No Direct Manufacturer to farmer platform is available and no digital knowledge sharing system available.

No Standardized pricing system is available in current system.

No multiple & secure payment options available in current system.

Lack of an efficient logistics system for remote farmers.

Lack of customer support & advisory services for farmers.

**Question 5:** Risk Analysis

**1. Internal Risks:**

Unclear or changing requirement from stakeholders.

Resource Unavailability or middle drop from company.

Lack of skills in Java, DB or Network administration my affect.

Budget Constraints or Time delay.

Integration issues with other systems.

Communication gap between APT IT solutions and Stakeholders (Mr. Henry, Mr. Pandu, Mr. Dooku)

Testing challenges like if defects are not identified early and fixing later stage.

**2. External Risks:**

Competitors may come up with similar application in to market.

Internet accessibility in rural arears

Vendor dependency like if manufacturers denies to on-board the platform.

Cybersecurity treats.

Natural disaster may reduce demand of the platform.

**3. Business Analyst Risk:**

Requirement Risks like Unclear or Changing requirements, Lack of domain knowledge, Conflict in stakeholder needs.

Stakeholder Risks like Lack of Stakeholder Engagement, Limited Digital Literacy.

Feasibility Risks like some features may be too complex or costly to implement with budget.

**4. Process/Project Risks:**

Technical Risks like Scalability & Performance Issues, Integration Challenge with third party, Cybersecurity Threats.

Project Management Risks like Over Budget, Timeline Delay, Resource Availability Issues and Vendor/Manufacturer participation risks.

Operational & Logistics Risks like Delivery or Supply Chain Challenge, Payment Failures.

**Question 6:** Stakeholder Analysis (RACI Matrix).

|  |  |  |  |
| --- | --- | --- | --- |
| Type | Resource Name | Designation | Details |
| Responsible  | Mr. Henry | Project Sponser | Funding & strategic decisions |
| Mr. Pandu | Financial Head | Budget approvals & cost management |
| Mr. Dooku  | Project Coordinator | Operational oversight |
| Mr. Karthik  | Delivery Head (APT IT Solutions) | Project execution |
| Mr. Vandanam  | Project Manager | Development & timelines |
| Accountable | Mr. Dooku  | Project Coordinator | Operational oversight |
| Mr. Karthik  | Delivery Head (APT IT Solutions) | Project execution |
| Mr. Vandanam  | Project Manager | Development & timelines |
| Influencers (Consulted) | Mr. PeterMr. KevinMr. Ben | Farmers | Providing requirements on real time basis |
| Vendors | Agricultural companies | Suppliers of fertilizers, seeds, and pesticides |
| Informed | Ms. Juhi, Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo  | Java Developers | Whatever information available will provide to them |
| Mr.John | DB Admin |
| Mr. Mike | Network Admin |

**Question 7:** Business Case Document.

1. What is this project initiated?

This project is initiated by SOONY Company under its CSR initiative to help remote-area farmers procure agricultural products (fertilizers, seeds, pesticides) directly from manufacturers through an online web/mobile platform.
The idea was proposed by Mr. Henry, after identifying critical supply chain challenges faced by farmers in remote villages. The project is executed by APT IT Solutions with a budget of ₹2 Crores INR and a timeline of 18 months.

1. What are the current problems?
* Farmers need to travel physically to cities/ towns to purchase agricultural products.
* Farmers relay on local suppliers, leading to limited choices, Knowledge and stock shortages.
* Farmers pay high price due to middleman and lack of price comparison.
* Mostly Cash transactions, limiting flexibility & security.
* Farmers personally transport goods leading to additional cost and effort.
* Farmers depends on word-of-mouth or local dealers for advice.
1. With this project, how many problems could be solved?
* Direct Manufacturer-Farmer Interaction
* Cost Reduction on selected product compare to physical purchase.
* Ease of Access to multiple products and can be access to door step.
* Transparency of cost, quality and details.
* Timely availability of products needed
1. What are the resources required?
* Human Resources - PM, BA, Java Developers, Testers, DB Admin, Network Admin
* Technology Stack - Java, MySQL/Oracle, Cloud Hosting
* Infrastructure Servers - Security Firewalls, Mobile App Development Tools
* Support & Training - Farmer Education on App Usage, Vendor On boarding
1. How many organizational change is required to adopt this technology?
* Training for farmers on using the mobile/web application.
* Technical support team to assist farmers & manufacturers.
* Supply chain partnerships to handle logistics efficiently.
* Awareness programs to encourage adoption of digital procurement.
1. What is the Time frame to recover ROI (Return on Investment)?
* Expected break-even point: 3-5 years post-launch.

We can achieve this by having commission from manufacturers, subscription fees, premium listings, by reducing supply chain expenses and improved efficiency.

1. How to identify Stakeholders?

 Key Decision Makers (Responsible & Accountable)

* Mr. Henry (Project Sponsor) – Funding & strategic decisions.
* Mr. Pandu (Financial Head) – Budget approvals & cost management.
* Mr. Dooku (Project Coordinator) – Operational oversight.
* Mr. Karthik (Delivery Head, APT IT Solutions) – Project execution.
* Mr. Vandanam (Project Manager) – Development & timelines.

 Influencers (Consulted)

* Farmers (Peter, Kevin, Ben) – Providing requirements.
* Agricultural Companies – Suppliers of fertilizers, seeds, and pesticides.

 Supporting Team (Informed)

* Development Team (Java Developers, DB Admin, Network Admin).
* Testers (Jason, Alekya) – Ensuring quality.

**Question 8:** Four SDLC Methodologies

The SDLC is a structured process used to develop software efficiently and with high quality. It consists of the following phases:

* Requirement Analysis – Gathering functional and technical requirements.
* Planning – Defining scope, budget and timeline.
* Design – Architectural and UI/UX design.
* Development – Coding the application.
* Testing – Ensuring quality and performance.
* Deployment – Making the product live.
* Maintenance & Support – Continuous improvements and bug fixes.

There are 4 SDLC Methodologies available

**1.** **Sequential Approach – Waterfall model**

The Waterfall model is a linear, step-by-step approach where each phase is completed before moving to the next.

It can be best fit for Well-defined projects with clear and fixed requirements.

**Advantages**:

* Simple and easy to manage.
* Works well for small projects with minimal changes.
* Well-documented phases ensure clarity.

**Disadvantages**:

* Not flexible; changes are difficult once a phase is completed.
* Late discovery of defects or requirement mismatches.

**2. Iterative Approach – RUP model**The RUP model builds the system in small parts (increments), where each increment adds functionality and is tested before moving to the next.

Projects with partially known requirements that will change over time.

**Advantages**:

* Delivers functional parts early, allowing testing and feedback.
* Easier to manage risks and incorporate feedback.
* Reduces overall project failure risk.

**Disadvantages:**

* Requires more planning and documentation.
* Integration challenges between different increments

**3. Evolutionary Approach – Prototyping (Spiral) model**

A prototype model of the system is created, tested, and refined based on feedback before full development starts.

Projects with unclear requirements or requiring customer validation.

**Advantages:**

* Helps users visualize the system early.
* Allows multiple refinements before full-scale development.
* Reduces misunderstandings in requirements.

**Disadvantages:**

* Prototyping can be time-consuming and costly.
* Users may misunderstand the prototype as the final product.

**4. Agile Approach – Scrum model**

Agile is a flexible and iterative model that delivers small, functional features in short sprints (usually 2–4 weeks) with continuous feedback.

Dynamic projects where requirements change frequently and rapid delivery is needed.

**Advantages**:

* Highly flexible, accommodating changes easily.
* Regular customer feedback ensures better alignment with needs.
* Delivers working software early and frequently.

**Disadvantages**:

* Requires close collaboration and experienced teams.
* Less documentation, which may be a challenge for regulatory projects.

**Question 9:** As a business analyst, which methodology do you think would be better for this project Waterfall and V Models?

Above I have defined in detail about all the SDLC models, from those SMEs are looking for V Model and Project team is showing interest on Waterfall Model.

As a BA, I would recommend using V-Model over Waterfall Model for this project.

**Reasons for Choosing V-Model**:

* Ensures high product quality since testing is integrated at each stage.
* Suitable for well-defined requirements, which is the case in this project.
* Reduces defect costs by identifying issues earlier instead of waiting until the end.

We can still consider Waterfall Model if the budget and timeline constraints are very strict and the team is confident that requirements will not change, the Waterfall model can still be considered.

However, as this is a customer-facing application, I strongly recommend the V-Model as it ensures better quality, reliability, and security before deployment.

**Question 10:** Differences between Waterfall model and V model.

|  |  |  |
| --- | --- | --- |
| **Aspect** | **Waterfall Model** | **V-Model** |
| Process | It’s a continuous process | It’s a simultaneous process |
| Testing Phase | Performed only after development is completed | Performed in parallel with each development phase |
| Flexibility | Rigid, Difficult to accommodate changes | Slightly more flexible  |
| Risk Handling | Risks are identified late in the project | Risks are mitigated early through continuous validation |
| Cost of Fixing Defects | High, since issues are detected late | Lower, as defects are caught early in the cycle |
| Suitable For | Projects with stable and well-defined requirements | Projects where quality is a high priority and early defect detection is critical |
| Project Size | Small to medium-sized projects | Medium to large projects with stringent quality needs |
| Parallel Testing | Not possible, testing happens only after coding | Possible, since every phase has a corresponding test phase |
| Error Detection | Errors are detected at the end | Errors are detected early in the development cycle |
| Documentation | Required at each stage | Even more extensive documentation is needed |
| Cost Efficiency | Can be costlier due to late defect detection | More cost-efficient due to early defect prevention |
| Customer Involvement | Less customer involvement | More customer involvement as compared to waterfall model. |
| Complexity Handling | Not suitable for complex projects | Better suited for complex projects requiring thorough validation |
| Developer Involvement in Testing | Limited until the testing phase begins | High, as testing is done alongside development |
| Real-world Applications | Used in banking, ERP, and government projects | Used in safety-critical applications like healthcare, aviation, and automotive industries |
| Maintenance & Support | Maintenance can be expensive due to late defect discovery | Maintenance is easier as early validation reduces major defects |
| Suitability for Changing Requirements | Not suitable, as changes are difficult to implement | Slightly better, but still not ideal for rapidly changing requirements |
| Time Consumption | Takes longer as all development must be completed before testing | Saves time by integrating testing early |
| Debugging Efficiency | Debugging is harder as defects are found late | Debugging is easier as defects are found in early phases |

**Question 11:** As a BA, state your reason for choosing one model for this project.

As a Business Analyst, I recommend using the V-Model over the Waterfall Model for this project.

Reasons for Choosing the V-Model are:

**1. High-Quality Assurance**:

* This project involves financial transactions like buying & selling agricultural products, so thorough testing at each stage ensures better security and reliability.
* Bugs found late in development as in Waterfall, could lead to financial losses or security breaches.

**2. Early Error Detection:**

* Since testing is integrated into every development phase, errors are caught early rather than at the end.
* This reduces the cost of fixing defects, making development more efficient.

**3. Stable and Well-Defined Requirements:**

* Farmers need an e-commerce-like platform, which has a clear and structured requirement set.
* Unlike Agile, where requirements constantly change, the V-Model ensures each phase is verified before moving forward.

**4. Parallel Testing Saves Time:**

* In Waterfall testing happens only after development but in the V-Model, it allows testing at every stage.
* This reduces rework time and helps deliver a more robust application within the 18-month deadline.

**5. Better Stakeholder Confidence**:

* Key stakeholders (Mr. Henry, Mr. Pandu, and Mr. Dooku) need a secure and reliable system.
* The V-Model reassures them that each requirement is tested and validated at every phase, increasing trust in the final product.

So, due to above reasons, I would prefer V Model, instead of Waterfall. If the project has absolutely fixed requirements with minimal complexity, the Waterfall model could work. However, the need for high quality, security, and continuous validation makes the V-Model the better choice for this project.

**Question 12:** Prepare Gantt Chat in V Model.

A Gantt chart is a project management tool that shows a project's schedule as a bar chart. It's a visual way to plan, track, and manage tasks. It makes easy to understand project phase and deadline.

**Project Timeline & Phase:**

|  |  |  |
| --- | --- | --- |
| **Phase** | **Duration** | **Resources Involved** |
| Requirement Gathering (RG) | 4 weeks | PM, BA, Stakeholders |
| Requirement Analysis (RA) | 4 weeks | PM, BA |
| Design | 4 weeks | PM, BA, Java Developers, DB Admin |
| Development Phase 1 (D1) | 4 weeks | Java Developers, DB Admin |
| Testing Phase 1 (T1) | 2 weeks | Testers |
| Development Phase 2 (D2) | 4 weeks | Java Developers, DB Admin |
| Testing Phase 2 (T2) | 2 weeks | Testers |
| Development Phase 3 (D3) | 4 weeks | Java Developers, DB Admin |
| Testing Phase 3 (T3) | 2 weeks | Testers |
| Development Phase 4 (D4) | 4 weeks | Java Developers, DB Admin |
| Testing Phase 4 (T4) | 2 weeks | Testers |
| User Acceptance Testing (UAT) | 4 weeks | PM, BA, Testers, Stakeholders |
| Deployment & Handover | 2 weeks | PM, NW Admin, DB Admin |

**Resource allocation across Phases:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Role** | **RG** | **RA** | **Design** | **D1** | **T1** | **D2** | **T2** | **D3** | **T3** | **D4** | **T4** | **UAT** | **Deploy** |
| **Project Manager** |   |
| **Business Analyst** |   |
| **Java Developers** | - | - |   | - |   | - |   | - |   | - | - | - |
| **Testers** | - | - | - | - |   | - |   | - |   | - |   | - |
| **DB Admin** | - | - |   | - |   | - |   | - |   | - | - |   |
| **Network Admin** | - | - | - |   |

**Question 13:** Explain the difference between Fixed Bid and Billing projects.

|  |  |  |
| --- | --- | --- |
| **Aspect** | **Fixed Bid Project** | **Billing Project** |
| Definition | A project with a pre-agreed cost, scope and timeline. | A project where the client is billed based on actual time spent and resources used. |
| Scope | Well-defined, fixed scope. Changes require re-negotiation. | Flexible scope, changes can be accommodated easily. |
| Budgeting | Fixed budget agreed upon before the project starts. | Variable budget, costs depend on actual work done. |
| Risk Factor | Higher risk for the vendor if estimates are incorrect. | Lower risk for the vendor, as costs are adjusted in real-time. |
| Flexibility | Low flexibility—any changes may result in additional cost. | High flexibility—changes can be managed dynamically. |
| Best Suited For | Projects with clear, stable requirements. | Projects where requirements may evolve over time. |
| Delivery Timeline | Strict deadline, must be delivered within the agreed timeline. | More relaxed timeline, allowing for ongoing improvements. |
| Client Involvement | Limited involvement after signing the contract. | Continuous involvement required for approvals and prioritization. |
| Example Projects | Government projects, ERP implementations, website development. | Software maintenance, Agile development, R&D projects. |

**Question 14:** Preparer Timesheets of a BA in various stages of SDLC

**1. Design Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| **Task** | **Estimated Hours** | **Actual Hours** |
| Conduct stakeholder workshops | 8 | 9 |
| Document business requirements (BRD) | 12 | 14 |
| Review system design with technical team | 6 | 7 |
| Prepare functional specifications (FSD) | 10 | 12 |
| Finalize Requirement Traceability Matrix (RTM) | 4 | 5 |

**2. Development Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| **Task** | **Estimated Hours** | **Actual Hours** |
| Support development team in clarifications | 6 | 7 |
| Update requirement documents | 4 | 5 |
| Conduct walkthroughs with developers | 5 | 6 |
| Monitor progress and identify requirement gaps | 4 | 4 |

**3. Testing Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| **Task** | **Estimated Hours** | **Actual Hours** |
| Assist in test case preparation | 8 | 9 |
| Review test scenarios for alignment with requirements | 6 | 7 |
| Validate test data | 5 | 6 |
| Support testers in defect analysis | 6 | 7 |

**4. UAT Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| **Task** | **Estimated Hours** | **Actual Hours** |
| Coordinate with business users for UAT | 6 | 7 |
| Prepare UAT scenarios & test cases | 8 | 9 |
| Conduct UAT training for end users | 5 | 6 |
| Document UAT feedback and changes | 6 | 6 |

**5. Deployment & Implementation Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| **Task** | **Estimated Hours** | **Actual Hours** |
| Validate system readiness for go-live | 6 | 6 |
| Prepare user manuals and training guides | 8 | 9 |
| Conduct end-user training sessions | 5 | 6 |
| Support post-go-live monitoring & issue resolution | 6 | 7 |