**Q1. Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)**

Ans.

Business Process Model for Online Agriculture Store:

1. Goal:

Provide an online platform where farmers from any remote locations can easily buy and receive fertilizers, seeds, and pesticides.

2. Inputs:

* Data about farmer’s needs: Information on fertilizers, seeds, pesticides and delivery preferences.
* Product Lists from Manufacturers: Details of available products
* Technology: A web or mobile app, internet connectivity and payment system.

3. Resources:

* Software Team: To handle the operations of the Online Platform
* Technology: Servers, mobile apps, and web application.
* Suppliers: Companies producing seeds, fertilizers, and pesticides.
* Payment System: Secure payment methods (credit cards, net banking) for processing transactions.
* Transport Service: Delivery services for shipping products to farmer locations.

4. Outputs:

* Detailed product descriptions with prices
* Farmer orders placed through the app the products they need, quantities, and shipping locations.
* Confirmation of the order and estimated delivery time.

5. Activities:

* Collect Product data from manufacturers & display products on the platform, along with descriptions, images, prices, etc.
* Farmers get registered on the site to see products and purchase them.
* Farmers select products and place an order by providing delivery details
* Farmers make payment through payment method (online or cash on delivery).
* The products are delivered to the farmer’s location within specified time.

6. Value:

Farmers get **easy Access** to agricultural products in remote locations

Farmers can **save time** by buying products online instead of travelling long distances

Since products from different manufacturers are listed on the website, farmers have access to **best quality** products.

**Q2. Mr Karthik is doing SWOT analysis before he accepts this project. What Aspects he should consider as Strengths, as Weaknesses, as Opportunity and as Threats?**

Ans.

**Strengths**:

* Expertise in Technology:

APTIT SOLUTIONS has a talented pool of developers & testers which can help it in delivering the project on time.

* Corporate Social Responsibility:

The Company is helping farmers from remote locations to gain access to the best products in the market thus fulfilling their CSR Goals.

* Clear Requirements:

The involvement of farmers (Peter, Kevin, and Ben) as stakeholders gives direct input to the development team in respect of the app thus making it user friendly.

**Weaknesses**:

* Limited Knowledge of Users:

Lack of education could make it hard for the farmers to understand the app.

* Limited Technology:

Farmers in remote areas may have limited access to smartphones and low internet connectivity which may make the website difficult to use for them.

* Problems in making Delivery to remote locations:

Delivering products to remote areas can be costly.

**Opportunities:**

* Vast Scope for Agricultural Market:

The agriculture market is huge since there are no major online agricultural platforms there is a large amount of scope to grow.

* Government Support :

Since the Company is fulfilling its CSR goals, there are chances that they will receive subsidies and tax exemptions from the government.

**Threats**:

* Competition from previously Established Agri platforms:

There are already established platforms in the agricultural product space such as Amazon & Flipkart. They might already have brand value and a loyal user base.

* Problems in Supply Chain Management:

Any changes in the market due to Farmers protests or government regulations may affect our website adversely.

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**Q3.** **Mr Karthik is trying to do feasibility study on doing this project in Technology (Java). Please help him with points (HW SW Trained Resources Budget Time frame) to consider in feasibility study.**

Ans.

1. Hardware:

* Determine the need for servers to support the platform, including storage, processing power.
* We have to ensure that the servers can scale/take the increasing load as the number of users and products increases over time.
* We have to ensure that there are systems in place for backup and disaster recovery.
* We have to assess the reliability of network connectivity in remote areas where the app will be used, ensuring that the app will work even in low-bandwidth environments.
* Ensure that the hardware infrastructure has security measures like firewalls & encryption to protect sensitive data.

2. Software:

* Ensure that the technology used to design the software such as Java is compatible with future upgrades and allows easy integration with other systems. Ex: Payment gateways& logistics.
* Assess the feasibility of integrating third-party services like payment gateways such as Razorpay or Paytm and logistics APIs for delivery management.
* Ensure that the chosen software supports cross-platform compatibility, especially for mobiles used by farmers in remote areas.
* The application must be user-friendly, considering possible limited internet connectivity.

3. Trained Resources:

* Ensure that the development team has the necessary expertise in Java technologies.
* The testing and QA team should have experience with Java-based testing tools
* Network admins should be skilled in setting up and maintaining secure, high-performance networks, especially in remote areas with connectivity issues.
* Certified trainers should be hired to provide basic tutorials to the farmers on how to use the application
* The Business Analysts in the team should be expert enough to gather the requirements from end users that is farmers and provide the same to the software team

4. Budget:

Development Team Costs: Calculate costs for developers, project managers, and QA teams involved in building the platform.

Infrastructure Costs: Budget for server costs, database management, cloud services, and third-party services (e.g., payment gateways, logistics).

Maintenance Costs: Budget for activities like bug fixes, system updates, performance enhancements etc.

Marketing Costs: Allocate funds for marketing the app to farmers, which could include digital marketing and outreach programs in rural areas

5. Timeframe Feasibility:

Project Timeline (18 months):

Given the 18-month timeframe, we can break it down into major phases (e.g., requirement gathering, design, development, testing, deployment) of the SDLC.

Requirement Gathering and Analysis: 1-2 months.

Design Phase: 2-3 months.

Development: 7-8 months.

Testing and QA: 2-3 months.

Deployment and Training: 1-2 months.

Top of Form

**Q 4. Mr Karthik 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**

Ans.

Bottom of Form

1. AS-IS Analysis:

* Farmers have to make purchases in the local shops thus having limited access to the variety of agricultural products.
* The Farmers have to face transportation issues because of high transportation cost or non availability of transport in remote areas.
* Since the farmers have to buy the products from Intermediary shops, they will have to pay high prices
* Delivery of products from local stores or markets may be delayed due to logistical issues and long distances.
* Many farmers may not know how to properly use fertilizers, seeds, or pesticides, leading to inefficient crop yields.

2. TO-BE Analysis:

* Farmers will be able to browse and purchase fertilizers, seeds, and pesticides from the online platform thus removing the need for travel to physical stores and they will have access to a wide variety of products.
* The farmers don’t have to worry about transportation costs since they will getting door delivery of agriculture products ordered by them.
* Direct access to manufacturers will help reduce intermediaries thus lowering the prices for farmers.
* The platform will provide delivery services to ensure that products are delivered directly to the farmer’s location, minimizing transportation delays. Real-time tracking system will be available for both farmers and sellers.
* The platform can provide educational content such as videos, or expert advice on the proper usage of seeds, fertilizers, and pesticides. This will help farmers optimize their crop yield.

**Q5. List down different risk factors that may be involved (BA Risks And process/Project Risks**

**Ans.**

**Business Analysis Risks:**

**1. Misalignment of Stakeholder Expectations:**

The expectations of different stakeholders may not be the same or they maybe conflicting.

**2. Inadequate User Requirements:**

The requirements from farmers and other users may not be gathered properly, leading to the development of a system that does not meet their needs.

**3. No Knowledge of Subject Domain:**

A lack of understanding of the agricultural industry could lead to the development of features that don't effectively address farmers' problems.

**4. Compliance Issues:**

The platform will handle confidential information, such as payment details and personal data of farmers. If it does not comply with the compliance requirements it could face legal challenges.

**Project Risks:**

**1. Integration Challenges:**

Integrating third-party services APIs into the platform might be more difficult than anticipated.

**2. Scalability Issues:**

The system might struggle to scale properly as the number of users and products grow.

**3. Budget Overruns:**

The project may exceed the allocated budget (2 Crores INR), either due to underestimated costs, unforeseen technical issues, or changes in scope.

**4. Delays in Development:**

The project might face delays due to technical problems or resource unavailability.

**5. Availability of Skilled Resources:**

There may be a shortage of skilled resources available to work on the project

**6. Delivery Challenges:**

Challenges in logistics, such as delays or damage to products during transportation, and transportation to remote locations.

**Q6.** **Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and Who**

Ans.

|  |  |
| --- | --- |
| Responsible | Ms. Juhi (Senior Developer), Testers (Mr. Jason and Ms. Alekya) , Developers(Teyson, Lucie, Tucker,Bravo), Mike(Net Admin), John(DB Admin), Me(BA) |
| Accountable | Mr. Karthik (Delivery Head), Mr. Vandanam (Project Manager), Mr Dooku(Project Coordinator) |
| Consulted | Farmers(Peter, Kevin, Ben), Manufacturers/Suppliers |
| Informed | Mr Henry(Sponsor), Mr Pandu(Finance Head),  |

**Q7. Help Mr Karthik to prepare a business case document?**

**Ans.**

**Business Case Document for Online Agriculture Product Store Project**

**1. Why is this Project initiated?**

The **Online Agriculture Product Store** is a platform designed to connect farmers in remote areas with manufacturers of agricultural products (fertilizers, seeds, pesticides).

**2. What are the Current Problems?**

Farmers in remote areas are facing significant challenges in procuring agricultural products such as fertilizers, seeds, and pesticides. These issues lead to problems in the growth of the agricultural industry in rural areas.

**3. With this Project how many problems can be solved?**

* Farmers have easy access to a wide range of agricultural products at best prices.
* Increased crop productivity due to better availability of fertilizers, seeds, and pesticides.
* Suppliers have increased market reach and direct access to farmers in remote areas.

**4. What are the Resources required?**

**a. Human Resources**:

* Project Manager: Mr. Vandanam
* Senior Java Developer: Ms. Juhi
* Java Developers: Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo
* Network Administrator: Mr. Mike
* Database Administrator: Mr. John
* Testers: Mr. Jason and Ms. Alekya
* Business Analyst: You (BA)

**b. Technology Resources**:

* **Software**: Java, testing tools, database management systems
* **Hardware**: Servers, network equipment

**c. Financial Resources**:

* Project Budget: ₹2 Crore

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

 **For SOONY company, this will be Strategic change as they will need to allocate resources separately for monitoring and maintaining the platform.**

**5. Time frame to recover ROI?**

**1 to 2 years depending on the transaction volume and marketing efforts.**

**6. How to identify Stakeholders?**

**Sponsor: Mr. Henry**

**Financial Head: Mr. Pandu**

**Delivery Head: Mr. Karthik**

**Project Manager: Mr. Vandanam**

**End Users: Farmers**

**Q8 The Committee of Mr. Henry, Mr Pandu, Mr Dooku and Mr Karthik are having a discussion on Project Development Approach. Mr Karthik explained to Mr. Henry about SDLC. And four methodologies like Sequential Iterative Evolutionary and Agile. Please share your thoughts and clarity on Methodolgies.**

1. Sequential Development (Waterfall)

The Waterfall methodology is one of the oldest and most traditional approaches in software development. It follows a linear, step-by-step process where each phase must be completed before the next one begins.

The phases typically include:

Requirements gathering

System design

Implementation (coding)

Testing

Deployment

Maintenance

Advantages:

1. Simple and easy to understand.

2. Clear milestones, deliverables, and deadlines.

3. Well-suited for small, simple projects where requirements are fixed and well-understood.

Disadvantages:

Inflexible; once a phase is completed, revisiting it can be costly and time-consuming..

Difficult to accommodate changes after the development begins.

2. Iterative Development

In Iterative development, the project is broken down into smaller iterations, and each iteration goes through all the SDLC phases: planning, design, development, testing, and deployment. After each iteration, a partial but working version of the product is delivered and feedback is gathered from stakeholders to improve the next iteration.

Advantages:

1. Each iteration delivers a working product, allowing stakeholders to see progress early.

2. Flexibility to make adjustments based on feedback after each iteration.

3. Helps in managing risks by addressing smaller pieces of the project at a time.

Disadvantages:

1. Requires a lot of resources and constant revisiting of work already done.

2. Needs clear planning and strong coordination to ensure each iteration builds upon the last.

3. May lead to scope creep if not managed well.

3. Evolutionary Development

In Evolutionary development, the software product is developed and released in successive versions or stages. Each version improves upon the previous one, adding more features and functionalities over time. The development process involves frequent prototyping, and new requirements are introduced as the system evolves.

Advantages:

a. Focuses on early delivery of working software.

b. Flexible to accommodate changing requirements and market conditions.

c. Continuous improvement and incremental release

Disadvantages:

a. Can result in project fragmentation, as features and functionalities are developed incrementally and may lack initial coherence.

b. Potential difficulty in maintaining a balance between development speed and quality.

c. Requires constant feedback and strong collaboration between the development team and stakeholders.

4. Agile Development

Agile is a set of principles and practices based on iterative development, where requirements and solutions evolve through collaboration between self-organizing, cross-functional teams. Agile emphasizes flexibility, customer collaboration, and rapid delivery of functional software. The Agile methodology often uses frameworks like Scrum or Kanban to manage the development process.

Scrum: Involves breaking the project into smaller tasks called sprints, with each sprint having a fixed duration (usually 2-4 weeks) to deliver a part of the product.

Kanban: Focuses on continuous delivery with a visual workflow for managing tasks.

Advantages:

a. Highly flexible and adaptive, allowing for quick changes based on feedback.

b. Frequent delivery of working software, which helps in meeting business goals quickly.

c. Strong collaboration between developers and stakeholders, ensuring that the final product meets the actual user needs.

d. Promotes early and frequent testing, helping identify and resolve issues quickly.

Disadvantages:

a. Requires frequent and close collaboration with stakeholders.

b. Can be hard to predict the exact timeline and budget due to evolving requirements.

c. Teams need to be well-disciplined to ensure efficient progress and avoid scope creep.

**Q9. They discussed models in SDLC like waterfall RUP Spiral and Scrum. You put forth your understanding on these models When the APT IT SOLUTIONS company got the project to make this online agriculture product store, there is a difference of opinion between a couple of SMEs and the project team regarding which methodology would be more suitable for this project. SMEs are stressing on using the V model and the project team is leaning more onto the side of waterfall model. As a business analyst, which methodology do you think would be be better for this Project**?

Ans.

Let us first understand about the models:

1.V-Model (Verification and Validation Model):

It is rigid like the Waterfall model, but testing is planned parallel to development phases.

That is, each development stage has a corresponding testing phase

Advantages:

a. Early detection of defects since testing begins from the requirements phase.

b. Highly structured, ensuring quality assurance at every step.

Disadvantages:

a. Not flexible for changes once the project progresses.

b. Requires clear and well-defined requirements from the start.

2.Waterfall Model:

Each phase (Requirements, Design, Development, Testing, Deployment) is completed before moving to the next.

This model is easy to manage and follow.

Advantages:

a. Works well when requirements are clear and unlikely to change.

b. Provides a clear structure for the development process.

Disadvantages:

a. Difficult to accommodate changes after the project moves to later stages.

b. Late testing means issues may surface only in the final stages.

3. Recommendation

The V-Model is better suited for this project due to the following reasons:

a. The application involves critical functions like order placement, delivery tracking, & payments where early testing will reduce the risk of defects.

b. The project seems to have moderately clear requirements (with stakeholders like Peter, Kevin, and Ben), making the V-Model viable.

c. SMEs prefer the V-Model, and their buy-in is essential for smooth execution and collaboration.

d. By integrating testing with every phase, the V-Model ensures issues are identified early, reducing rework in later stages.

e. To address the project team's preference for the Waterfall Model:

Highlight that the V-Model is essentially an enhancement of the Waterfall Model, with added testing focus.

Offer training or workshops to familiarize the team with the V-Model's process.

Emphasize how early defect detection can save time and costs in the long run.

**Q10.Write down the differences between waterfall model and V model**

Ans.

|  |  |
| --- | --- |
|  **Waterfall Model** |  **V Model** |
| Testing is performed after the development phase is completed. | Testing is planned and executed simultaneously with each development phase. |
| Rigid; changes are difficult to incorporate once the project moves to the next phase. | Slightly more flexible, but still less adaptable to changes compared to iterative models. |
| Focuses primarily on completing each phase before moving to the next. | Emphasizes both development and verification (testing) at every phase. |
| Errors are detected late in the lifecycle, usually during testing. | Errors can be detected early as testing begins alongside requirement analysis and design. |
| Cost of Defects is Higher, as issues discovered later in the project are more expensive to fix. | Comparatively lower defect cost, as defects are identified and resolved early. |
| Best suited for projects with clear, well-defined, and stable requirements. | Best suited for projects where quality is a high priority and requirements are fairly stable. |
| Heavy emphasis on documentation. | Also emphasizes documentation but includes testing plans for all phases. |

**Q11.** **As a BA, state your reason for choosing one model for this project**

Ans.

As a Business Analyst (BA), I would recommend the V-Model for this project:

1. High Emphasis on Quality Assurance

* This project involves critical functions like:
* Farmers purchasing seeds, fertilizers, and pesticides.
* Manufacturers uploading product details.
* Payment processing and delivery tracking.
* Early detection of defects like in the V-Model is crucial to ensure these functionalities are reliable.

2. Clear Requirements

* The requirements for the project are relatively clear:
* Farmers need a user-friendly platform to browse and purchase agricultural products.
* Manufacturers need a system to upload product details and manage orders.
* With stable requirements, the V-Model aligns well as it requires a well-defined structure from the beginning.

3. Structured and Systematic Approach

* The V-Model’s highly structured nature ensures:
* Verification at every development stage Validation through parallel testing (e.g., system testing as modules are developed).

4. Risk Mitigation

* By integrating testing into every phase:
* Defects are identified and corrected in the early stages itself thus reducing the cost and time needed for fixes later in the project.

5. Limited Scope for Changes

* While the application needs to be user-friendly and functional, major changes are unlikely after the requirements phase since:

Conclusion

The V-Model is the better choice because it prioritizes quality and aligns with the stakeholder expectations.

**Q12. The Committee of Mr. Henry, Mr Pandu, and Mr Dooku discussed with Mr Karthik and finalised on the V Model approach (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) Mr Vandanam is mapped as a PM to this project. He studies this Project and Prepares a Gantt chart with V Model (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) as development process and the Resources are PM, BA, Java Developers, testers, DB Admin, NW Admin.**

Ans.

**Q13. Explain the difference between Fixed Bid and Billing Projects**

Ans.

|  |  |
| --- | --- |
|  **Fixed Bid Project** |  **Billing Project** |
| A project with a predefined scope, timeline, and budget agreed upon before the work begins. | A project where the client is billed based on the actual time and resources spent by the service provider. |
| A fixed price is decided for the entire project, regardless of the actual effort required. | Pricing is flexible and depends on the hours worked and materials used.  |
| Scope is typically rigid. Any changes to the scope may require renegotiation or change requests | Scope is flexible, allowing for modifications during the project. |
| Suitable for projects with clear, well-defined requirements and minimal scope for changes. | Suitable for projects with evolving requirements or where the scope is not fully known upfront. |
| Limited client involvement since deliverables and costs are predefined. | High client involvement is often necessary to provide feedback and guide evolving requirements. |

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

Ans.

Below are the different timesheets of a Business analyst at different stages of the SDLC:

**1. Design Timesheet**

|  |  |  |
| --- | --- | --- |
| Day | Activity | Hours |
| Monday | Collaborating with developers to create system designs and workflows. | 4 hours |
| Tuesday | Reviewing wireframes, prototypes, and mockups. | 5 hours |
| Wednesday | Preparing and validating design documentation  | 6 hours |
| Thursday | Ensuring designs align with business requirements and reviewing with stakeholders. | 5 hours |
| Friday | Finalizing design documents and addressing feedback. | 5 hours |

**2. Development Timesheet**

|  |  |  |
| --- | --- | --- |
| **Day** | **Activity** | **Hours Spent** |
| Monday | Clarifying requirements for the development team. | 4 hours |
| Tuesday | Assisting with understanding user stories and workflows. | 5 hours |
| Wednesday | Participating in sprint planning or progress reviews. | 4 hours |
| Thursday | Verifying interim builds against requirements. | 5 hours |
| Friday | Addressing developer queries and updating documentation if needed. | 4 hours |

**3. Testing Timesheet**

|  |  |  |
| --- | --- | --- |
| **Day** | **Activity** | **Hours Spent** |
| Monday | Assisting QA with test case preparation and reviewing scripts. | 5 hours |
| Tuesday | Mapping test cases to requirements to ensure full coverage. | 4 hours |
| Wednesday | Observing and validating test execution. | 5 hours |
| Thursday | Collaborating with QA to log and analyze defects. | 6 hours |
| Friday | Reviewing test results and ensuring alignment with business needs. | 4 hours |

**4. User Acceptance Testing (UAT) Timesheet**

|  |  |  |
| --- | --- | --- |
| **Day** | **Activity** | **Hours Spent** |
| Monday | Coordinating UAT sessions with end-users. | 5 hours |
| Tuesday | Assisting users with test scenarios and test data preparation. | 4 hours |
| Wednesday | Observing and documenting feedback from UAT sessions. | 6 hours |
| Thursday | Addressing issues identified during UAT and updating documentation. | 5 hours |
| Friday | Finalizing UAT reports and obtaining sign-offs. | 5 hours |

**5. Deployment and Implementation Timesheet**

|  |  |  |
| --- | --- | --- |
| **Day** | **Activity** | **Hours Spent** |
| Monday | Preparing training materials and user manuals. | 6 hours |
| Tuesday | Conducting training sessions for end-users. | 5 hours |
| Wednesday | Validating the deployed system in the production environment. | 5 hours |
| Thursday | Monitoring deployment issues and collaborating with the team to resolve them. | 5 hours |
| Friday | Providing post-implementation support and feedback analysis. | 5 hours |