PROJECT 1 – PART-1

Question 1: Business Process Model for Online Agriculture Store

Answer

Goal: To bridge the gap between buyers and sellers. Providing farmer with a convenient and efficient way to purchase agriculture products by connecting them with manufacturers.

Inputs: Customer information, Supplier Information, Manpower, Marketing Trends & Campaigns

Resources: E-commerce Platform for customers to order products, Warehouse/Inventory to store the products, managing deliveries and ensuring accurate order delivery

Outputs: Revenue Generation, Products Delivery & Customer Satisfaction

Activities: Partnering up with suppliers of agricultural products, Providing Top-Notch customer support to ensure our customers have smooth experience.

Value created to end customers: Customer Satisfaction, Customers can buy anytime or from the comfort of their home, Access to a wide range of agricultural products.

Question 2: SWOT

Answer

|  |  |
| --- | --- |
| INTERNAL FACTORS | |
| STRENGTHS + | WEAKNESSES – |
| * User Friendly Website and Shopping Experience * Convenience and Accessibility * Wide Product range |  |
|  |  |
| EXTERNAL FACTORS | |
| OPPORTUNITIES + | THREATS – |
| * Untapped market * Growing demand for online shopping |  |

Question 3: Feasibility Study

Answer

Budget assigned to the project – 2 cr.

Cost estimated – 1.8 cr.

Feasibility Study on Technology:

Technology used: Database servers, Payment gateway integrations, Cloud storage

Web Server: Apache

Database Server: MySQL, MongoDB

Programming Language: Java, PHP, Python

**Hardware**

Webservers: Dell PowerEdge, HPE ProLiant, Lenovo Thinksystem

Database servers: Supermicro SuperServer, Dell PowerEdge, Amazon RDS

Load Balancers: HAproxy, AWS Elastic, Citrix ADC

Storage Devices: Dell EqualLogic, AWS, Synology DiskStation

**Software**

Payment Gateway: Phonepe, Razorpay, Pinelabs

E-commerce Platform: Magento, Shopify, WeCommerce

Security Applications: SSL Certificates, Web Application Firewall, Anti Malware & Software

**Resources**

Question 4: Gap Analysis

**Current State**

* Customers usually have to visit physical stores to purchase agricultural products such as seeds, fertilizers, which can be inconvenient particularly for those who is the who live remote areas. This limits their access to necessary products.
* Is the website user-friendly and easy to navigate? Is the checkout process smooth and efficient?
* Limited payment methods primarily only credit cards or basic digital payment methods.
* Limited partnerships with a few manufacturers. Dependency on a small number of suppliers.
* High operating costs because of investments in technology and marketing.

**Desired State**

* Customers will be able to purchase products at any time and from any location with a fully integrated online platform. This will include detailed product reviews and descriptions that are easily accessible**.**
* Easy-to-use website with a simple payment process and straightforward functionality.
* a Variety of safe payment options, such as PayPal, credit cards, mobile wallets (like Google Pay and PhonePe & Paytm), and financing choices for expensive products
* Expansion into new product categories and markets
* Enhanced operational efficiency and profitability by implementing cost reduction strategies.

Question 5: Risk Analysis

**Internal Risks**

* Poor communication within the project team may result in misunderstandings and errors**.**
* Uncontrolled changes or continuous growth in project scope may impact deadlines and budgets.
* Ineffective allocation of resources, such as time, money can result in delays or failures in important aspects of a project.
* Technical issues and system downtime can affect customer experience.

**External Risks**

* Changes in e-commerce regulations could disrupt business operations.
* Increased competition from other online agricultural platforms may impact market share.

**Project Risks**

* Scope changes or inaccurate estimations can lead to excess spending.
* Delivering a product that does not meet quality requirements could damage reputation and usability.
* The project may fall behind schedule due to a number of reasons, including unforeseen challenges or increased complexity.

**BA Risks**

* Insufficient or unclear requirements can lead to scope creep, delayed timelines, and rework if developers create features that do not meet user needs.
* Failing to engage key stakeholders throughout the project can lead to a lack of support and resources when needed.
* lack of risk identification may result in insufficient preparedness and potential delays in project completion.

Question 7: Business Case Document

1. Why is this project initiated?

The project is initiated to solve the primary challenges that farmers, especially those in remote areas, experience when trying to get essential agricultural products including seeds, fertilizer, and pesticides. The goal is to create a seamless platform that enables farmers to procure these supplies easily and efficiently, thus reducing the time and effort spent on procurement.

1. Current Problems.

Farmers, especially in remote areas, struggle to access necessary supplies such as seeds, fertilizers, and pesticides. This limited availability often leads to lower crop yields. The lack of available agricultural products, such as seeds, fertilizers, and pesticides, severely limits farmers' ability to achieve best crop yields and manage their farming operations effectively.

1. Problem solved.

The online agriculture product store significantly improves accessibility for farmers, particularly those in remote areas who previously faced challenges in procuring essential agricultural supplies. By providing a centralized platform, farmers can easily browse a wide range of products, including seeds, fertilizers, and pesticides, from various manufacturers. This platform enables farmers to engage with suppliers, ensuring that they receive timely information about product availability and pricing.

1. Resources required.

To execute this project, several key resources are required. A skilled development team, including Java developers and testers, will be essential for building and maintaining the online platform. Additionally, network and database administrators will be needed to ensure the system's reliability and security. A project manager will oversee the project, coordinating efforts among team members and stakeholders. Furthermore, necessary hardware and software infrastructure, such as servers and development tools, will be required to support the application.

1. How much organizational change is required? To adopt this technology?

Cultivating a culture open to adopting new technologies among stakeholders. Concentrating more on User Acceptance Focus by Promoting. user acceptance by highlighting the advantages of the new technology and providing ongoing support to ease the transition. Establishing a feedback loop to monitor the effectiveness of the new system and make necessary adjustments based on user experiences and suggestions.

1. What is the timeframe to recover ROI?

The expected timeframe to recover the return on investment (ROI) for this project is approximately 18 months. This estimate considers the initial development costs, ongoing operational expenses, and projected revenue generated from increased sales through the online platform. By aligning the project's duration with the corporate social responsibility (CSR) initiative, the organization aims to demonstrate its commitment to supporting farmers while achieving financial sustainability.

1. How to identify stakeholders?

Identifying stakeholders is a crucial step in the project planning process. Stakeholders can be identified through a comprehensive stakeholder analysis, which involves mapping out individuals and groups who will be affected by the project. Key stakeholders include farmers who will use the platform, manufacturers who will supply products, project coordinators who will oversee implementation, and the development team responsible for building the application. Engaging these stakeholders early in the process will ensure their needs and concerns are addressed, fostering collaboration and support for the project.

Question 8: Four SDLC Methodologies

**Sequential - Waterfall Model**

The Waterfall model is a sequential and linear approach in which each phase needs to be finished before the next phase commences. It comprises specific stages: requirements analysis, design, implementation, testing, integration, deployment, and maintenance. This methodology is most appropriate for projects that have well-defined and stable requirements, as it aids in project management and planning by establishing clear milestones. However, its inflexibility can become problematic when user needs evolve, as integrating changes late in the process can be costly.

**Iterative - RUP (Rational Unified Process)**

RUP is a flexible framework that breaks down the development process into four key stages: Inception, Elaboration, Construction, and Transition. This structure promotes ongoing iteration and adjustment, which helps keep stakeholders involved and highlights the importance of managing risks. By prioritizing the delivery of a functional product in stages, RUP is designed to handle changes effectively and ensures that the project stays in tune with user requirements, making it a great fit for complex projects where needs can evolve.

**Evolutionary - Spiral Model**

The Spiral Model focuses on evaluating risks and developing in stages. Each loop of the spiral includes steps like Planning, Risk Analysis, Engineering, and Evaluation. This approach encourages teams to create prototypes early on and regularly reassess their progress, which helps them tackle potential risks before they become issues. With its emphasis on making adjustments based on user input, the Spiral Model works particularly well for big, complicated projects that come with a lot of unknowns.

**Agile - Scrum**

Scrum is an Agile approach that revolves around brief, repetitive cycles known as "sprints," usually spanning 2 to 4 weeks. Teams tackle tasks from a prioritized Product Backlog, aiming to roll out particular features during each sprint. Daily stand-up meetings promote clear communication among team members, and Sprint Reviews and Retrospectives help in refining processes for better outcomes. The focus on teamwork and flexibility in Scrum makes it a great fit for fast-paced settings, enabling teams to swiftly adjust to evolving needs.

Choosing the right software development methodology is key to ensuring a project's success. The Waterfall model offers a clear and structured approach, which works well for projects with fixed requirements, though it can sometimes feel a bit inflexible. On the other hand, RUP's iterative method allows for continuous tweaks, making it a better fit for more complicated projects. The Spiral model shines when it comes to managing risks, effectively tackling uncertainties and allowing for proactive solutions. Meanwhile, Scrum stands out for its adaptability and speed, thanks to its iterative sprints that boost team collaboration and responsiveness to user input. In the end, the best methodology should match the project's objectives, the needs of stakeholders, and the unique challenges of the development landscape.

Question 9:

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I would recommend adopting the Scrum methodology, Due to its flexibility, iterative development approach, and enhanced collaboration among teams. It allows for quick adaptations to user feedback, engaging stakeholders continuously and delivering early value to farmers effectively.

Question 10: Difference between Waterfall Vs V-Model

| **Aspect** | **Waterfall model** | **V-model** |
| --- | --- | --- |
| **Cost** | The cost of Waterfall model is low. | V-model is expensive. |
| **Simplicity** | Simplicity of Waterfall model is simple. | Simplicity of V-model is Intermediate. |
| **Flexibility** | Flexibility of Waterfall model is Rigid. | Flexibility of V-model is Little flexible. |
| **Phases** | There is no way to return to the earlier phase. | There is no such constraint in V-model. |
| **Execution Process** | Waterfall model is a sequential execution process. | It is also a sequential execution process. |
| **Linear Movement of Steps** | Waterfall model’s steps move in a linear way. | V-model’s steps don’t move in linear way. |
| **Reusability** | Re-usability of Waterfall model is Limited. | V-model can be Re-use for some extent. |
| **User Involvement** | User involvement in Waterfall model is only in beginning. | User involvement in V-model is also only in beginning. |
| **Testing Activities Start** | In Waterfall model testing activities start after the development activities are over. | In V-model testing activities start with the first stage. |
| **Success Guarantee** | Guarantee of success through Waterfall model is low. | Guarantee of success through V-model is high. |
| **Process** | Waterfall model is a continuous process. | V-model is a simultaneous process. |
| **Defects** | Software made using Waterfall model, the number of defects are less in comparison of software made using V-model. | Software made using V-model, the number of defects are greater in comparison of software made using Waterfall model. |
| **Requirement Specification** | Requirement specification in Waterfall model is necessary in beginning. | Requirement specification in V-model is also necessary in beginning. |
| **Customer Involvement** | Less customer involvement. | More customer involvement as compared to waterfall model. |
| **Testing during Development** | It is not possible to test a software during its development. | There is possibility to test a software during its development. |
| **Identification of Defects** | Identification of defects is done in the testing phase. | Identification of defects can be done from the beginning. |
| **Debugging** | Debugging is done after the last phase. | Debugging can be done in between phases. |
| **Usage** | Waterfall model is less used now-a-days in software engineering. | V-model is widely used in software engineering. |

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

**Fixed bid** projects involve a predetermined amount that clients agree to pay for the entire project, regardless of the actual expenses incurred during development. This pricing structure provides cost certainty for the client and defines the project scope upfront. However, it places the financial risk primarily on the vendor, as they must manage any unexpected costs or overruns within the set budget. This makes accurate estimation of project requirements and resources essential. Fixed bid contracts are typically best suited for projects with well-defined objectives and minimal expected changes, as any alteration in scope can complicate the agreement and may require renegotiation.

**Billing projects**, often based on time and materials, require clients to pay for the actual hours worked and materials used during the project. This structure offers greater flexibility as it allows for adjustments in scope and requirements without the need for renegotiation. The client assumes more financial risk since they are responsible for the actual costs incurred, but this arrangement also grants vendors the freedom to focus on delivering quality work without the constraints of a fixed budget. Billing projects are ideally suited for initiatives where requirements are unclear at the outset or expected to evolve, as they can accommodate changing priorities and deliverables more fluidly throughout the project lifecycle.

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