**Name:** Shahzad Ahmed

**Capstone Project 1**

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

**Ans**:

**Goal**: To create online platform which allow farmers to buy agriculture products such as pesticides, seeds and fertilizers.

**Inputs**: Productsinformation: Information about pesticides, seeds and fertilizers for buyers.

Farmer information: Contact name, contact number, address, mode of payment.

Manufacturer details: Contact details, payment terms, and delivery options from manufacturers.

**Resources**:

Software development and testing team, HR team.

Backend management system, such as database, server for user data.

Finance Resources

**Output:** It means result of process to deliver the product to end user.

Order confirmation, delivery of product, payment processing and transaction history.

**Activities:**

Manufacturer should be able to upload product details.

Farmers should be able to browse the products based on their needs

Placing the order, payment processing and delivery of products (track of delivery).

**Value Created to the End Customer:**

Time saving, Convenience, product availability, direct contact with manufacturer

**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.**

**Strengths:**

APT IT SOLUTIONS company has strong development team.

The budget of **2 Crores INR** is substantial, ensuring the development, testing, and deployment phases can be well-funded.

**Weakness:**

Internet connectivity

Farmers may find it difficult to use the application, as they may not be technically sound.

**Opportunities:**

Growing market, technological advancements, partnerships, government support, potential for expansion.

**Threats:**

Competition from existing players, convince farmers to trust the online platform, economic uncertainty, changing government regulations.

**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:** A feasibility study is a process where you check if an idea or project can be done successfully. It looks at things like how much it will cost, what resources are needed.. The goal is to see if it's a good idea to move forward with the project.

**Hardware (HW):** Servers, network infrastructure, backup systems, development machines.

**Software (SW):** Java (Spring, Hibernate), database (MySQL/PostgreSQL), testing tools, payment gateway, and third-party API integration.

**Resources:** Java developers, DB admin, network admin, testers, project manager, business analyst, and frontend developers.

**Budget**: 2 Crores of project allocated for development, infrastructure, licensing, testing, and operational costs.

**Time frame:** 18 months with phases for analysis, design, development, testing, and deployment.

**Q4.) 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**: Gap analysis is the process of comparing where you are now with where you want to be. It helps you identify the differences (or "gaps") between your current situation and your goals. This way, you can figure out what needs to be done to reach your objectives.

**Current state**

Farmers facing challenges in procuring fertilizers, seeds and pesticides due to lack of availability in remote areas.

Farmers need to physically visit local stores, markets, or rely on vendors who may not carry a full range of products.

Remote and rural farmers face challenges in reaching local stores due to poor transportation infrastructure and distance from the nearest market.

Manual orders, limited payment options.

**Desire state:**

**Centralized Online Platform**: Farmers will be able to access agricultural products (fertilizers, seeds, pesticides) from multiple manufacturers in a single onlineplatform.

**Direct Purchase**: The system eliminates the need for intermediaries, enabling farmers to directly purchase products from manufacturers, ensuring better quality and fair pricing.

The online store will be accessible to farmers in remote areas via internet-enabled devices (smartphones, PCs), improving accessibility to products.

Online ordering, multiple secure payment methods, tracking.

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

**Ans:**

**BA Risk:** Incomplete requirements, miscommunication, domain knowledge.

**Process/Project Risks:**

These risks relate to the implementation of project itself, including not meeting timelines due to technical or resource issues, resource unavailability, technical or system issues or challenges

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

**Ans:**

**A RACI matrix is a tool used to clarify roles and responsibilities in a project. It helps show who is responsible for what tasks. The letters in "RACI" stand for:**

* R = Responsible: The person who does the work.
* A = Accountable: The person who is ultimately answerable for the task.
* C = Consulted: People who give advice or information.
* I = Informed: People who need to be kept updated about progress

| **Activity** | **Mr. Henry** | **Mr. Pandu** | **Mr. Dooku** | **Peter, Kevin, Ben** | **Mr. Karthik** | **Mr. Vandanam** | **Ms. Juhi** | **Java Devs** | **Mr. Mike** | **Mr. John** | **Mr. Jason & Ms. Alekya** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Requirements Gathering (Functional/Non-Functional)** | R | C | A | C | C | I | I | I | I | I | I |
| **Feasibility Study (Technology, Resources)** | C | A | C | I | R | C | I | I | I | I | I |
| **Design System Architecture** | I | C | I | I | A | R | C | R | I | C | I |
| **System Development (Java)** | I | I | I | I | I | C | R | R | I | I | I |
| **User Interface Design** | C | I | I | R | C | A | R | C | I | I | I |
| **Database Design** | I | I | I | I | C | C | I | I | R | A | I |
| **Testing**  | I | I | I | I | C | I | I | I | I | I | A |
| **Deployment** | I | I | C | I | A | R | I | I | I | I | I |
|  |  |  |  |  |  |  |  |  |  |  |  |

**Q7) Help Mr Karthik to prepare a business case document**

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

**Purpose of the Project:**
The Online Agriculture Store is designed to facilitate farmers, particularly those in remote areas, to buy the agricultural products such as seeds, fertilizers, pesticides through an online platform. The objective is to smoothly procurement, connect manufacturers directly with farmers, and ensure timely delivery of products to their location.

**Current Market Situation:**

Farmers in remote areas always facing challenges in procuring quality agricultural products. Limited access to fertilizers, seeds, and pesticides hampers productivity and reduces crop yields. The traditional supply chain is slow, unreliable, and lacks transparency.

**Scope of the Project**

Development of the online platform (Web and Mobile Application).

Integration with payment gateways (for seamless financial transactions).

Integration with logistics partners for delivery.

User registration and product catalog management.

Customer support and feedback systems.

**Benefits of the Project**

* **For Farmers:**
	+ Improved access to a variety of agricultural products.
	+ Timely delivery of products to remote locations.
	+ Competitive prices due to a direct connection with manufacturers.
	+ Increased awareness and education about product usage through tutorials or guides on the platform.
* **For Manufacturers:**
	+ Access to a wider customer base, including rural and underserved regions.
	+ Reduced costs of traditional distribution channels.
	+ Increased brand visibility and market share in rural markets.

**Resources:** Java developers, DB admin, network admin, testers, project manager, business analyst, and frontend developers.

**Project Duration:** **18 months**.

**Project Stakeholders:**

Project Sponsorer- Mr Henry

End User -Peter, Kevin, Ben represent the end users farmers, sharing the requirement

Financial Head of SOONY company- Mr.Pandu

Project Coordinator of SOONY company- Mr. Dooku

Delivery Head- Mr. Karthik

Project Manager- Mr. Vandanam

Development Team- Ms. Juhi, Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo

Testing Team - Mr. Jason and Ms. Alekya

Database Admin- Mr. John

Network Admin- Mr. Mike

BA- Mr. Shahzad Ahmed

**Q8) The Committee of Mr. Henry , Mr Pandu , and Mr Dooku and Mr Karthik are having a discussion on Project Development Approach**

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

**Ans:** For Online Agriculture store project initiating we will have to understand the various Software Development Life Cycle (SDLC) methodologies that can be applied to implement and successful project.

Here's an explanation of each methodology.

**1. Sequential Methodology (Waterfall)**

**Description:**

The **Sequential (Waterfall)** model follows a linear and structured approach to software development. In this model, each phase of development must be completed before moving on to the next. The stages include:

1. **Requirements Gathering**
2. **System Design**
3. **Implementation**
4. **Testing**
5. **Deployment**
6. **Maintenance**

**Iterative Methodology**

The **Iterative** methodology involves developing the system in small sections or iterations. Each iteration typically goes through all phases of SDLC: design, development, and testing. After completing an iteration, the system is reviewed, feedback is gathered, and adjustments are made before proceeding with the next iteration.

**Evolutionary Methodology (Spiral Model)**

The Evolutionary (Spiral) model combines elements of both Iterative and Waterfall methodologies. It is often represented as a series of spirals, where each spiral involves planning, risk analysis, engineering, testing, and evaluation. The project goes through multiple iterations (or spirals), gradually refining and evolving the product.

**Agile Methodology**

Agile is a highly flexible, iterative, and incremental development approach where small, cross-functional teams collaborate to deliver value to the customer in regular, frequent iterations (called sprints). Key Agile frameworks include Scrum, Kanban, and Extreme Programming (XP). Agile emphasizes customer collaboration, responding to change, and delivering working software frequently.

**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 better for this project?**

**Waterfall**

The Waterfall model is a sequential and linear approach where each phase of the software development lifecycle (SDLC) is completed before moving on to the next.

The phases in Waterfall typically include Requirement Gathering, System Design, Implementation, Testing, Deployment, and Maintenance.

**V-Model**

The V-Model (Verification and Validation Model) is an extension of the Waterfall model. It emphasizes a parallel relationship between development stages and testing stages.

In the V-Model, each phase of development is directly linked to a corresponding testing phase, creating a V-shape. The stages involve Requirement Analysis, System Design, Implementation, and testing phases like Unit Testing, Integration Testing, and System Testing.

**Spiral Model:**

The **Spiral model** combines elements of iterative development with systematic risk management. It focuses on repeatedly going through a process of planning, risk analysis, engineering, testing, and evaluation in each cycle or “spiral.”

**Scrum**

**Scrum** is an Agile framework that emphasizes short, time-boxed iterations called **Sprints**, which typically last 2-4 weeks. At the end of each sprint, the team produces a potentially shippable product increment, and feedback is integrated into the next sprint.

It focuses on flexibility, collaboration, and continuous improvement.

As a business analyst, I would recommend adopting over the Waterfall for following reason.

Clear and Well-defined Phases: Each phase has specific deliverables and a clear timeline.

Easy to Manage: The project is easier to manage as each phase is completed in sequence, and progress is clearly measurable.

Ideal for Well-Defined Projects: This methodology works well for projects where requirements are well understood and unlikely to change.

**Q10)** – Waterfall Vs V-Model - 5 Marks 20Write down the differences between waterfall model and V model.

| **Feature** | **Waterfall Model** | **V-Model** |
| --- | --- | --- |
| **Approach** | Linear, Sequential | Linear but with parallel testing phases |
| **Testing** | After development phase | Parallel to development, testing at each phase |
| **Flexibility** | Inflexible, changes difficult once a phase is done | Less flexible but allows for some early changes |
| **Risk Management** | Late identification of risks | Early identification of risks with validation |
| **Cost of Changes** | Expensive if changes are made late | More expensive than Waterfall but less so than it |
| **Suitability** | Simple projects with well-understood requirements | Complex projects requiring rigorous validation |
| **Project Complexity** | Low complexity projects | High complexity projects requiring high reliability |
| **Documentation** | Heavy documentation, can become cumbersome | Extensive documentation for verification & validation |
| **Testing Focus** | Testing after completion | Continuous testing alongside development |
| **Ideal For** | Projects with minimal changes | Projects requiring strict quality assurance |

**Question 11 – Justify your choice - 3 Marks As a BA, state your reason for choosing one model for this project**

**Ans:**

Waterfall model is better suited for project with static and well-understood requirements, and offers a clear structure. Each phase has specific deliverables and a clear timeline. The project is easier to manage as each phase is completed in sequence.

**Q 12) – Gantt Chart - 5 Marks 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:** A fixed bid project is when the price for a job is agreed on before it starts, and that price stays the same no matter how long the work takes or how much effort is needed.

A billing project is a job or task where the cost is tracked and charged to a client based on the work done, materials used, or time spent.

**Q14 – Preparer Timesheets of a BA in various stages of SDLC - 20 marks ➢ Design Timesheet of a BA Development Timesheet of a BA ➢ Testing Timesheet of a BA ➢ UAT Timesheet of a BA ➢ Deployment n Implementation Timesheet of a BA**

**Ans:**

|  |  |  |  |
| --- | --- | --- | --- |
| Design Timesheet |  |  |  |
| Sr.No | Tasks | Start Time | End Time | Duration |
| 1 | Participating in design discussions with PM, architects | 10:00 | 02:00 | 4 |
| 2 | Functional Design D0ocumentation | 03:00 | 06:00 | 3 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Development Timesheet |  |  |  |
| Sr.No | Tasks | Start Time | End Time | Duration |
| 1 | Development requirement clarification | 10:00 | 01:00 | 3 |
| 2 | Stakeholder Communication | 02:00 | 03:00 | 1 |
| 3 | Reviewing developed Modules | 03:30 | 05:30 | 2 |
|  |  |  |  |  |
|  |  |  |  |  |
| Testing Timesheet |  |  |  |
| Sr.No | Tasks | Start Time | End Time | Duration |
| 1 | Reviewing Test Plans and Test Cases | 10:00 | 01:00 | 3 |
| 2 | Collaborating with testers for functional testing | 02:00 | 04:00 | 2 |
| 3 | Reviewing test results and defect analysis | 04:00 | 06:00 | 2 |
|  |  |  |  |  |
|  |  |  |  |  |
| UAT Timesheet |  |  |  |
| Sr.No | Tasks | Start Time | End Time | Duration |
| 1 | UAT Planning and preparation | 10:00 | 01:00 | 3 |
| 2 | Coordinating with end users for UAT execution | 02:00 | 06:00 | 4 |
|  |  |  |  |  |
|  |  |  |  |  |
| Deployment Timesheet |  |  |  |
| Sr.No | Tasks | Start Time | End Time | Duration |
| 1 | Deployment planning and coordination with technical team | 10:00 | 01:00 | 3 |
| 2 | Post Deployment Validation  | 02:00 | 05:00 | 3 |
| 3 | Communicating with Stakeholders | 05:00 | 06:00 | 1 |