**COEPD – Traditional Development**

Capstone Project1 – Part -1/3 – 100 Marks

**Ques 1:** 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:**

To generate the online platform that connect farmers with agricultural product manufactures to facilitate the easy availability for products like fertilizers, seeds and pesticides, so that productivity and efficiency of agriculture will be improve.

1. **Inputs:**

* **Business Inputs:**
* Requirement Gathering from Farmers (Peter, Kevin and Bem)
* Requirement Gathering from Manufactures for Fertilizer, Seeds and Pesticides
* Budget of 2 Crores INR
* Project Duration: 18 months
* **System Inputs:**
* Product details like type of fertilisers, seeds, pesticides, price, availability.
* Farmers details like location, required product with quantity, contact details.
* Order details like requested product, quantity, delivery timelines.

1. **Resources:**

* **Human Resource:**
* APT IT SOLTIONS Team having Delivery Head, Project Manager, Developers, Testers, Network Admin.
* Project Committee have Mr. Henry – the project provider,

Mr. Pandu – the Financial Head,

Mr. Dooku – the Project Coordinator.

* Stakeholders – Peter, Kevin and Ben.
* **Technical Resource:**
* Software Development tools like Java, Online Web / Mobile Application, Databases.
* Payment Gateways and Logistics Integration.
* Hosting Infrastructure like Cloud servers, databases.

1. **Outputs:**

* A fully functional Online Agriculture Store.
* Farmers can browse products easily and make a purchase as per their requirements.
* Manufacturers list and sell their products directly to farmers.
* Improving availability and accessibility of farming products to remote areas.

1. **Activities:**
2. **User Onboarding:**

* Farmers & Manufacturers register on the platform.
* Farmers give location access.
* Manufacturer lists their products with details like price, availability.

1. **Product Search and Ordering:**

* Farmers search for required their products.
* Select their product based on quality, price and availability and add them to Cart.

1. **Order Placement and Payment:**

* Farmers place their order and choose delivery preferences
* Payments completed through UPI, Net Banking, Credit/Debit Cards or COD.

1. **Order Processing and Delivery:**

* Manufacturers receive order details and confirm fulfilment.
* Delivery partners pick and transport the items.
* Farmers receive their real-time delivery updates regarding their products.

1. **Customer Support and Feedback:**

* Farmer receive their ordered product.
* Farmer provide rating and review for manufacturers.
* If needed, Farmer can proceed with return request or raise complaints.

1. **Value created to the end Customer:**

* Easy Accessibility – Farmers in remote areas can buy products online.
* Cost Savings – Competitive pricing & direct buying from manufacturers.
* Time Efficiency – Eliminates the need for traveling long distances.
* Product Assurance – Verified sellers and user ratings ensure quality.
* Seamless Order Tracking – Transparency in order status and delivery.

**Ques 2:** 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:** Mr. Karthik should authorise strengths, mitigate weaknesses, capitalize on opportunities, and prepare for threats before proceeding with the project.

Following is the **SWOT Analysis** for Online Agriculture Store Project processed by Mr. Karthik:

1. **Strengths:**

* Strong Technical Team at APT IT SOLUTIONS.
* Clear Business Goals set by Mr. Henry & Committee.
* CSR Funding of 2 Crore INR ensures financial stability.
* High Demand among farmers for easy access to fertilizers, seeds, and pesticides.
* Scalability Potential for future expansion.

1. **Weaknesses:**

* Limited Technical Awareness among farmers.
* Poor Internet Connectivity in remote areas.
* Logistics & Delivery Challenges for rural distribution.
* Potential Resistance from Traditional Suppliers

1. **Opportunities:**

* Expansion into New Markets
* Government Collaborations for wider reach.
* Financial Integrations
* Data Insights to help farmers make informed decisions.

1. **Threats:**

* Competition from existing e-commerce platforms.
* Legal & Regulatory Issues in agricultural sales.
* Farmer Adoption Hesitation due to preference for traditional buying.
* Cybersecurity Risks in online transactions.

**Ques 3:** 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:** Feasibility Study for Online Agriculture Store (Technology: Java) to be done by Mr. Karthik regarding HW, SW, Trained Resources, Budget and Time Frame:

1. **Hardware Requirements (HW):**

* **Server Infrastructure** – Cloud-based or on-premise servers for hosting the platform.
* **Database Servers** – High-capacity servers to store product, user, and transaction data.
* **Networking & Security Equipment** – Firewalls, Load Balancers, SSL Certificates for secure transactions.
* **User Devices Compatibility** – Ensuring smooth performance on mobile phones, tablets, and desktops.

1. **Software Requirements (SW):**

* **Backend** –Java (Spring Boot) for API development.
* **Frontend** – React/Angular for web, Flutter/React Native for mobile.
* **Database** – MySQL for structured data storage.
* **Cloud Services** – AWS/Azure/GCP for hosting and scalability.
* **Security Measures** – Encryption, Multi-factor Authentication (MFA).
* **Payment Gateway Integration** – UPI, Nat Banking, etc.

1. **Trained Resources:**

* Project Manager – Mr. Vandanam (Oversees project execution).
* Java Developers – Ms. Juhi (Senior), Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo.
* Database Administrator – John (Manages data security & performance).
* Network Administrator – Mike (Ensures connectivity & cybersecurity).
* Testers – Mr. Jason, Ms. Alekya (Validates functionality & performance).
* Business Analyst – Defines requirements and ensures alignment with business needs.

1. **Budget Feasibility:**

* Total CSR Budget – Rs 2 Crores.
* Estimated Expenses:
* Development Costs – Rs 80 Lakhs (Salaries & resources).
* Infrastructure & Hosting – Rs 30 Lakhs.
* Security & Compliance – Rs 20 Lakhs.
* Marketing & Awareness – Rs. 20 Lakhs.
* Contingency Buffer – Rs. 50 Lakhs.

1. **Time Frame Feasibility:**

* Total Timeline – 18 months (As per the CSR contract).
* Proposed Project Phases:
* Requirement Gathering & Analysis – 2 months.
* UI/UX Design & Wireframing – 2 months.
* Development & Testing (Agile Sprints) – 10 months.
* UAT & Beta Launch – 2 months.
* Final Deployment & Support – 2 months.

**Ques 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:** Gap Analysis for Online Agriculture Store Project, prepared by: Mr. Karthik (Delivery Head, APT IT SOLUTIONS) and submitted to: Mr. Henry (Project Sponsor, SOONY Company).

* The **AS-IS process has significant inefficiencies** that impact farmers' productivity and profitability, while by implementing the **TO-BE process via the Online Agriculture Store will modernize agricultural procurement**, benefiting both farmers and manufacturers.

1. **Purpose of Gap Analysis:**

To compare the **current AS-IS process** (existing challenges in agricultural product buying) with the **TO-BE process** (how the proposed online platform will improve efficiency and accessibility).

1. **Gap Analysis Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Category** | **AS-IS** | **TO-BE** | **Identified GAP** |
| **Product Buying** | Farmers travel long distances to buy fertilizers, seeds, and pesticides. | Farmers order online from manufacturers using the mobile/web app. | **Lack of accessibility** in rural areas. |
| **Product Availability** | Farmers rely on local suppliers, leading to limited choices. | Farmers can buy from multiple manufacturers, ensuring better variety & pricing. | Limited options & dependency on middlemen. |
| **Pricing** | Middlemen increase prices, making products costly. | Direct purchase from manufacturers, ensuring cost savings. | Unfair pricing due to middlemen. |
| **Order Tracking & Delivery** | No real-time tracking. Farmers must wait for uncertain deliveries. | Order tracking & estimated delivery time available via app. | No visibility on delivery progress. |
| **Payments** | Cash-based transactions, risk of fraud. | Secure online payments (UPI, Net Banking, COD, Credit/Debit Cards). | High dependency on cash payments. |
| **Customer Support** | Farmers have no direct contact with manufacturers for complaints. | 24/7 customer support & chat feature for issue resolution. | Lack of post-sale support. |

1. **Key Insights & Justification for Project Initiation:**

* Bridges the gap between farmers and manufacturers by eliminating middlemen.
* Provides cost savings through transparent pricing and bulk order options.
* Improves accessibility for remote farmers, ensuring they get high-quality products.
* Enhances efficiency with online ordering, tracking, and secure payments.
* Supports financial inclusion by enabling digital payments and credit options.

**Ques 5:** List down different risk factors that may be involved (BA Risks And process/Project Risks).

**Ans:** Risk Factors in the Online Agriculture Store Project based on BA Risks and Process/Project Risks are as followed:

1. **Business Analyst (BA) Risks:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk Category** | **Risk Factor** | **Impact** | **Mitigation Strategy** |
| **Requirement Gathering Risks** | Farmers may not clearly articulate their needs. | Incomplete or unclear requirements. | Conduct field visits, surveys, and stakeholder interviews. |
|  | Language barriers with rural farmers. | Misinterpretation of user needs. | Use regional language support and involve local representatives. |
|  | Changing business requirements during the project. | Frequent scope changes and delays. | Implement Agile methodology to handle evolving requirements. |
| **Stakeholder Risks** | Resistance from local suppliers. | Potential pushback against online store adoption. | Educate stakeholders on benefits & collaboration opportunities. |
|  | Farmers’ reluctance to adopt technology. | Low platform adoption rate. | Provide training, video tutorials, and customer support. |
| **Process Documentation Risks** | Poor documentation of business rules. | Leads to misalignment between development and business goals. | Maintain detailed BRD (Business Requirement Document) & use JIRA/Confluence. |
|  | Missing key compliance & regulatory details. | Legal challenges in selling fertilizers/pesticides online. | Conduct legal reviews & regulatory checks early in the project. |
| **Validation & Testing Risks** | Misalignment between expected and delivered product features. | Farmers may find the platform difficult to use. | Conduct User Acceptance Testing (UAT) with farmers before launch. |
| **Communication Risks** | Miscommunication between BA, developers, and stakeholders. | Delays and misinterpretations in project execution. | Arrange regular meetings & requirement review sessions. |

1. **Process/Project Risks:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk Category** | **Risk Factor** | **Impact** | **Mitigation Strategy** |
| **Technology Risks** | Poor internet connectivity in rural areas. | Low usability of the application. | Develop offline mode & lightweight mobile version. |
|  | Scalability challenges due to high traffic. | System crashes during peak usage. | Use cloud-based scalable architecture (AWS, Azure, GCP). |
| **Financial Risks** | |  | | --- | | Budget overruns due to unexpected expenses. |  |  | | --- | |  | | Project delay or failure. | |  | | --- | | Track expenses closely with cost monitoring tools. |  |  | | --- | |  | |
|  | Farmers’ inability to make online payments. | Reduced transactions on the platform. | |  | | --- | | Integrate Cash on Delivery (COD) & Government subsidy support. |  |  | | --- | |  | |
| **Operational Risks** | Delay in manufacturer onboarding. | Fewer product listings at launch. | Offer incentives for early adoption & onboarding support. |
|  | Logistics challenges in rural deliveries. | |  | | --- | |  |   Delayed product deliveries to farmers. | Partner with local courier service & warehouse networks. |
| **Security Risks** | |  | | --- | |  |   Cyber threats & data breaches. | Risk of fraud and identity theft. | Implement SSL encryption, OTP authentication, & secure payment gateways. |
| **Compliance Risks** | Selling restricted agricultural products. | Legal action against the platform. | Ensure legal approvals & certifications for products sold. |
| **Project Management Risks** | Delays in development and testing. | Project timeline extension. | |  | | --- | |  |   Follow Agile sprints & milestone tracking. |
|  | High dependency on a few key team members. | Project may slow down if key personnel leave. | Ensure knowledge sharing & documentation of all processes. |

**Ques 6:** Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and Who are the influencers.

**Ans: Stakeholder Analysis – RACI Matrix for Online Agriculture Store**

Prepared by Delivery Head, APT IT SOLUTIONS i.e. Mr. Karthik with an objective to identify key stakeholders, their roles, and their decision-making influence using the **RACI (Responsible, Accountable, Consulted, Informed) Matrix**.

1. **RACI Matrix:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Stakeholder** | **Role** | **Responsible (R)** | **Accountable (A)** | **Consulted (C)** | **Informed (I)** |
| Project Sponsor **(Mr. Henry)** | Approves and funds the project |  | ☑ | ☑ | ☑ |
| Financial Head **(Mr. Pandu)** | Manages project budget |  | ☑ | ☑ | ☑ |
| Project Coordinator **(Mr. Dooku)** | Oversees execution | ☑ | ☑ | ☑ | ☑ |
| Farmers/Stakeholders **(Peter, Kevin, Ben)** | Provide farmer requirements | ☑ |  | ☑ | ☑ |
| Delivery Head **(Mr. Karthik)** | Oversees project delivery | ☑ | ☑ | ☑ | ☑ |
| Project Manager **(Mr. Vandanam)** | Manages project team & timelines | ☑ | ☑ | ☑ | ☑ |
| Developers **(Ms. Juhi & Java Team)** | Develop software & backend | ☑ |  | ☑ |  |
| DB Admin **(Mr. John)** | Manages database and security | ☑ |  | ☑ |  |
| Network Admin **(Mr. Mike)** | Ensures network and cloud infrastructure | ☑ |  | ☑ |  |
| Testers **(Mr. Jason & Ms. Alekya)** | Test application before deployment | ☑ |  | ☑ |  |

1. **Key Stakeholders & Their Influence:**

|  |  |  |
| --- | --- | --- |
| **Category** | **Stakeholders** | **Influence** |
| **Decision Makers (A)** | Mr. Henry, Mr. Pandu, Mr. Dooku, Mr. Karthik, Mr. Vandanam | They **approve** budget, project plans, and final implementation. |
| **Influencers (C)** | Peter, Kevin, Ben (Farmers), Developers, Testers, DB & Network Admins | They **provide insights & recommendations** for development and execution. |
| **Informed Stakeholders (I)** | SOONY Company team, Local Farmer Community | They **receive updates** on project progress and adoption. |

**Ques 7.** Help Mr Karthik to prepare a business case document.

**Ans:** The **Online Agriculture Store** will modernize agricultural procurement, making essential farming products accessible, affordable, and transparent for rural farmers. This initiative will also boost SOONY’s CSR impact while benefiting farmers nationwide. Mr. Karthik strongly recommends approving this project for execution.

* **Executive Summary:**

Farmers in remote villages face challenges in procuring **fertilizers, seeds, and pesticides** due to limited access to suppliers, high prices from middlemen, and logistical issues. To address this, SOONY Company is funding an **Online Agriculture Store** under a CSR initiative. This digital platform will **connect farmers directly with manufacturers**, ensuring fair pricing, product availability, and ease of purchase.

* **Business Problem & Opportunity:**
* **Current Challenges (AS-IS Process):**
* Limited access to suppliers
* High dependency on middlemen
* No real-time product availability
* Lack of delivery tracking
* Cash-based transactions
* **Proposed Solution (TO-BE Process):**
* Web & mobile application for farmers to order agricultural products online.
* Direct manufacturer-to-farmer transactions to ensure fair pricing.
* Order tracking & logistics integration for timely deliveries.
* Multiple payment options (UPI, Net Banking, COD, Credit/Debit Cards).
* Customer support & advisory services for farmers' queries.
* **Project Scope:**
* In-Scope:
* Web & mobile app development (Java, React/Flutter).
* Product listing, order placement, tracking, and payments.
* User registration for farmers & manufacturers.
* Secure database & cloud hosting (AWS/Azure).
* Digital payment & logistics partner integration.
* Out of Scope:
* Physical delivery logistics (handled by third-party vendors).
* Crop advisory services (can be added in future phases).
* **Financial Analysis & Budget Estimation:**

|  |  |
| --- | --- |
| **Expense Category** | **Estimated Cost (INR)** |
| Development (Java, Backend, Frontend) | 80 Lakhs |
| Infrastructure & Hosting | 30 Lakhs |
| Security & Compliance | 20 Lakhs |
| Marketing & Training | 20 Lakhs |
| Maintenance & Support | 20 Lakhs |
| **TOTAL BUDGET** | **2 Crores** |

* **Benefits & ROI:**
* Cost Savings – Farmers save money by eliminating middlemen.
* Better Availability – Manufacturers can reach a larger customer base.
* Faster Procurement – Online ordering reduces delays in supply chain.
* Increased Farmer Adoption – Government can support digital transactions.
* Secure & Transparent Payments – Reduces fraud and improves financial tracking.
* **Project Timeline:**

|  |  |
| --- | --- |
| **Phase** | **Duration** |
| Requirement Gathering | 4 Months |
| Development & Testing | 10 Months |
| User Acceptance Testing (UAT) | 2 Months |
| Deployment | 2 Months |
| **TOTAL DURATION** | **18 Months** |

**Ques 8:** 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: Project Development Approach – SDLC & Methodologies** that Mr Karthik explained to Mr. Henry it’s four methodologies like Sequential, Iterative, Evolutionary and Agile.

**Mr. Karthik should recommend the Agile Model** as the best approach for this project because:

* Farmers & manufacturers may **change requirements** based on usability.
* The system needs **frequent updates & improvements.**
* Agile allows **early testing & feedback**, reducing long-term risks.

1. **Understanding SDLC (Software Development Life Cycle):**

Mr. Karthik explains that **SDLC (Software Development Life Cycle)** is the **structured process** followed to design, develop, test, and deploy software. It ensures that the project is **delivered efficiently, meets business needs, and is of high quality.**

* **SDLC Phases:**
* **Requirement Gathering & Analysis** – Understanding what the system needs.
* **Design** – Creating the system architecture and database design.
* **Development** – Writing the actual code.
* **Testing** – Verifying that the software works correctly.
* **Deployment** – Making the software live.
* **Maintenance & Support** – Fixing issues and upgrading the system.

1. **Four Methodologies of SDLC are as follows:**

Mr. Karthik explains the four major **SDLC methodologies** and their suitability for the **Online Agriculture Store.**

1. **Sequential Model (Waterfall):**

* **Definition:** A **linear and step-by-step** development model where each phase is completed before moving to the next.
* **Pros:**
* Simple to understand and manage.
* Works well for projects with fixed, well-defined requirements.
* **Cons:**
* No flexibility once a phase is completed.
* Late testing, making bug-fixing costly.
* **Suitable for:** **Small, well-defined projects.**

1. **Iterative Model:**

* **Definition:** Software is built in **repeated cycles**, with each iteration improving and refining the product.
* **Pros:**
* Allows feedback-based improvements.
* Reduces risk as issues are identified earlier.
* **Cons:**
* May extend project timelines if too many iterations are needed.
* **Suitable for:** **Medium-sized projects where requirements may evolve.**

1. **Evolutionary Model (Prototype-based Development) :**

* **Definition:** A working **prototype** is developed first, followed by continuous refinements.
* **Pros:**
* Users can see an **early version of the product.**
* Reduces the risk of missing important requirements.
* **Cons:**
* Can lead to **scope creep** if changes keep coming.
* **Suitable for:** **Projects where user feedback is crucial, such as UI-heavy applications.**

1. **Agile Model (Recommended for Online Agriculture Store):**

* **Definition:** Development is done in **small, iterative cycles (Sprints)** with continuous customer feedback.
* **Pros:**
* **Highly flexible** – changes can be accommodated easily.
* **Early delivery of working software.**
* **Better stakeholder collaboration** (Farmers & Manufacturers can test features).
* **Cons:**
* Requires **strong communication** and active involvement from stakeholders.
* **Suitable for:** **Complex projects where requirements evolve, like the Online Agriculture Store.**

**Ques 9:** 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?

**Ans: Understanding SDLC Models – Waterfall, RUP, Spiral, and Scrum:**

1. **Waterfall Model:**

* **Definition:** A **sequential** development model where each phase (Requirement → Design → Development → Testing → Deployment) is completed before moving to the next.
* **Pros:**
* Simple and easy to manage.
* Works well for projects with **fixed and well-defined** requirements.
* **Cons:**
* No flexibility for changes once a phase is completed.
* **Late testing** – issues are found too late, increasing rework costs.
* **Suitable for:** **Small projects with stable requirements.**

1. **RUP (Rational Unified Process) Model:**

* **Definition:** A **phased and iterative** approach where the development process is divided into four phases – **Inception, Elaboration, Construction, and Transition.**
* **Pros:**
* Well-structured **iterative approach** for large projects.
* **Risk assessment at every stage** reduces failures.
* **Cons:**
* Requires **strong documentation** and experienced teams.
* Can be **complex** for smaller projects.
* **Suitable for:** **Enterprise-level applications with complex business logic.**

1. **Spiral Model (Risk-Driven Approach)**

* **Definition:** A combination of **Waterfall + Iterative development**, emphasizing **risk management**. It involves **multiple iterations (spirals)** before final deployment.
* **Pros:**
* Best for **high-risk projects** where requirements evolve.
* Allows continuous **risk assessment and mitigation**.
* **Cons:**
* **Expensive and time-consuming** due to repeated cycles.
* Needs **experienced teams** for effective implementation.
* **Suitable for:** **Critical applications like banking, healthcare, or aerospace software.**

1. **Scrum (Agile Framework):**

* **Definition:** A highly flexible **Agile methodology** where work is broken down into **Sprints (2-4 weeks cycles)** with continuous feedback.
* **Pros:**
* **Early and continuous delivery** of working software.
* **Stakeholder collaboration** ensures a user-friendly product.
* **Cons:**
* Requires **strong communication** and adaptability.
* May cause **scope creep** if not well-managed.
* **Suitable for:** **Projects with evolving requirements and end-user involvement.**

**Choosing Between V-Model vs. Waterfall for This Project**

* SMEs prefer the V-Model (Verification & Validation Model).
* Project Team prefers the Waterfall Model (Step-by-step approach).

**Understanding the V-Model:**

* It is an extension of Waterfall but integrates testing at every stage (Validation).
* Ensures early defect detection since testing happens parallel to development.
* Works well for projects where requirements are stable and high quality is required from the start.

**Waterfall Model’s Limitations for This Project:**

* No early testing, making defect fixing costly.
* No flexibility, whereas this project may require changes based on farmers' feedback.

**Best Methodology for This Project?**

* **V-Model is the Better Choice!**

**Reasons:**

* Early Testing Reduces Risk – Since farmers and manufacturers are new to technology, testing at each stage ensures user-friendly development.
* Ensures High-Quality Delivery – Since it's a CSR project, SOONY wants a reliable and defect-free product.
* Better Than Waterfall – Unlike Waterfall, V-Model allows validation at each phase, avoiding last-minute failures.
* **As a Business Analyst, I strongly recommend the V-Model as the best SDLC methodology for this Online Agriculture Store project.**

**Ques 10:** Write down the differences between waterfall model and V model.

**Ans: Differences Between Waterfall Model and V-Model:**

|  |  |  |
| --- | --- | --- |
| **Aspect** | **Waterfall Model** | **V-Model** |
| **Approach** | Sequential & Liner Process | Sequential but testing happens in parallel |
| **Testing Phase** | Testing happens after development is completion | Testing is integrated at every stage |
| **Flexibility for Changes** | Not Flexible that makes changes costly | Some flexibility as issues are identified early |
| **Risk Management** | Higher risk since defects are found late | Lower risk due to early defect detection |
| **Development Speed** | Faster initial development, but delays due to late bugs fixes | Takes more time upfront but avoids rework later |
| **Project Suitability** | Best for Small, well-defined projects with stable requirements | Best for critical projects where high quality and early validation are important |
| **Cost of Fixing Defects** | Expensive, as defects are identified late | Cheaper, as defects are found in early phase |
| **Documentation Requirements** | Moderate | High |
| **Examples of Use Cases** | Simple web applications | Online Agriculture Store, Medical software. |

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

**Ans:** While choosing one of the best models I’ll choose is SDLC Model for the Online Agriculture Store:

**As a Business Analyst (BA), I recommend the V-Model for this project due to following reasons:**

* Early Defect Detection – Since testing happens at every phase, issues can be fixed early, reducing costs.
* High-Quality Assurance – This project involves farmers and manufacturers who need a reliable and error-free system.
* Reduces Risk – Unlike the Waterfall model, the V-Model identifies and resolves risks before full development is completed.
* Better User Adoption – Continuous validation ensures the application is user-friendly for non-tech farmers.
* Cost-Effective – Fixing issues late (as in Waterfall) is expensive, while V-Model prevents major rework.
* Structured and Well-Documented – This model follows a clear structure, which helps with compliance and stakeholder approvals.
* Ensures Stakeholder Satisfaction – Regular validation aligns the product with business needs and expectations.
* Ideal for CSR Projects – Since this is a Corporate Social Responsibility (CSR) initiative, ensuring flawless implementation is crucial.

**Ques 12:** 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.

|  |  |  |
| --- | --- | --- |
| **Phase** | **V-Model Approach** | **Resources** |
| **Requirement Gathering (RG)** | Gathers business requirement, Stakeholder Interviews | BA, PM, SMEs |
| **Requirement Analysis (RA)** | Define functional & non-functional requirements | BA, PM |
| **Design** | System Architecture, UI/UX design | Java Developers, DB Admin, NW Admin, BA |
| **Development 1 (D1)** | Core Model Development | Java Developers |
| **Testing 1 (T1)** | Unit Testing | Testers & Developer |
| **Development 2 (D2)** | Additional Features Development | Java Developers |
| **Testing 2 (T2)** | Integration Testing | Testers, BA |
| **Development 3 (D3)** | API & DB Integration | Java Developers, DB Admin |
| **Testing 3 (T3)** | System Testing | Testers, BA |
| **Development 4 (D4)** | Final Enhancements & Security Updates | Java Developers, NW Admin |
| **Testing 4 (T4)** | Performance & Load Testing | Testers, NW Admin |
| **UAT (User Acceptance Testing)** | Testing with end users | Testers, BA, SMEs |

**Gantt Chart Summary:**

**Total Project Duration:** **36 Weeks**   
**V-Model Ensures Early Testing:** Testing phases (T1-T4) align with development (D1-D4).

**Parallel Testing Approach:** Ensures issues are caught early, reducing costly fixes later.  
**Resource Utilization:** PM oversees the project, BA works in all phases, Devs & Testers collaborate at each stage.  
**UAT Involvement:** Farmers & SMEs ensure the system meets real-world needs before launch.

**Conclusion:** The Gantt chart enables structured tracking of **tasks, timelines, and resource allocation**, ensuring smooth project execution.

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

**Ans: Fixed Bid Project:**

A Fixed Bid project has a predefined cost, and the service provider agrees to complete the work within the agreed budget and timeframe.

Key Characteristics:

* Fixed cost is agreed upon before the project starts.
* Defined scope, timeline, and deliverables.
* Low flexibility – Changes require a separate contract or additional cost.
* Higher risk for the vendor if the effort is underestimated.
* Best for short-term, well-planned projects (e.g., website development with clear requirements).

**Example:** Developing an e-commerce website with fixed features and a deadline of 3 months.

**Billing (Time & Material) Project:**

A Billing (T&M) project is where the client is billed based on the actual time and resources used during development.

Key Characteristics:

* Costs vary depending on hours worked and resources utilized.
* Flexible scope – Requirements can change during development.
* Higher client involvement – Regular tracking of project progress.
* Best for long-term or evolving projects (e.g., Agile software development).

**Example**: Developing a cloud-based SaaS application where features evolve based on market feedback.

* Key Differences Between Fixed Bid & Billing (T&M):

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| **Features** | **Fixed Bid Project** | **Billing Project** |
| Definition | A project where the total cost is agreed upon upfront, regardless of the time or resources spent. | A project where billing is based on the actual time and resources used. |
| Cost Predictability | High – The price is fixed and predefined. | Low – Costs vary based on the work done. |
| Flexibility | Low – Any change in scope requires a new agreement or additional charges. | High – Clients can make changes as needed, and they will be billed accordingly. |
| Risk | Higher risk for the vendor (company doing the project) if effort is underestimated. | Higher risk for the client if the project takes longer than expected. |
| Best Used For | Well-defined projects with clear scope, deliverables, and requirements. | Projects where scope is uncertain, evolving, or requires continuous development. |
| Client Control | Limited – The client approves requirements initially, and changes are difficult. | High – The client can monitor progress and modify requirements dynamically |
| Payment Model | Lump sum payment based on milestones or deliverables. | Regular payments (hourly, weekly, or monthly) based on effort logged. |

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

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:** A Business Analyst (BA) plays a crucial role throughout the Software Development Life Cycle (SDLC). Below are timesheet templates covering different phases:

* Design Timesheet of a BA:
* Gathering and analysing business requirements.
* Creating Business Requirement Documents (BRD).
* Preparing Use Cases, Wireframes, and Prototypes.
* Conducting stakeholder meetings.
* Reviewing Functional Specification Documents (FSD).

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| **Task** | **Hours Spent** | **Remarks** |
| Requirement Gathering | 4 | Client Meeting |
| Creating Use Cases | 3 | E-commerce Product Features |
| Wireframe Design | 2 | Created UI Screens |
| Review BRD & FSD | 3 | Peer Review |
| Stakeholder Approval | 2 | Signed-off Documents |

* Development Timesheet of a BA:
* Supporting developers with clarifications.
* Refining backlog requirements in Agile.
* Coordinating with UI/UX designers.
* Conducting walkthrough sessions for the development team.

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| **Task** | **Hours Spent** | **Remarks** |
| Explaining Business Rules | 3 | Dev Team Queries |
| Refining Backlog | 2 | Agile Grooming |
| Coordinating with UI Team | 2 | Design Revisions |
| Walkthrough with Developers | 3 | Functional Clarifications |
| Updating Requirement Docs | 3 | Change Requests |

* Testing Timesheet of a BA:
* Reviewing Test Cases.
* Assisting testers in test scenario creation.
* Performing functional testing.
* Validating defect fixes.
* Ensuring requirements are correctly implemented.

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| **Task** | **Hours Spent** | **Remarks** |
| Reviewing Test Cases | 3 | Ensured Coverage |
| Assisting Testers | 3 | Explained Business Scenarios |
| Performing Functional Testing | 3 | Cross-checking BRD |
| Validating Bug Fixes | 2 | Closed 5 Defects |
| User Training Preparation | 2 | Created Training Docs |

* UAT Timesheet of a BA:
* Supporting User Acceptance Testing (UAT).
* Assisting SMEs and end users in testing.
* Logging and tracking UAT defects.
* Gathering final user feedback.

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| **Task** | **Hours Spent** | **Remarks** |
| UAT Test Execution | 4 | Supported Farmers Testing |
| Logging UAT Defects | 3 | 7 Issues Logged |
| Coordinating Fixes | 3 | Dev Team Discussion |
| Collecting End-User Feedback | 2 | Improvement Suggestions |
| Final UAT Sign-off | 3 | Approved by SMEs |

* Deployment n Implementation Timesheet of a BA:
* Supporting production deployment.
* Monitoring system performance.
* Handling post-go-live issues.
* Conducting user training sessions.
* Finalizing project documentation.

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| **Task** | **Hours Spent** | **Remarks** |
| Deployment Readiness Check | 3 | Final Review |
| Monitoring Go-Live | 4 | Ensured No Major Issues |
| Post-Go-Live Support | 3 | Answered User Queries |
| Conducting Training | 3 | Explained System Usage |
| Project Closure Report | 2 | Document Submission |