**CapstoneProject1–Part-1/3**

**Question 1 – BPM**

Identify Business process model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end customer).

**Answer–**

**Goal –** Building an online platform for remote farmers to buy agricultural products directly from manufacturers.

**Inputs –** Gather requirements from farmers, and product details from manufacturers.

**Resources –** Human Resources, Technologies, Financial, and Stakeholders.

**Output –** User-friendly interface, product listings, order processing, and delivery management.

**Activities –** Gathering requirements, designing and developing, database, testing, deployment, and training.

**Value created to the end user –** Easy access to the products, increased productivity, enhanced convenience for farmers in remote areas.

**Question 2 – SWOT Analysis**

**Strengths**:

* **Talent Pool Availability**: APT IT SOLUTIONS already has the necessary talent pool available, which means that they have the skilled resources to execute the project effectively.
* **Clear Purpose and Objectives**: The project has a clear goal of facilitating farmers in remote areas, which aligns well with CSR objectives.
* **Experienced team**: APT IT SOLUTIONS has a talented pool of developers who can handle the project.

**Weaknesses**:

* **Limited Time Frame**: 18 months for completion might be tight for developing, testing, and deploying the application, especially considering user-friendliness.
* **Internet Dependence**: The platform’s reliance on internet connectivity could be a limitation, especially in remote regions with poor access.
* **Logistical Hurdles**: Ensuring the timely delivery of products to remote locations presents significant logistical challenges.

**Opportunities**:

* **Market Growth**: Successful implementation could lead to expansion into other regions or countries.
* **Partnership Potential**: The project offers opportunities to establish long-term partnerships with manufacturers, fostering continuous business growth.
* **Agricultural Innovation**: There is potential to integrate advanced features, such as real-time tracking or AI-driven product recommendations, enhancing the platform’s value.

**Threats**:

* **Competitive Landscape**: The emergence of similar solutions from competitors could diminish the platform’s uniqueness.
* **External Dependencies**: The project’s success depends on cooperation from third-party manufacturers, posing a risk if these relationships do not function as expected.
* **Economic Risks**: Economic fluctuations or downturns in the agricultural sector could impact the demand for the platform’s services.

**Question 3 – Feasibility Study**

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

**Answer–**

**Hardware –** Server infrastructure and network equipment**.**

**Software –** Development tools, DB management, testing, security.

**Trained Resources –** Java developers, Network Administrators, Database Administrators, and testers.

**Budget –** Cost estimation, Contingency

**Time Frame –** Development timeline, milestone, risk management.

**Question 4 – Gap Analysis**

**Answer-**

**AS-IS**

* Farmers in remote areas struggle to obtain essential products due to limited supplier access.
* Framers rely on traditional supply chains involving intermediaries, causing delays, and raising costs.
* Farmers lack a user-friendly way to compare, browse, and purchase products.
* The involvement of additional costs due to intermediaries.
* The process of procuring products is time-consuming, the farmers should travel and engage with multiple vendors.
* Currently farmers are dependent on local suppliers which is unreliable.
* Framers lack training on digital platforms.

**To-BE**

* The new online platform will allow them to directly purchase from manufacturers.
* This platform will offer detailed, real-time product information, helping them choose wisely.
* This online store will provide them with a user-friendly interface and make them easier to find and purchase the products they need.
* The new platform will reduce the costs by facilitating direct transactions between farmers and manufacturers.
* The online platform will save the farmers time by allowing them to order product from their farm.
* This system will reduce this dependency by offering stable and direct contact with manufacturers.
* The project will include training and support.

**Question – 5 Risk Analysis**

List down different risk factors that may be involved (BA Risks and process/project Risks)

**Answer–**

**BA Risks**

* Miscommunicating of the needs of farmers or manufacturers, leading to incomplete requirements.
* Changes in project scope as new requirement emerge, potentially leading to delays and budget overruns.
* Cultural language barriers between the BA and farmers in remote area could lead to miscommunication.

**Project/Process Risks**

* Technical challenges like integration issues and system scalability, Cost overruns
* Delay in development due to unforeseen resource unavailability.
* Risk of data breach, given the sensitive due to unfamiliarity with technology.
* Data privacy and change in government policies affecting online commerce.

**Question – 6 - RACI Matrix**

**Answer–**

|  |  |  |  |
| --- | --- | --- | --- |
| **RACI** | **Stakeholders** | **Designation** | **Personal Details** |
| **Responsible** | Mr. Karthik | Delivery Head | Contact: karthik@aptit.com |
| Mr. Vandanam | Project Manager | Contact: vandanam@aptit.com |
| Rio | Business Analyst | Contact: rio@aptit.com |
| Development Team | Java Developers | Contact: developers@aptit.com |
| **Accountable** | Mr. Henry | Project Sponsor | Contact: henry@soony.com |
| Mr. Pandu | Financial Head | Contact: pandu@soony.com |
| **Consulted** | Mr. Dooku | Project Coordinator | Contact: dooku@soony.com |
| Ms. Juhi | Senior Java Developer | Contact: juhi@aptit.com |
| Testing Team | Testers | Contact: testers@aptit.com |
| Peter, Kevin, Ben | Farmer Representatives | Location: Remote Village Area |
| Manufacturers | Supplier Stakeholders | Various contacts |
| **Informed** | John | DB Admin | Contact: john@aptit.com |
| Mike | Network Admin | Contact: mike@aptit.com |

**Question – 7 - Business Case Document**

Help Mr Karthik to prepare a business case document?

**Answer–**

* The project is being initiated to address the problem faced by farmers in remote areas. They struggle to access essential agricultural products like fertilizers, seeds, and pesticides. The project aims to bridge the gap between farmers and agricultural product manufacturers by building an online platform, enabling direct access to vital resources to enhance productivity and improve livelihood.
* **Current problem**- Remote farmers often struggle to access agricultural products due to limited availability and geographical challenges.

Traditional supply chains involve intermediaries, leading to increased costs and delayed deliveries.

Farmers have limited knowledge about the availability, quality, and pricing of essential products. There is a lack of a user-friendly, accessible platform to connect farmers directly with manufacturers and suppliers.

* **Problem solved by this project-** This online platform will provide farmers direct access to manufacturers allowing them to purchase fertilizers, seeds, and pesticides efficiently. The platform will feature detailed product descriptions, pricing, and availability, giving farmers the information they need to make informed decisions.

Farmers will save time and effort by being able to browse and purchase products online from anywhere, without traveling to physical markets.

* **Required Resources–** Project Manager, BA, Developers, Network and Database Administrators, Testers, Trainers for Farmers. Technical resources and the budget for development and implementation, additional funds for training and support post-launch.
* **Organizational change required–** Farmers and manufacturers will need training on how to use the platform. A customer support team will need to handle the queries from farmers and suppliers. Farmers who are unfamiliar need to shift from traditional purchasing method to using an online system, requiring patience and ongoing engagement.
* **Time frame to recover ROI-** As more farmers and manufacturers start using the platform, revenue from potential partnerships and increased sales will accelerate ROI. Cost reductions achieved by cutting out intermediaries will improve the financial position of the farmers, making the platform more sustainable.
* **Identifying stakeholders-** Decision makers, IT development Team, Government and regulatory authorities, NGOs and farmer cooperatives that support remote farmers and promote the platform.

**Question 8 – Four SDLC Methodologies**

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.

**Answer–**

The process an IT company follows to develop the project is defined through SDLC.

SDLC have methodology and models.

**1.Sequential:**

The Sequential is a linear approach where each phase must be completed before moving on to the next phase.

Phases of waterfall model –

* Requirement gathering-
* Requirement analysis- Design
* Development
* Testing
* Deployment
* Implementation

They have 3 servers – Development, UAT, and Production.

The storage of code or documents is in the development server.

It is divided into documents and technology. Documents is divided into public and protected. Technology is divided into coding, testing, and DB. BA has access to public area and Test & Code when joining the project.

**2.Iterative-(RUP):**

RUP is based on set of elements that describe what is to be produced, the skills required and the step-by-step explanation how the development goals are to be achieved. They have 6 engineering disciplines.

Business Modelling, Requirements, Analysis & Design, Implementation, Test, and Deployment.

They have Three process- Configuration & Change Management, Project Management, and Environment.

RUP have 4 Phases-

Inception – The project is discussed with the clients and agree for the deliverables.

Elaboration– The project will be discussed with team and agree on deliverables

 Construction– Work on deliverables or team should work on deliverables. It should be ready.

and Transition – This deliverable should fit to the next stage.

It requires more resources, more time, and more budget. It is mostly used in IBM-related projects only. Iterative development allows the project team to revisit earlier phases and incorporate changes as they progress.

**3. Evolutionary-Spiral**

It emphasizes risk analysis and evolves through repeated cycles, allowing for early detection of risks and iterative refinement of the project. It has 4 phases:

Planning– it is about requirement gathering.

Risk analysis– In this they identify risk and find the solution.

Engineering- software is produced and testing at the end of the phase.

Evaluation– It allows the customer to evaluate the output of the project to date before the project continues to the next spiral.

The focus on risk analysis makes it ideal for projects with unclear requirements or where there is high uncertainty. Each cycle results in a refined version of the software, and stakeholders have the opportunity to assess progress and make necessary adjustments. The spiral model is mostly used in research projects and defense projects.

**4. Agile-Scrum:**

It is one of the SDLC models. In this process we break the requirements into small tasks and deliver them to the client through the process of iterations as a company, we will be flexible enough to adopt the requirement changes done by the customer. There will be good communication between the customer, developer, BA, and all the project team members. The main goal of agile is to satisfy customers by delivering a working piece of software. It have 4 main values and 12 principles.

Roles:

**Scrum Team-** BA, Developers, Test engineers**.** The size of the team will be 7-10.

**Product Owner–** He is the representative of a customer/end user. He will be guiding the team in building the right product and what needs to be in the product.

**Scrum Master-** He is the responsible for performance of the team and delivering the product to customer. He will solve the issues raised by the team members.

**Product burndown-** It indicates that how much work is incomplete in the beginning of each sprint.

**Sprint-** It is the time period of 2 weeks but it may extend to 4 weeks. In this sprint period they decide to deliver the objectives.

**Meeting:-**

**Sprint planning meeting:** It happens in the start of each sprint and team decide what they will delivering.

**Daily Scrum meeting:** What did u do today. what will u do tomorrow. Is there any difficulties in completing task.

**Sprint Review Meeting:** Meeting is conducted before product is given to the customer before complete the sprint.

**Sprint Retrospective Meeting:** It is conducted at the end of the sprint. They will discuss what went well in the sprint. What are the improvement areas and what did not well.

Product backlog-all stories and requirement.

Burn down chart: It is a graphical representation of the remaining work left vs the iteration time. A project backlog is represented in vertical axis. Time is indicated in horizontal axis. It is determine when work will be completed an iteration.

Epic: It is related to the set of user stories.

Iteration: It is divided into small tasks deliver a set of user stories. Each iteration includes waterfalls activities. They have time upto four weeks. At the end of an iteration, it is reviewed and recommended changes into the future iterations.

Release: A release is set of software delivered to the customer to the result from a set of iterations. Team will review a product backlog to arrange the user stories into the specific releases and iterations that deliver a functional product to the customer.

**Question–9: SDLC Models.**

**Answer–**

Waterfall model is sequential approach where each phase such as, planning, design, development, testing, and deployment, follows after one another without overlap. It is best for the project which have unchanging requirements.

RUP is a iterative framework that divides the process into 4 stages: inception, elaboration, construction, and transition. This model allows for flexibility and refinement over multiple iterations, making it suitable for larger projects that need ongoing evaluation adaptation.

Spiral model combines iterative development with an emphasis on risk management. Each spiral begins by identifying and mitigating potential risks before proceeding with design and development, making it ideal for complex projects with high levels of uncertainty or risk.

Scrum is focused on managing software projects. It emphasizes collaboration, adaptability and regular feedback, making it well-suited for projects where requirements evolve.

**Question–10: Write down the differences between waterfall model and V model**

**Answer–**

|  |  |
| --- | --- |
| **Waterfall Model** | **V-Model** |
| 1. It follows a linear and sequential approach.
2. It flows in one direction after one phase completed then other.
3. In this model testing is done after development is completed.
4. Making changes after the completion of phase is difficult.
5. Risk is not managed in earlier.
6. Feedback occurs after final testing.
7. In this model there is no overlap.
8. Mostly it is for small projects with clear requirements.
9. It is expensive to fix bugs which are detected later.
10. It is difficult to accommodate changes.
11. Limited customer involvement after initial requirements.
12. Struggles with complex projects due to late issue detection.
13. QA starts in the final testing phase.
 | 1. It follows a verification and validation approach.
2. It is a V-shape with corresponding testing phases.
3. In this model testing is done parallelly with development phase.
4. It is flexible with parallel validation.
5. Focuses on risk management throughout the life cycle.
6. Feedback is gathered during each phase.
7. Development and testing phases overlap.
8. Suitable for large projects.
9. Cheaper to fix bugs detected early.
10. Less adaptable but better than waterfall.
11. Customer involvement is possible during testing.
12. Handles complexities better with early issue detection.
13. QA is integrated at every stage.

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

**Answer—**Agile methodology is suitable for developing an online agriculture product store. Agile is flexible and adaptable, allowing the project to accommodate changing requirements. The needs of farmers and manufacturers evolve to interact with the platform. Agile’s iterative process adds features based on real-time feedback.

It focuses on customer collaboration and early delivery of software. Farmers have limited experience with online systems, functional features early on will allow for real-time testing and feedback from actual users. This iterative approach helps reduce risks by ensuring the system is both functional and user-friendly, improving the likelihood of success for this crucial CSR initiative.

**Question 12: Gantt Chart**

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.

**Answer–**

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

**Answer–**

**Fixed Bid Projects** in which the total cost is agreed upon in advance between the client and service provider, irrespective of the actual time or resources used. The client pays a fixed fee for the completion of the project, transferring the risk to the service provider if the project exceeds the estimated time. This works when the project scope and requirements are well-defined and unlikely to change.

**In Billing Projects,** the client pays based on the actual time and resources utilized during the project. This approach provides flexibility, allowing the scope to evolve, but it places the client at financial risk, as costs may increase if the project takes longer than anticipated. It is suitable for projects with frequent changes.

**Question 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 and Implementation Timesheet of a BA.**

**Answer–**

**Design Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| Task | Actionable | Duration |
| Requirements ElicitationRequirements DocumentationStakeholder InterviewsProcess Flow CreationReviewing Requirements | Gathering requirements from stakeholders Writing functional and business requirement specifications Conducting sessions to clarify requirements Mapping business processes and creating use cases Validating requirements with stakeholders and developers | 6 Hours4 Hours3 Hours5 Hours3 Hours |
|  | **Total** | 18 Hours |

**Development Phase Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| Task | Actionable | Duration |
| Requirement ClarificationsFunctional Specification ReviewChange Request ManagementTeam MeetingsReview Project Progress | Addressing queries from the development teamReviewing detailed specifications and design documentsHandling and processing change requestsAttending regular meetings with the development teamMonitoring progress to ensure alignment with requirements | 4 hours3 Hours2 Hours2 Hours1 Hours. |
|  | **Total** | 12 Hours |

**Testing Phase Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| Task | Actionable | Duration |
| Test Case ReviewUser Story ValidationTest Strategy DiscussionDefect ManagementRequirement Clarification for QA | Reviewing and validating test cases against requirementsVerifying test cases are aligned with user storiesParticipating in test strategy sessions with QA teamLogging and triaging defects raised during testingAssisting QA team with any requirement clarifications | 5 hours3 hours3 hours2 hours2 hours |
|  | **Total** | 15 hours |

**UAT (User Acceptance Testing) Phase Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| Task | Actionable | Duration |
| UAT PreparationUAT SupportDefect ManagementUAT Feedback CollectionConducting UAT Training | Creating UAT test plans, criteria, and test scriptsSupporting stakeholders during UAT sessionsAssisting with logging, tracking, and resolving UAT issuesCollecting and analyzing feedback from stakeholdersAssisting QA team with any requirement clarificationsTraining users for UAT execution | 4 hours3 hours3 hours2 hours3 hours3 Hours |
|  | **Total** | 18 hours |

**Deployment & Implementation Phase Timesheet of a BA**

|  |  |  |
| --- | --- | --- |
| Task | Actionable | Duration |
| Go-Live PlanningUser TraningPost Go-live SupportPost Implementation ReviewDocumentation updates | Coordinating the final deployment plansTraining end users and preparing manualsSupporting users after deploymentConducting a project review and lessons learnedUpdating final documents and user guides | 3 hours3 hours4 hours2 hours2 hours |
|  | **Total** | 12 hours |