Capstone Project Part 1

Q. 1 Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer).

Ans.

BPM – The collection of activities to get desired output from specific inputs is known as Business process modelling.

Goal: To build user friendly online agriculture store to facilitate farmers to buy seeds, pesticides, fertilizers and agricultural products.

Inputs: Farmers requirements like type of seeds, which pesticides, fertilizers they want and various agricultural products.

Resources: Delivery Head, Project Manager, Jawa Developer, Tester, Network Admin, DB Admin, BA, Computers and Internet.

Outputs: Develop user friendly app, deliver agricultural products to farmers and provide customer support functionality.

Activities: 1)Gather requirement, analyse the requirements.

 2)Design UI of app and test.

3)Build payment gateway integration.

4)Provide 24/7 customer support system.

Value created: Convenience, transparency, affordability.

Q. 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.

SWOT Analysis: SWOT analysis is used for identifying and analysing an organization’s strength, weakness, opportunity and threats.

Strength: 1)Strong link with suppliers and manufacturers.

 2)Peter, Kevin and Ben can provide valuable requirements for this project.

 3)The project budget is good.

 4)The project team members are talented.

Weakness: 1)The project has fixed timeline of 18 months.

 2)The project team may face some challenges as the project is completely new for them.

 3)It is difficult to put all suppliers and manufacturers under one umbrella.

Opportunity: 1)This project will fulfil all the requirements of the farmers.

2)As the project is 1st digital agriculture store, they have an opportunity to acquire whole market.

 3)The project team will have new experience while working on agriculture project.

Threats: 1) Farmers should be educated to purchase products online.

 2) Difficult to deliver agricultural products in rural areas.

 3) Increasing online market competition.

Q. 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: A feasibility study is an assessment of the practicality of a proposed plan or project.

Feasibility study for online agriculture store:

Hardware: 1)Working requirements like computers, laptops, backup systems, hard discs for storage.

 2)Networking equipment such as routers, switches, firewalls.

 3)Large cloud infrastructure for storing huge databases securely.

Software: 1)License version of JavaScript, HTML, Angular.js for frontend development.

 2)License version of Java, Python, Node.js, SQL for backend development.

Trained Resources: 1 Project Manager, 1 Senior Java Developer, 4 Java Developers, 2 Testers, 1Network

 Admin, 1 Database Admin, 1BA.

Budget: INR 2 crores

Timeframe: 18 months

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.

Gap Analysis: Gap Analysis is a method used to compare the current state and desired state of a project.

As Is: 1)Inconvenient access to seeds, pesticides and fertilizers

 2)Rely on local market for agricultural products.

 3)Manufacturers and suppliers facing difficulties to reach out farmers in rural areas.

To Be: 1)An online platform to connect farmers with manufacturers offering wide range of product variety,

 transparency and- affordable price.

 2)Integrated payment gateways for safe and secure online purchases.

 3)Logistic network for managing flow of products and services from supplier to consumers.

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

Ans. Risk: Any action or activity that leads to loss of any type can be called as Risk.

 BA Risks: 1)Inadequate planning like project start in hurry leads to risk.

 2)Lack of stakeholders interest may increase in failure of the project.

 3)Insufficient requirement gathering affects in project planning, stakeholders satisfaction

 and development process.

 4)Change in requirements may increase the risk of failure of the project.

Process Risks: 1)Being new kind of project in market, stakeholders may miss to share the requirements

 With BA.

 2)Scop crip is also a major risk, if the project will not get completed in delivered time &

 Budget.

 3)Agriculture is always related to Government. If there is change in gov. policies, the whole

 process may change.

 4)Improper technology infrastructure may slower the project process.

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

 Ans.

Stakeholder Analysis: Stakeholder analysis is a process of identifying stakeholders, their interest, roles and responsibilities within any project.

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| **Tasks** | **Mr. Henry****(Project Sponser)** | **Perter, Kevin, Ben****(Key Stakeholders)** | **Mr. Kartik****(Delivery Head)** | **Mr. Vandanam****(PM)** | **Ms. Juhi &****Her team****(Developers)** | **Mr. Jason &** **Ms.Alekya****(Testers)** | **Me****(BA)** |
| Project Planning |  C |  I |  I |  R |  I |  I |  C |
| RequirementGathering |  I |  C |  I  |  A |  I |  I |  R |
| RequirementAnalysis |  NA |  NA |  I |  A |  I |  I |  R |
| Development |  NA |  NA |  I |  I |  R |  I |  A  |
| Testing |  NA |  NA |  I |  I |  I |  R |  A |
| Implimentation |  NA  |  NA |  R |  C  |  I |  I |  A |

Q. 7 Help Mr Karthik to prepare a business case document.

Ans. Business Case Document: It provides justification for undertaking a project by defining the project, project problems, project opportunities, project solution.

|  |
| --- |
|  Project Name  |
| Online Agriculture Product Store |
| Project Manager | Mr. Vandanam |
| Client | Soony |
| Duration | 18 Months |
| Project Summary | Mr. Henry initiated this project to help farmers as the farmers are facing problem not getting seeds, fertilizers, pesticides and other agricultural products. To solve these problems decided to built an online agriculture store for farmers facilitate to buy agricultural products.  |
| Current Problems | - Farmers are facing problems in procuring fertilizers, pesticides. They are buying from their nearby place which may far from their place.- Certain types of seeds are also not available in this places from where they are buying.- Farmers have a major problem with buying these products at higher cost. |
| Benefit of Project | - Farmers can purchase fertilizers and pesticides within an instance.- Good quality of pesticides and fertilizers can be procured.- They can buy variety of seeds for different sesons.-This project provides convenience, transparency and affordability.  |
| Resources Required | Project Manager, BA, Developers, Testers, Delivery Head. |
| Organizational Change Required | - Need a team to manage the existing suppliers, customers and logistics.- New team to maintain new suppliers, customers and logistics.  |
| ROI | Approximately 3 to 4 years to receive ROI. |
| Stakeholders | Business Stakeholders – (Soony as client, PM from APT IT Solutions, Sponsor Mr. Henry and Suppliers)Project Stakeholders – (BA, Developers, Testers)Third party Stakeholders – (Government for Gov. policies and tax) |

Q. 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.

SDLC – Software Development Life Cycle is a cost effective and time efficient process that development team uses to design and build high quality software.

1. Sequential – The waterfall model is referred as linear sequential life cycle model. In this waterfall model, each phase must be completed, review is done and if project is good to go, then only next phase will start. There are 5 stages in waterfall methodology.
2. Requirement – Waterfall model depends on all requirements gathered and well understood.
3. Design – Once the requirement is gathered, the technical team design the requirements into layouts, data models and prototypes.
4. Development – Once the design is completed, the technical team starts coding as per the design.
5. Testing – Before the product is delivered, the product or software needs to be tested.
6. Deployment – Once the software is tested, it gets released to the customer.

1. Iterative-RUP (Rational Unified Process) – In this development process, each phase builds on the previous one.  The development takes place in iterations and in small parts at a time. It’s a process of gradual improvement and learning from previous iterations, as how to improve the next. There are 4 phases in this methodology.

1 – Inception - What we build.

2 – Elaboration - Design need to deliver.

3 – Contraction - Implementation.

4 – Transition - Delivery, defect correction, UAT.

1. Evolutionary – The spiral model gives more emphases placed on risk analysis. This model is good for large and critical projects. The spiral model has 4 phases and they are as follows.

1 - Planning

2 - Risk analysis

3 - Engineering

4 - Evaluation

1. Agile – The Agile methodology is a way to manage a project by breaking it up into several phases. It’s a process for managing a project that involves constant collaboration and working in iterations. Agile project management works off the basis that a project can be continuously improved upon throughout its life cycle, with changes being made quickly and responsively.

Agile has four main values are:

 1 - Individuals and interactions over processes and tools

 2 - Working software over comprehensive documentation

 3 - Customer collaboration over contract negotiation

 4 - Responding to change over following a plan

Q. 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.

1) Waterfall – Waterfall model is the oldest and most structured method. In this model, each phase depends on the outcome of the previous phase and all the phases runs sequentially. This model provides discipline and gives a tangible output at the end of each phase. However, this model doesn’t work well when flexibility is a requirement. There is little room for change once a phase is deemed complete, as changes can affect the cost, delivery time, and quality of the software.

2) Iteration – In the iterative process, each development cycle produces an incomplete but deployable version of the software. The first iteration implements a small set of the software requirements, and each subsequent version adds more requirements. The last iteration contains the complete requirement set.

3) Spiral – Spiral model is a SDLC methodology which combines Iterative development and Waterfall model. It is used for Risk management. This SDLC model is mostly used for large and complicated projects. The spiral model enables gradual releases and refinement of a product through each phase of the spiral as well as the ability to build prototypes at each phase.

4) Agile Scrum – The agile methodology based on ongoing release cycles. At each iteration, the product is tested. The agile model helps teams identify and address small issues in projects before they evolve into more significant problems. Teams can also engage business stakeholders and get their feedback throughout the development process.

5) V model – In the V-shaped model, verification phases and validation phases are run in parallel. Each verification phase is associated with a validation phase, and the model runs in V-shape, where each phase of development has an associated phase of testing.

As a BA, the V model SDLC methodology will be best for this project. This is a small project and a small project and V model works well for small projects. In this project, the requirements are very well understood. In this V model, the testing will do in each phase and review the process so we will know that the project is going on correct path or not.

Q. 10 Write down the differences between waterfall model and V model.

Ans.

|  |  |
| --- | --- |
| Waterfall Model | V Model |
| 1. Def – It is a SDLC model where an application is developed first, after which it is tested using different testing technique. | 1. Def – It is a SDLC model where entire model is divided into various sub-development phases where testing is done after each development phase.  |
| 2. Waterfall model is a linear sequential design approach as each phase start after completion of present phase. | 2. V model is a sequential or parallel design approach as each development and testing phase starts after completion of present phase. |
| 3. Flexibility of waterfall model is rigid. | 3. Flexibility of V model is little flexible. |
| 4. The cost of waterfall model is low. | 4. Cost of V model is expensive. |
| 5. There is no way to return to the earlier phase. | 5. There is no such constrain in V model. |
| 6. Waterfall model moves in linear way. | 6. V model don’t move in linear way. |
| 7. Guaranty of success through waterfall model is low. | 7. Guaranty of success through V model is high. |
| 8. Waterfall model is less used now a days in Software Engineering. | 8. V model is widely used in Software Engineering. |

Q. 11 As a BA, state your reason for choosing one model for this project.

Ans.

Reason for selecting V model:

1. As this project works on different phases, every phase has to go through development phase with complicated coding. If we have testing phase associated with each development phase, it becomes easy to identify problems in project to run development process smoothly.

2. The V model is flexible so we can do any change in request during development phase.

3. This model saves lot of time.

So it increases the chance of success of this project.

Q. 12 Explain the difference between Fixed Bid and Billing projects.

Ans.

Fixed Bid Project :- It is a project in which the time and scope is fixed within a budget and it has a deadline associated with it. In this fixed bid project, the client will provide all the details, specs and requirement upfront so that vendor can provide a bid showing the project cost. This model has less financial risk but it is not flexible for change in requests as the time and budget is fixed.

Billing Project :- It is a project where the project is billed on hourly basis. Vendor will set up a team and presented to client to bill them for their time spend on development. This model is flexible in nature as it has no fixed time and budget. It will accept any change in request during phase of development. This model allows client to monitor the progress as vendor presents reports on work development.

Q. 13 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.

Gantt Chart – Gantt chart is a visual representation of project schedule with respect to task showing start date and end date of a project.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Task | Position | Name | Activity | Start Date | End Date | Days to Complete |
| Task 1 | BA | Mr. Vishw | RG | 10 -11- 2024 | 12 -11- 2024 | 12 |
| Task 2 | BA | Mr. Vishw | RA | 13 -11- 2024 | 28 -11- 2024 | 15 |
| Task 3 | BA | Mr. Vishw | Design | 29 -11- 2024 | 10 -12- 2024 | 11 |
| Task 4 | PM andJava dev. | Mr. VandanamMs. Juhi | Developmentplanning | 11 -12- 2024 | 31 -12- 2024 | 21 |
| Task 5 | Java dev.Tester | Mr. TaysonMs. Alekya | Phase D1Phase T1 | 01 -01- 2025 | 31 -03- 2025 | 92 |
| Task 6 | Java dev.Tester | Ms. LuciaMr. Jason | Phase D2Phase T2 | 01 -04- 2025 | 01 -08- 2025 | 92 |
| Task 7 | Java dev.Tester | Mr. TuckerMs. Alekya | Phase D3Phase T3 | 02 -08- 2025 | 01 -11- 2025 | 90 |
| Task 8 | Java dev.Tester | Mr. BravoMr. Jason | Phase D4Phase T4 | 02 -11- 2025 | 31 -02- 2026 | 91 |
| Task 9 | BA | Mr. Vishw | UAT | 01 -03- 2026 | 31 -03- 2026 | 31 |
| Task 10 | Delivery Head | Mr. Kartik | Deployment | 01 -04- 2026 | 30 -04- 2026 | 30 |
| Total |  |  |  |  |  | 485 |

Q. 14 Prepare Timesheets of a BA in various stages of SDLC.

Ans. Timesheet – A timesheet is a data table which can be used to track the time a particular employee has worked during a certain period for an activity.

1)Requirement gathering timesheet of a BA –

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Activity | In Time | Out Time | Hours |
| 10 -11- 2024 | Conducted meeting with stakeholders to gather requirements | 10:00 | 14:00 | 4 |
| 11 -11- 2024 | Reviewed existing documentation to identify gaps | 11:00 | 13:00 | 2 |
|  | Conducted brainstorming sessions with project team and stakeholders | 14:00 | 17:00 | 3 |
| 12 -11- 2024 | Analysed and documented the requirement | 10:00 | 16:00 | 6 |
| 13 -11- 2024 | Followed up documents with stakeholders for clarification and feedback  | 10:00 | 15:00 | 5 |
| 14 -11- 2024 | Presented the requirement document to project team | 10:00 | 12:00 | 2 |
| Total Hours |  |  |  | 22 |

2) Requirement analysis timesheet of a BA –

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Activity | In Time | Out Time | Hours |
| 15 -11- 2024 | Reviewed the requirement document | 10:00 | 11:00 | 1 |
|  | Model the requirements using use case diagrams | 12:00 | 16:00 | 4 |
| 16 -11- 2024 | Verified the requirements | 10:00 | 12:00 | 2 |
|  | Validated the requirements | 14.00 | 16:00 | 2 |
| Total Hours |  |  |  | 9 |

3) Design timesheet of a BA –

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Activity | In Time | Out Time | Hours |
| 17 -11- 2024 | Preparing test cases | 10:00 | 13:00 | 3 |
|  | Allocating the requirements | 14:00 | 16:00 | 2 |
| 18 -11- 2024 | Identifying improvement opportunities | 10:00 | 12:00 | 2 |
|  | Assessing design options | 12:00 | 16:00 | 4 |
| 19 -11- 2024 | Estimating benefits and cost | 10:00 | 12:00 | 2 |
|  | Communicate with client about design and solution | 13:00 | 16:00 | 3 |
|  | Recomending solutions | 17:00 | 18:00 | 1 |
| Total Hours |  |  |  | 17 |

4) Development timesheet of a BA –

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Activity | In Time | Out Time | Hours |
| 20 -11- 2024 | Coordinating meetings with team | 10:00 | 12:00 | 2 |
|  | Checking on the approvals after each development phase | 12:00 | 13:00 | 1 |
|  | Clarifying all the queries of technical team at each phase  | 14:00 | 16:00 | 2 |
| 21 -11- 2024 | Outlining business requirements  | 10:00 | 12:00 | 2 |
|  | Working on change in requirement in development stage from client | 12:00 | 16:00 | 4 |
| Total Hours |  |  |  | 11 |

5) Testing timesheet of a BA –

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Activity | In Time | Out Time | Hours |
| 22 -11- 2024 | Working with testing team to create system test plans  | 10:00 | 12:00 | 2 |
|  | Create and execute system test cases | 12:00 | 16:00 | 4 |
| 23 -11= 2024 | Review system cases | 10:00 | 11:00 | 1 |
|  | Provide requirement clarification when required by testing team | 11:00 | 12:00 | 1 |
|  | Take sign off from client on client project acceptance form | 14:00 | 16:00 | 2 |
| Total Hours |  |  |  | 10 |

6) UAT timesheet of a BA –

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Activity | In Time | Out Time | Hours |
| 24 -11- 2024 | Developed the detailed UAT test plan | 10:00 | 12:00 | 2 |
|  | Create UAT test cases | 13:00 | 17:00 | 4 |
| 25 -11- 2024 | Test case data preparation | 10:00 | 12:00 | 2 |
|  | Run the test cases | 12:00 | 14:00 | 2 |
| Total Hours |  |  |  | 10 |

7) Deployment and implementation timesheet of a BA –

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Activity | In Time | Out Time | Hours |
| 26 -11- 2024 | Discussed with team about the project | 10:00 | 12:00 | 2 |
|  | Project gets initiated by the client | 14:00 | 16:00 | 2 |
| 27 -11- 2024 | Coordinate to complete manual | 10:00 | 12:00 | 2 |
|  | Training sessions for end user | 12:00 | 16:0 | 4 |
| Total Hours |  |  |  | 10 |