**Decode the study**

* Project Idea: Farmers are facing difficulties in procuring agricultural products (Fertilizers, Seeds & Pesticides) which are very important for farming. Hence, Mr. Henry wants to develop web/mobile application for easy procurement for farmers.
* Current needs: Easy procurement of agricultural products though web/mobile application.
* Overview of the project: To develop online platform for farmers to easy procurement of agricultural products and increase their farming productivity.
* Current problem: The farming community faces difficulties obtaining agricultural products due to its remote location.

Question 1 – Business Process Model

Answer:-

Business Process Model is a collection of activities, which are designed to produce a specific output for a customer or market. It implies a strong emphasis on how the work will be done within the organization. This process is a specific ordering of work activities across time and place, with a beginning, an end and clearly defined inputs and outputs, a structure for action.

Goal: Profit, to create an online platform for farmers in remote areas so that they can purchase agricultural products easily.

Inputs: Web application development; coordinate with manufacturer of agricultural products to display & sell their products.

Resources: Laptop computers, Server, Storage, Manpower i.e Java developer, tester, DB Admin, BA, PM, service staff.

Outputs: Farmers can get agricultural products through easily accessible web application, easy payment method.

Activities: Assign a project to APT IT Solution for web application development and its maintenance. Step by step activities like searching product, placing order, payment, delivery, feedback & review.

Value created to the end Customer: Farmers can place order from anywhere using internet, time saving, farmer do not need to travel for procuring agricultural products, having wide range of products, increase productivity.

Question 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.

Answer:

SWOT analysis is a strategic planning tool used to identify an organization's internal strengths and weaknesses, as well as external opportunities and threats. Its importance lies in providing a comprehensive overview that aids in informed decision-making.

Strength: This web application can improve life or rural people. Manufacturer can display & sell their products online.

Weakness: Remote village, 18 months timeline & 2 Cr budget, lack of domain knowledge.

Opportunity: Famers can increase their productivity.

Threat: Competition, government regulations, company may face unexpected delays during development process, farmer may not afford price.

Question 3 – Feasibility study

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.

Answer:

A feasibility study is a detailed analysis that considers all of the critical aspects of a proposed project in order to determine the possibility of it succeeding.

Hardware: Mr. Karthik should ensure that the company has required hardware products to develop this web application like laptop, server, storage etc. He should also identify if any additional hardware is required for this project.

Software: Mr. Karthik should evaluate the existing software systems and libraries that the company is already using and access whether they are compatible with JAVA to develop this web application. He should also identify if any additional software is required for this project.

Trained resources: Mr. Karthik should identify the availability of trained & skilled java developers to develop this web application.

Budget: Mr. Karthik should analyse all the costs related to this project like hardware, software, personnel etc. and check if it is sufficient within the given budget of 2 crore. If not then adjust into the scope to make it feasible.

Time Frame: Mr. Karthik should consider the given period, which is 18 months. He should check whether they are capable of completing this project within 18 months using all the resources. He should consider any likely delay or challenges that may arise during development process.

After considering the above points, Mr. Karthik can decide whether this project is technically feasible or not.

Question 4 – Gap Analysis

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.

Answer:

A gap analysis is the means by which a company can recognize its current state—by measuring time, money, and labor—and compare it with its target state. By defining and analyzing these gaps, the management team can create an action plan to move the organization forward and fill in the performance gaps.

AS IS:

1. Difficulty in procurement: Farmers are living in remote village and they facing difficulties in procurement of agricultural products like seeds, fertilizers & pesticides, which are very important for crops.
2. Low Productivity: Because of remote village, farmers cannot procure agricultural products on time hence it is affecting its productivity.

TO BE:

1. Easy availability: Right now, the farmer’s are facing difficulty for procurement of agricultural products. Using this online platform, they can avail required agricultural products easily.
2. More product options: Right now farmer’s have to visit the shop for procuring agricultural products and can’t visit each and every shop. After using this web application, they can see all the products available in the market in a single screen.
3. Better pricing: In this web application, there may be number of seller for each product. Hence, rate will be competitive and farmer’s can get product at better price.
4. Increase in productivity: After using this web application, farmer’s can procure product easily and on time. Ultimately their productivity increase.

By considering the above points, Mr. Karthik can convince Mr. Henry to initiate this project. Explain him present condition of farmers and future condition of farmer’s after using this web application.

Question 5 – Risk Analysis

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

Answer:

Risk analysis is the process of identifying and analyzing potential issues that could negatively affect key business initiatives or projects. An uncertain event or condition, which can have impact on either cost, time, scope or quality. This process is done to help organizations avoid or mitigate those risks.

1. Lack of stakeholder management: Due to lack of stakeholder management, a project may delayed. Hence, BA need to identify and manage stakeholder effectively.
2. Lack of adequate details in requirements: To develop this application, lack of required details may failure project. Hence, BA need to gather requirements properly.
3. Non availability of stakeholder: If any stakeholder is not available due to development of web application, it may affect the project. Hence, BA needs to confirm availability of stakeholder during entire project life cycle.
4. Changing scope: If scope will change after preparing BRD, there is a risk of delayed or project failure.
5. Limited budget & time: Given 2 crore-budget & 18 months’ timeline is a risk. It can be increased during development process.
6. Lack of BA domain knowledge: Lack of domain knowledge may lead to project risk.
7. Delay in signing off agreement: Delay in signing on important documents may lead to project delayed.
8. Ready to accept purchase through mobile application: Farmer should ready to use this application for procurement of agricultural products.
9. Internet availability: Ensure internet should be available so that farmer can access this web application.
10. External factor: BA should consider external factors like legal, government rules & regulations, policies.
11. Manufacturer/Vendor: They should ready to sell & deliver their product through online mode in a remote village.

Consider above risk factors to make project successful.

Question 6 – Stakeholder Analysis (RACI Matrix)

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

Answer:

A stakeholder analysis is a process of identifying people before the project begins; grouping them according to their levels of participation, interest, and influence in the project; and determining how best to involve and communicate each of these stakeholder groups throughout.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Title | Name | Designation | Organization | Contact number | Mail ID |
| Responsible | Mr. Karthik | Delivery Head | APT IT Solutions | XXXX79879 | karthik@aptsolution.com |
| Ms. Komal Chauhan | Business Analyst | APT IT Solutions | XXXX79899 | Komal@aptsolution.com |
| Mr. Vandanam | Project Manager | APT IT Solutions | XXXX89979 | vandanam@aptsolution.com |
| Ms. Juhi | Sr. Java Developer | APT IT Solutions | XXXX43413 | juhi@aptsolution.com |
| Mr. Teyson | Java Developer | APT IT Solutions | XXXX67680 | teyson@aptsolution.com |
| Ms. Lucie | Java Developer | APT IT Solutions | XXXX46570 | lucie@aptsolution.com |
| Mr. Tucker | Java Developer | APT IT Solutions | XXXX66576 | tucker@aptsolution.com |
| Mr. Bravo | Java Developer | APT IT Solutions | XXXX57690 | bravo@aptsolution.com |
| Mr. Mike | Network Admin | APT IT  Solutions | XXXX13245 | mike@aptsolution.com |
| Mr. John | DB Admin | APT IT Solutions | XXXX89780 | john@aptsolution.com |
| Mr. Jason | Tester | APT IT Solutions | XXXX54658 | jason@aptsolution.com |
| Ms. Alekya | Tester | APT IT Solutions | XXXX24369 | alekya@aptsolution.com |
| Accountable | Mr. Henry | Client | Soony Company | XXXX79808 | henry@soony.com |
| Mr. Pandu | Financial Head | Soony Company | XXXX57587 | pandu@soony.com |
| Mr. Dooku | Project co ordinator | Soony Company | XXXX68697 | dooku@soony.com |
| Consulted | Mr. Peter | Farmers |  | XXXX80995 | peter@gmail.com |
| Mr. Kelvin | Farmers |  | XXXX14354 | kelvin@gmail.com |
| Mr. Ben | Farmers |  | XXXX98090 | ben@gmail.com |
| Informed | Manufacturer of agricultural products like fertilizers, seeds and pesticides. | Sellers |  | XXXX67457 | xyz@gmail.com |

Question 7 – Business Case Document

Help Mr Karthik to prepare a business case document.

Answer:

A business case is developed during the early stages of a project and outlines the why, what, how, and who necessary to decide if it is worthwhile continuing a project. One of the first things you need to know when starting a new project are the benefits of the proposed business change and how to communicate those benefits to the business.

1. Why is this project initiated?: Farmers in remote areas are facing difficulties in procuring agricultural products. Hence, Mr. Henry wants to Develop a web/mobile application to procure necessary agricultural products easily.
2. What are the current problems? Farmers are living in remote areas and they are facing difficulties to purchase important agricultural products like seeds, pesticides & fertilizers. Not only single farmer but also so many farmers face this difficulty.
3. With this project how many problems could be solved?: Easy procurement, time saving, variety of products, increase productivity.
4. What are the resources required?: Hardware, Software, Skilled & experienced Java developer & tester, network admin, database admin, manufacturer of products,
5. How much organizational change is required to adopt this technology?: Domain knowledge & information.
6. Time frame to recover ROI?: After successful release of web application.
7. How to identify stakeholders?: Through RACI matrix.

Question 8 – Four SDLC Methodologies

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.

Answer:

1. Sequential – Waterfall

Sequential is the most common and classic life cycle models, also referred to as linear-sequential life cycle model. This methodology follows a linear approach and moves through each phase of the SDLC in a set of sequence. This method is best suited for projects with precise requirements, low risk and expected outcome.

In this model each phase must be completed before the next phase begin. At the end of each phase, a review takes place to determine if the project on the right path and whether to continue or discard the project.

|  |  |  |
| --- | --- | --- |
| Stages of waterfall model | Resources | Artifacts |
| Requirement gathering | BA, PM | BRD |
| Requirement analysis | BA,PM  Tech Team-Sol Arch, NW Arch  DB Arch | FRS,  SSD, **SRS**  RTM |
| Design | Tech Team-Sol Arch, NW Arch  DB Arch, GUI Designer | HDD/ADD  Solution document |
| Development-Coding | Programmers  Developers | LDD/CDD  Application |
| Testing | Testers | Test documents  Application with less errors |
| Deployment & implementation | Release Engineers |  |

After Deployment, support team will take care about maintenance.

Over the year customer has started deviating and started giving change request, to handle incoming change one process is introduced i.e. configuration management which is handled by PM.

1. Iterative-RUP

The Rational Unified Process is an iterative software development process framework created by Rational Software Corporation, which was acquired by IBM in February 2003. It is also known as Unified Process Model. Rational Corporation has designed and documented using UML (Unified Modeling Language).

This method involves developing software in iteration, where each iteration build upon the previous one. This method is best suited for complex requirement & high-risk projects.

It has four stages:-

1. Inception: Agreement among the team and customer as to what will be built.
2. Elaboration: Agreement within the team as to the architecture and design needed to deliver the agreed system behaviour.
3. Construction: The iterative implementation of a fully functional system.
4. Transition: delivery, defect correction and tuning to ensure customer acceptance.
5. Evolutionary-Spiral

This methodology includes developing a basic version of software and then incrementally improve it. This method is best suited for the project, which are rapidly changing requirements and high risk.

It has four phases.

1. Planning: Requirements are gathered.
2. Risk Analysis: A process is undertaken to identify risk and its alternate solutions. A prototype is produced at the end of the risk analysis phase.
3. Engineering: Software is produced in this phase.
4. Evaluation: In this phase customer, evaluate the output of the project to date before the project continues to the next spiral.
5. Agile-Scrum

Agile – Scrum SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about two to four weeks.

This methodology is best suited for projects with rapidly changing requirement, high risk projects.

It has four main values:-

* Individual and interactions over process and tools.
* Working software over comprehensive documentation.
* Customer collaboration over contract negotiation.
* Responding to change over following plan.

Agile Principles:-

* To satisfy the customer
* Welcome change
* Frequent delivery
* Work together
* Motivated individuals
* Face to face conversations
* Working software
* Sustainable development
* Technical excellence
* Maintain simplicity
* Self-organised teams
* Feedback & adjust

Question 9 – Waterfall RUP Spiral and Scrum Models

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?

Answer:

1. Waterfall:-

Waterfall - Sequential is the most common and classic life cycle models, also referred to as linear-sequential life cycle model. This methodology follows a linear approach and moves through each phase of the SDLC in a set of sequence. This method is best suited for projects with precise requirements, low risk and expected outcome.

In this model each phase must be completed before the next phase begin. At the end of each phase, a review takes place to determine if the project on the right path and whether to continue or discard the project.

1. RUP:-

The Rational Unified Process is an iterative software development process framework created by Rational Software Corporation, which was acquired by IBM in February 2003. It is also known as Unified Process Model. Rational Corporation has designed and documented using UML (Unified Modeling Language).

This method involves developing software in iteration, where each iteration build upon the previous one. This method is best suited for complex requirement & high-risk projects.

It has four stages: Inception, Elaboration, Construction, and Transition.

1. Spiral:-

This methodology includes developing a basic version of software and then incrementally improve it. This method is best suited for the project, which are rapidly changing requirements and high risk.

It has four phases.

1. Planning: Requirements are gathered.
2. Risk Analysis: A process is undertaken to identify risk and its alternate solutions. A prototype is produced at the end of the risk analysis phase.
3. Engineering: Software is produced in this phase.
4. Evaluation: In this phase customer, evaluate the output of the project to date before the project continues to the next spiral.
5. Scrum:-

Agile – Scrum SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about two to four weeks.

This methodology is best suited for projects with rapidly changing requirement, high risk projects.

It has four main values:-

* Individual and interactions over process and tools.
* Working software over comprehensive documentation.
* Customer collaboration over contract negotiation.
* Responding to change over following plan.

As per SME’s suggestion, V Model will be more appropriate. Also as per my opinion, V Model will be best methodology as it provides more flexibility and adapt changes, if required. As there may be chances of this project may need more changes during product/software development life cycle.

Question 10 – Waterfall Vs V-Model

Write down the differences between waterfall model and V model.

Answer:-

|  |  |  |
| --- | --- | --- |
| Aspect | Waterfall model | V-Model |
| Cost | Cost of Waterfall model is low. | V Model is expensive. |
| Flexibility | It is rigid. Not flexible. | Little flexible. |
| Phases | There is no way to return to the earlier phase. | There is no such constraint in V-Model. |
| Testing activities | Testing activities start after the development activities are over. | Testing activities start with the first stage. |
| Success guarantee | Guarantee of success through Waterfall model is low. | Guarantee of success through V-model is high. |
| Process | Waterfall model is a continuous process. | V-model is a simultaneous process. |
| Defects | The number of defects are less in comparison of software made using V-model. | The number of defects are greater in comparison of software made using Waterfall model. |
| Customer involvement | Less customer involvement. | More customer involvement as compared to waterfall model. |
| Debugging | Debugging is done after the last phase. | Debugging can be done in between phases. |
| Usage | Waterfall model is less used now-a-days in software engineering. | V-model is widely used in software engineering. |

Question 11 – Justify your choice

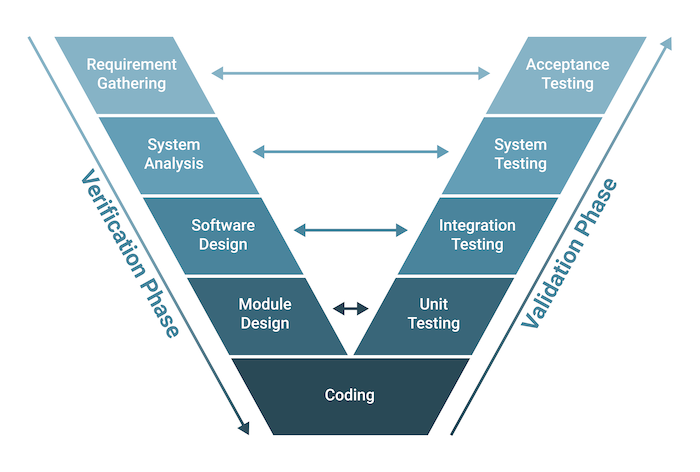
As a BA, state your reason for choosing one model for this project.

Answer:-

V Model:-

As per SME’s suggestion, V Model is more suitable for this project. It is an extension of Waterfall model.

Also, I will choose V Model as well. V-model means verification & validation. Each phase must be completed before the next phase begins. Testing of the product is planned in parallel with a corresponding phase of development in this model.



Proactive defect tracking – that is defects are found at early stage.

It works well for small projects where requirements are easily understood.

If any changes happen in midway, then the test document along with requirement document has to be updated.

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:

A Gantt chart is defined as a graphical representation of activity against time; it helps project professionals monitor progress of the project. Gantt chart is important task scheduling tools.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Stage | Timeline (total 18 months) | | | | | | | | | | |
|  | 1 Month | 1 month | 3 month | 1 month | 3 month | 1 month | 3 month | 1 month | 3 month | 1 month | Deployment |
| Requirement Gathering | BA |  |  |  |  |  |  |  |  |  |  |
| Requirement Analysis |  | BA/PM |  |  |  |  |  |  |  |  |  |
| Design 1 |  |  | Dev. |  |  |  |  |  |  |  |  |
| Testing 1 |  |  |  | Tester |  |  |  |  |  |  |  |
| Design 2 |  |  |  |  | Dev. |  |  |  |  |  |  |
| Testing 2 |  |  |  |  |  | Tester |  |  |  |  |  |
| Design 3 |  |  |  |  |  |  | Dev. |  |  |  |  |
| Testing 3 |  |  |  |  |  |  |  | Tester |  |  |  |
| Design 4 |  |  |  |  |  |  |  |  | Dev. |  |  |
| Testing 4 |  |  |  |  |  |  |  |  |  | Tester |  |
| UAT |  |  |  |  |  |  |  |  |  |  | Client/BA/PM |

Question 13 – Fixed Bid Vs Billing

Explain the difference between Fixed Bid and Billing projects.

Answer:

Fixed Bid project: In this project the time and budget has been fixed at the time of agreement. Scope of statement is given to the vendor and vendor has to complete the project within given budget and timeline. In case of delays, vendor will be responsible.

Billing Project: In this project, the resources working in the project will be billed to the client on hourly basis. Charges will be based on actual time & resources used on the project. Change in scope of statement is accommodated during project life cycle.

|  |  |  |
| --- | --- | --- |
| Aspect | Fixed Bid Project | Billing Project |
| Scope | Detailed scope of statement is required upfront. | Scope adapts business needs throughout the project. |
| Payment | Pay for the entire project after completion. | Pay based on agreed upon rates for the work completed. |
| Involvement | Initial involvement | Continuous involvement |
| Control | Less control over product quality | Greater control and visibility at each stage |
| Project type | Challenging for complex project.  Best for smaller project. | Beneficial for complex project.  Best for large & small project as well. |

Question 14 – Prepare 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:

A timesheet is a fundamental tool the businesses use to record the time employees spend on various tasks, projects, or work activities during a specific period, such as a day, week, or month. It is a vital record that helps track work hours, manage payroll, and ensure compliance with labor laws.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Design | | | | |
| Date | Task | Start time | End time | Total duration |
| 12-01-2024 | Review user requirement | 10 | 15 | 5 |
| 12-02-2024 | Creating use cases diagram | 10 | 16 | 6 |
| 12-03-2024 | Designing data base schema | 10 | 16 | 6 |
| 12-04-2024 | Reviewing design | 10 | 16 | 6 |
| 12-05-2024 | Prepared RTM | 10 | 15 | 5 |
| 12-06-2024 | Finalizing design documents | 10 | 14 | 4 |
| 12-07-2024 | Reviewing and approve the design | 10 | 13 | 3 |
| Total hours | | | | 35 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Development | | | | |
| Date | Task | Start time | End time | Total duration |
| 14-01-2024 | Meeting with developers team | 10 | 17 | 7 |
| 14-02-2024 | Conduct a meeting to explain software design/System design | 10 | 16 | 6 |
| 14-03-2024 | Conduct a meeting for design & development | 10 | 15 | 5 |
| 14-04-2024 | Review test plan for upcoming release | 10 | 18 | 8 |
| Total hours | | | | 26 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Testing | | | | |
| Date | Task | Start time | End time | Total duration |
| 15-01-2024 | Conducted functional testing | 10 | 15 | 5 |
| 15-02-2024 | Collaborated with testing team | 10 | 16 | 6 |
| 15-03-2024 | Conducted regression testing | 10 | 13 | 3 |
| 15-04-2024 | Analyse test results | 10 | 16 | 6 |
| 15-05-2024 | Take sign off from stakeholder | 10 | 16 | 6 |
| Total hours | | | | 26 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| UAT Testing | | | | |
| Date | Task | Start time | End time | Total duration |
| 16-01-2024 | Prepared UAT test plan & test case | 10 | 15 | 5 |
| 16-02-2024 | Review UAT test plan & test case to stakeholders | 10 | 16 | 6 |
| 16-03-2024 | Execute UAT test plan | 10 | 13 | 3 |
| 16-04-2024 | Report defects found during UAT to developers & fixed | 10 | 16 | 6 |
| 16-05-2024 | Take sign off from stakeholder | 10 | 16 | 6 |
| Total hours | | | | 26 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Deployment & Implementation | | | | |
| Date | Task | Start time | End time | Total duration |
| 17-01-2024 | Created deployment plan | 10 | 15 | 5 |
| 17-02-2024 | Deploy application to test environment | 10 | 16 | 6 |
| 17-03-2024 | Deploy application to production environment | 10 | 13 | 3 |
| 17-04-2024 | Perform UAT | 10 | 16 | 6 |
| 17-05-2024 | Finalize implementation | 10 | 16 | 6 |
| Total hours | | | | 26 |