**Online Agriculture Products Store**

 **Decode Case Study**

**Project Idea:** to develop Ecommerce model online agriculture product store to help the remote area farmers that they can buy their agriculture products (seeds, pesticides, and fertilizers) easily from anywhere.

**Current needs:** Ecommerce Online Web / Mobile Application that should be user friendly, Easy to navigate, Accept the Product details from manufacturers and Suppliers and those should be showed to farmers, Order Processing and deliver them to farmers location.

**Overview of the Project:** It’s an e-Commerce-based Project, facilitates the remote area farmers to buy the agriculture products seamlessly from their location. New Web/Mobile Application should be created by taking inputs from various stakeholders involved.

**Current Problem:** Remote area Farmers facing difficulties in Procuring the Agriculture products (Fertilizers, Seeds & Pesticides)

**Know the Team:**
Mr.Hendry has given this Project through his Company -SOONY
 Mr. Hendry - Project Head
 Mr. Pandu- Financial Head
 Mr. Dooku- Project Coordinator
 Mr. Peter, Mr. Kevin & Mr. Ben – Stakeholders
Mr. Hendry, Mr. Pandu & Mr. Dooku formed one committee and gave this Project to APT IT Solutions.

Mr. Peter, Mr. Kevin and Mr. Ben are helping the Committee and can be considered as Stakeholders to share requirements for the Project.

In APT IT SOLUTIONS company

Mr. Karthik-Delivery Head
Mr. Vandanam - project Manager
Ms. Juhi is Senior Java Developer
 Mr. Teyson -Java Developer
 Ms Lucie -Java Developer
 Mr Tucker -Java Developer
 Mr Bravo -Java Developer
Mr Mike-Network Admin
Mr.John- DB Admin
Mr Jason and Ms Alekya-Testers
Mr.Kumaran(me) as a Business Analyst

**1.Business Process Model**
 Business Process Model is a technique that helps businesses visualize, analyse and Improve their Processes. Business Process modeling can be described as creating a Map of what happens within a business, detailing how the tasks are carried out, by whom and in what order.
The business process model for an online agriculture store involves several components, including the goal, inputs, resources, outputs, activities, and value created for the end customer.

 **Goal:**

* To bridge the GAP between Buyers (Farmers) and Sellers (Manufacturers), Fulfilling farmer’s needs & requirements.
* To create an online Agriculture store is to provide a platform for customers (farmers) to purchase agriculture products and services conveniently through the Internet connection.

 **Input**:

* Product Information
* Order Information
* trained Employees

 **Resources:**

* Storage area
* a user-friendly Software/Application
* Payment gateway
* Office area & Equipment
* Well-connected Logistics services

**Output:**

* Order confirmation
* Completed Orders
* Ontime Delivery
* Delivery update to Farmers
* Sales Revenue & Efficiency
* Customer feedback

**Activities:**

* Product listing
* Order processing
* Inventory management
* Excellent customer service
* Marketing and promotions
* Partner with all agriculture product manufacturers

**Value:**

* Creating Convenient, hassle free availability of Agriculture products to farmers at their doorstep
* Transparency
* Customer Support

**2.SWOT Analysis**

 **Strengths** **Weakness**

Strong customer base Supply chain disruptions

Availability @doorstep Storage of Farming materials

Ease of Availability Educating farmers to use the Application

 **Opportunities**  **Threats**

Expansion of new customer Base Climatic changes

Addition of new Products Raw Material cost fluctuations
 Chemicals & Synthetic fertilizer causes soil damage

 As project is CSR Initiative company
 reputation will increase. The project may face competition from
 other online agriculture product stores

**3.Feasability Study** A feasibility study is an independent assessment that helps determine if a project is viable and should proceed. It's used to evaluate the practicality of a project plan and the potential risks involved.

A feasibility study typically includes an examination of the following aspects of a project: Technical feasibility, Economic feasibility, financial feasibility, Marketing feasibility, and Management feasibility.

 1. Budget - INR 2 crores
 2. Time Frame – 18 months
 3. Trained Resources – 12 Resources
 a. Delivery Head – 1 – Mr. Karthik
 b. Project Manager – 1 – Mr. Vandanam
 c. Senior Java Developer – 1 – Ms. Juhi
 d. Java Developers – 4 – Mr. Teyson, Ms. Lucie, Mr. Tucker & Mr. Bravo
 e. Network Admin – 1 – Mr. Mike
 f. Database Admin – 1 – Mr. John
 g. Testers – 2 – Ms. Alekya and Mr. Jason
 h. BA – 1 – Myself

 4. Hardware (Equipment)
Web Servers: Dell PowerEdge, HP ProLiant, IBM System x
Database Servers: Dell PowerEdge, HP ProLiant, IBM System x
Load Balancers: F5 Big-IP, Citrix NetScaler, HAP Roxy
Storage Devices: Dell EqualLogic 3PAR, NetApp FAS

 5. Software
Content Management System: WordPress, Drupal, Magento
Ecommerce Platform: WooCommerce, Shopify, Magento
Payment Gateway: PayPal, Gpay, PhonePe, Authorize.net
Security Applications: SSL Certificate, Firewall, Anti-Malware

Technology used : Based on the database servers, Payment gateways, Security and API’s
Webserver : Apache, Nginx
Database Server : MySQL
Programming Language: Java, PHP, Python

**Technical Feasibility:**

* Hardware – 12 Laptops for all the 12 resources in the organization
* Software –
 Java license – there are 7 JAVA users, 4 Developers and 1 Sr. Developer
 and 2 Testers are going to use the software.
* Network – Network admin will make sure that there isn’t any issue with the
 network, while the development team works on developing the codes.
* Database admin – They will ensure that all the data of the customer’s and seller’s
 data is updated and stored at the right place.

**Operational Feasibility: Time – 18 months**

 1. 2 months - Requirement gathering and design by BA.
 2. 1 month – Project planning - The Project manager and Sr. Developer will discuss with the team and specify the roadmap of the project and they will then decide, how the project will be completed.
 3. 12 months – Project Development - Being a waterfall model, the project will be developed and tested in 3 phases.

 **1. For customers:**

 i. Registration and Login phase – 2 months: In this phase, the development team will work on the Registration page and Login page, so that the customer can login with password and also update their addresses for delivering the product on time. It will take approximately 2 months, as the Development team will write the code and then Testing team will test the code. Hence there will approx. 3 times development and testing (D1-T1, D2-T2 and D3-T3)

 ii. Product Selection phase – 3 months: In this phase, development team will start the coding on how to search the product (including filters with category), select the product and add them to the cart. This phase will take approx. 3 months and will take approx. 4 times development and testing (D1-T1, D2-T2, D3-T3 and D4-T4)

 iii. Billing and Payment phase – 3 months: In this phase, the development team will develop the codes for payment section, where the customers can make the payment adding their Banking details for their selected items. This phase will also include their Banks as well. The payment modes should be via Credit card, Debit card, Net banking, Digital payments and Pay on Delivery. This phase will take approx. 4 -5 times Development and testing, as they also need to make sure that the payments get cleared from the customer’s bank and payment is also received correctly. (D1-T1, D2-T2, D3-T3, D4-T4 and D5-T5)

 iv. Delivery phase – 2 months – In this phase, development team will develop codes to make that the product is delivered within the time specified. They also have to make sure that if the product is not available at the nearby warehouse, the delivery date should get updated, as the product will now be delivered from the 2nd nearby warehouse. This phase will also include the 3rd party sellers as well.

 **2. For Sellers:**

 i. Registration and Login phase – While developing the codes for customer, the team will also develop the codes for Sellers to register themselves, so that they can sell their product.

 ii. Product Updating phase – 2 months – Development team will develop codes for Seller to update their product on the online store and also keep updating new products. Hence this phase should take approximately 2 months including Development and Testing both.

 iii. Billing and Payment phase – Development team and manage developing codes, as in this phase, the payment should be reached to the seller as well under the same timeline, when developing codes for customers.

 iv. Delivery phase – This phase will also come under the phase when developing codes about delivering the products by coordinating with sellers to ship under same time line.

 4. 1 months - Final Testing: Once the coding is completed, the Testers will test the project as final testing to make the product delivery ready
 5. 1 months – Project delivery and Training – The delivery head, Mr. Karthik will lead this phase with the help of the development team and BA to make sure the training is completed and product is delivered as per customer’s satisfaction.
 6. 1 month – UAT – Customer will use the software and confirm, if there is any issue with the product or not.

**Financial feasibility – INR 2 crores**

**4.GAP Analysis** As a Business Analyst, to showcase the Gap Analysis, we need to compare the AS-IS existing process with the TO-BE future process. Here are some points to be considered:

**AS-IS Process:**
1. Farmers have to physically visit the market to buy agricultural products such as fertilizers, seeds, and pesticides.
2. Farmers have to rely on intermediaries for the procurement of these products, which results in higher prices and sometimes even low-quality products.
3. Farmers often face difficulty in finding the right products according to their specific crop requirements.
4. The lack of communication between the farmers and the manufacturers results in farmers not being able to procure the latest and most effective products.

**TO-BE Process:**
1. Farmers will be able to order the required agricultural products online, saving their time and efforts.
2. Farmers can buy products directly from the manufacturers at affordable prices, eliminating intermediaries.
3. The Online store will have a search functionality to filter products based on crop types, specific requirements, and other parameters, which will help farmers to find the right products easily.
4. Through the Online store, the manufacturers can communicate with farmers and provide them with the latest products and technologies, resulting in higher productivity and better crop yield.

Other points to consider:
1. The online store should be user-friendly and accessible to farmers who may not have much technical knowledge.
2. The payment gateway should be secure and reliable to ensure smooth transactions.
3. The Online store should have an effective supply chain management system to ensure timely delivery of products.
4. The online store should have a robust customer support system to address any issues or queries raised by farmers.
By showcasing the above points, Mr Karthik can convince Mr Henry to initiate the project and take the initiative forward.

**5.Risk Analysis** As a Business Analyst, there are several risk factors that need to be considered during the project planning phase. These risk factors can be categorized into BA Risks and Project Risks.

Here are some of the risk factors that can be involved in this project:

**BA Risks:**1. Inadequate understanding of the agriculture industry and the specific needs of farmers in remote areas.
2. Miscommunication with stakeholders resulting in unclear requirements.
3. Unclear project objectives and scope.
4. Insufficient knowledge of the technology required to develop the online agriculture product store.
5. Difficulty in gathering and managing stakeholder requirements due to their remote location.
6. Insufficient resources and budget allocated for the project.

**Project Risks:**1. Inadequate IT infrastructure and internet connectivity in remote areas leading to
 difficulty in accessing the online store.
2. Delay in delivery of materials due to unforeseen circumstances such as natural disasters or logistical issues.
3. Security risks associated with online transactions and personal information of the users.
4. Technical risks associated with the development and implementation of the
online store such as software bugs or system crashes.
5. Resistance to change from farmers who are accustomed to traditional methods
of purchasing agricultural products.
6. Competition from established brick-and-mortar stores or other online agricultural
stores.

It is important to identify and manage these risk factors to ensure the success of the
project. As a BA, it is crucial to work closely with the project manager and other team members to mitigate these risks and develop a contingency plan if needed.

**6.Stakeholder Analysis (RACI Matrix)**

**R - Responsible**

**A - Accountable**

**C - Consulted**

**I - Informed**

Based on the information provided, the stakeholders in this project and their roles in the
RACI Matrix are as follows:

1. Mr. Henry - Accountable - As the initiator of the project, Mr. Henry is responsible for ensuring the success of the project and making the final decisions.
2. Mr. Pandu - Responsible - As the Financial Head, Mr. Pandu is responsible for managing the project budget and ensuring financial compliance.
3. Mr. Dooku - Consulted - As the Project Coordinator, Mr. Dooku provides guidance and support to the project team and consults with other stakeholders.
4. Peter, Kevin, and Ben - Consulted - As stakeholders and farmers, they provide requirements and feedback to the project team and consult with other stakeholders.
5. APT IT SOLUTIONS company - Responsible - As the company executing the project, they are responsible for delivering the project on time, within budget, and meeting all the requirements.
6. Mr. Karthik - Responsible - As the Delivery Head of APT IT SOLUTIONS, Mr. Karthik is responsible for managing the project delivery and ensuring that the project meets the client's expectations.
7. Mr. Vandanam - Responsible - As the Project Manager, Mr. Vandanam is responsible for managing the project team and ensuring that the project is completed successfully.
8. Ms. Juhi, Mr. Teyson, Ms. Lucie, Mr. Tucker, and Mr. Bravo - Responsible – As Java Developers, they are responsible for developing the software applications and delivering them on time.
9. Mr. Mike - Responsible - As the Network Admin, he is responsible for setting up
the network infrastructure required for the project.
10. Mr. John - Responsible - As the DB Admin, he is responsible for managing the project's database.
11. Mr. Jason and Ms. Alekya - Responsible - As Testers, they are responsible for testing the software applications and ensuring that they are error-free.

From the above RACI Matrix, we can see that Mr. Henry, as the initiator of the project, is accountable for the project's success, while the APT IT SOLUTIONS company and its team are responsible for delivering the project. Mr. Pandu, the Financial Head, is responsible for managing the project budget, while Mr. Dooku provides guidance and support to the project team. Peter, Kevin, and Ben are consulted for their requirements and feedback.

Overall, the key decision-makers in this project are Mr. Henry, APT IT SOLUTIONS company, and Mr. Karthik. The influencers in this project are Mr. Pandu, Mr. Dooku, and the farmers, Peter, Kevin, and Ben, as they provide requirements and feedback that can influence the project's outcome.

|  |
| --- |
| RACI - Responsible (R) - Accountable (A) - Consulted (C)- Informed (I)- Authorize (A\*) Not Available (NA) |
| Tasks | **Mr. Henry -Project Sponsor** | **Peter, Kevin, Ben-Key Stakeholders** | **Mr. Karthik****–****DH** | **Mr. Vandanam -PM** | **Ms. Juhi-Sr. Java Dev** | **Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo-Java Dev** | **Mr. Jayson, Ms. Alekya-Testers** | **Kumaran-BA** |
| Requirement Gathering | A\* | C | NA | A/I | NA | A | NA | R |
| Requirement Analysis | NA | NA | NA | I | NA | NA | NA | R |
| Development | A\* | NA | NA | R/A | C/A | R | NA | C |
| Testing | NA | NA | NA | R/A | I | NA | R | I |
| Implementation | NA | NA | R | I | I | NA | NA | A |
| UAT | I | NA | NA | R/A | NA | NA | NA | C |

**7.Business Case Document**

**Executive Summary:**

The purpose of this business case is to propose the development of an Online Agriculture Products Store to facilitate remote area farmers to buy agriculture products.

The proposed solution is a web/mobile application that allows farmers and companies manufacturing fertilizers, seeds, and pesticides to communicate directly with each other.

The goal is to provide a platform for farmers to purchase necessary products without facing any difficulties in procuring fertilizers, seeds, and pesticides. The project is expected to be completed within 18 months and is being undertaken as part of the Corporate Social Responsibility initiative.

**Problem Statement:**

Farmers in remote areas face difficulties in procuring fertilizers, seeds, and pesticides, which are essential for farming. These products are not readily available in the market and farmers often have to travel long distances to procure them. This leads to wastage of time and money, which could have been utilized in farming activities. Therefore, there is a need for a platform that can facilitate the purchase of these products for farmers.

**Solution:**

The proposed solution is an Online Agriculture Products Store, a web/mobile application that enables farmers and companies manufacturing fertilizers, seeds, and pesticides to communicate directly with each other. The application will have the following features:

* Farmers can browse through the products and select the ones they need.
* Companies can submit their product details, which will be displayed on the application.
* Farmers can place an order for the products and request delivery to their location.
* The application will have a user-friendly interface for easy navigation.

**Benefits:**

* The Online Agriculture Products Store will provide the following benefits:
* Farmers will be able to purchase necessary products without facing difficulties in
* procuring them.
* Companies manufacturing fertilizers, seeds, and pesticides will have a platform
* to reach out to farmers directly.
* The application will save time and money for farmers, which can be utilized in

farming activities.

* The application will promote the use of quality products, which will lead to better yields.
* The project will be undertaken as part of the Corporate Social Responsibility
* initiative, which will help in fulfilling the company's social obligations.

**Costs:**

The estimated budget for the project is 2 crores INR. This includes the cost of development, testing, deployment, and maintenance. The project is expected to be completed within 18 months.

**Key Stakeholders:**

* Mr. Henry, who proposed the project and is a key stakeholder.
* Peter, Kevin, and Ben, who shared their requirements for the project and are stakeholders.
* Mr. Pandu, who is the Financial Head and a key stakeholder.
* Mr. Dooku, who is the Project Coordinator and a key stakeholder.
* Mr. Karthik, who is the Delivery Head in APT IT SOLUTIONS company and a key stakeholder.
* Mr. Vandanam, who is the Project Manager and a key stakeholder.
* Ms. Juhi, Mr. Teyson, Ms. Lucie, Mr. Tucker, and Mr. Bravo, who are Java Developers and stakeholders.
* Mr. Mike, who is the Network Admin and a stakeholder.
* Mr. John, who is the DB Admin and a stakeholder.
* Mr. Jason and Ms. Alekya, who are Testers and stakeholders.
* The farmers and companies manufacturing fertilizers, seeds, and pesticides who will use the application.

**Risks**:

* The application may face technical issues during development and deployment.
* There may be delays in development due to unforeseen circumstances.
* The application may not be user-friendly, leading to low adoption by farmers.
* There may be issues with product quality and delivery, leading to dissatisfaction among farmers.
* Competitors may develop similar applications, leading to a loss of market share.

 **ROI:**

 Current Finance - INR 2 Crores
 Assuming profit - INR 10 lakhs
 ROI - 10,00,000/2,00,00,000 = 5% ROI

 **Conclusion:**

 The Online Agriculture Products Store

**8.Four SDLC Methodologies**

 SDLC, which stands for Software Development Life Cycle, is a process used by software development teams to plan, design, build, test, and deploy software. SDLC consists of several methodologies or approaches that can be used to develop software applications. These methodologies include Sequential, Iterative, Evolutionary, and Agile.

**1. Sequential:**
 Sequential methodology, also known as the Waterfall model, is a linear approach where each phase of the software development process must be completed before moving on to the next phase. This methodology works well for projects where requirements are well-defined and there is a clear understanding of what the end product should look like. However, this approach may not be suitable for projects where there are evolving requirements or where changes need to be made during the development process.

**2. Iterative:**
 The iterative methodology involves multiple iterations or cycles of the SDLC process. In this approach, the development team creates a working prototype of the software product, tests it, and then makes changes based on feedback before moving on to the next iteration. This methodology is useful for projects where requirements are not well-defined or may evolve during the development process.

**3. Evolutionary:**
 The evolutionary methodology is similar to the iterative methodology in that it involves multiple iterations. However, in this approach, the initial product is not fully functional but evolves over time through a series of iterations. This methodology is best suited for projects where the requirements are not fully defined or may change frequently.

**4. Agile:**
 The Agile methodology is an iterative and incremental approach to software development that focuses on delivering working software in small increments or sprints. The Agile approach emphasizes customer collaboration, continuous feedback, and flexibility in response to changing requirements. This methodology is ideal for projects where requirements may change frequently and where there is a need for rapid delivery of working software.
 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's four main values are:

* Individuals and interactions over processes and tools
* Working software over comprehensive documentation
* Customer collaboration over contract negotiation
* Responding to change over following a plan

**Frameworks of Agile:**

* Scrum
* Kanban
* Extreme Programming (XP)
* Adaptive Project Framework (AFP)

Each methodology has its advantages and disadvantages, and the choice of methodology will depend on the specific needs of the project. It is essential to consider factors such as project requirements, project scope, team size, budget, and timeline before choosing the methodology.

**9.Waterfall RUP Spiral and Scrum Models (SDLC Models)
 1. Waterfall Model** is a development process where all the phases flow like a waterfall. Each phases need to be completed before the next phase begins. There are 5 stages in waterfall methodology.

 i. Requirement – Waterfall model depends on all the requirements gathered and understood upfront.
 ii. Design – Once the requirement is gathered, the technical team designs the requirement into layouts, data models, prototypes etc.
 iii. Implementation – One the design is completed; the technical team starts coding as per the design or prototypes.
 iv. Testing – before the product is delivered to the customer, the product/software needs to be tested.
 v. Deployment/Maintenance – Once the software is tested, it gets released to the customer and with that maintenance phase begins.

 **2. RUP Model (Iterative)**: 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.
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 phases in this methodology:

 i. Requirement: The Goal needs to set accordingly, as every iteration is different from later ones and there are no previous iterations to work from.

 ii. Design: In this phase, design needs to be created to solve the requirements, which includes technical designs, process flow diagrams etc.

 iii. Implementation or Development: The technical team will create the first iteration which will be informed by analysis and design.

 iv. Testing: after the iteration, it will be tested to find out the improvement. It can also be checked with project stakeholders.

 v. Review: Team will evaluate the success of the iteration and align on anything that need to be changed

 **3.Spiral Model:** Spiral model is an 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. It can manage unknown risks once the project is started.

 The radius of the Spiral model represents the cost of the project, and the angular degree represents the progress made in the current phase. Every phase can be broken into four quadrants:

 i. Identifying and understanding requirements - Every phase can be broken into four quadrants: identifying and understanding requirements, performing risk analysis, building the prototype and evaluation of the software's performance.

 ii. Performing risk analysis: risk analysis should be performed on all possible solutions to find any faults or vulnerabilities, such as, running over the budget or areas within the software.

 iii. Building the prototype: Prototype is built and tested. This step includes architectural design, design of modules, physical product design and the final design.

 iv. Evaluation of the software's performance: In the final quadrant, test results of the newest version are evaluated. This analysis allows programmers to stop and understand what worked and didn’t work before progressing with a new build. At the end of this quadrant, planning for the next phase begins and the cycle repeats. At the end of the whole spiral, the software is finally deployed in its respective market.

**4.SCRUM:** Scrum is an Agile development methodology used in the development of Software based on an iterative and incremental processes.

**Scrum Methodology and Process:** Scrum is executed in temporary blocks that are short and periodic, called Sprints, which usually range from 2 to 4 weeks. Each Sprint is an entity in itself, that is, it provides a complete result, a variation of the final product that must be able to be delivered to the client with the least possible effort when requested.

 The process has as a starting point, a list of objectives/ requirements that make up the project plan. It is the client of the project that prioritizes these objectives considering a balance of the value and the cost thereof, that is how the iterations and consequent deliveries are determined.

**Events in Scrum** Each of the Scrum events facilitates the adaptation of some of the aspects of the process, the product, progress or relationships.

 1. Sprint: Sprint is the basic unit of work for a Scrum team. This is the main feature that marks the difference between Scrum and other models for agile development.

 2. Sprint Planning: The goal of the Sprint Planning is to define what is going to be done in the Sprint and how it is going to be done. This meeting is held at the beginning of each Sprint and is defined how it will approach the project coming from the Product Backlog stages and deadlines. Each Sprint is composed of different features.

 3. Daily Scrum: The objective of the Daily Scrum is to evaluate the progress and trend until the end of the Sprint, synchronizing the activities and creating a plan for the next 24 hours. It is a brief meeting that takes place daily during the Sprint period. Three questions are answered individually: What did I do yesterday? What am I going to do today? What help do I need? The Scrum Master should try to solve problems or obstacles that arise.

 4. Sprint Review: The goal of the sprint review is to show what work has been completed with regards to the product backlog for future deliveries. The finished sprint is reviewed, and there should already be a clear and tangible advancement in the product to present to the client.

 5. Sprint Retrospective: The team reviews the completed goals of the finished sprint, write down the good and the bad, so as not to repeat the mistakes again. This stage serves to implement improvements from the point of view of the development process. The goal of the sprint retrospective is to identify possible process improvements and generate a plan to implement them in the next Sprint.

As a business analyst, I would consider the characteristics and requirements of the project to determine which methodology would be better suited: the V model or the waterfall model.

Considering the available information and the stable nature of requirements in this project, I would lean towards recommending the waterfall model. However, it's important to note that the final decision should be made based on a comprehensive understanding of the project requirements, available resources, and the preferences and expertise of the project team and SMEs involved.

**10. Waterfall Vs V-Model**

The following table highlights the major differences between the V-Model and the Waterfall Model on the basis of the type of steps or phases involved in these two software development methodologies –

|  |  |  |
| --- | --- | --- |
| **Parameter** | **V-Model** | **Waterfall Model** |
| Definition | V-Model is the development model in which the entire model is divided into various sub-development phases where the corresponding testing phase for each development phase is practiced.For every stage in the development cycle, there is an associated testing phase and the corresponding testing phase of the development phase is planned in parallel. | In the Waterfall model, an application is developed first, after which it is tested using different testing techniques.The complete process is divided into several phases among which one phase should be completed in order to reach the next phase and testing is almost at end phase of the development. |
| Type/Nature | In the V-Model, the execution of the phases i.e., development and testing happen in a sequential manner so type of V-Model is Sequential/Parallel in nature. | Waterfall Model is a relatively linear sequential design approach as each phase should be completed in order to reach the next phase. So, type of this model is Continuous in nature. |
| Testing and Validation | In the V-Model, each development phase gets tested at its own level and hence no pending testing occurs in this model also if any validation requires to be implemented then it could be implemented at that phase. | In the Waterfall Model, the testing occurs after development is completed and thus if any missing validation is identified to be implemented then first that phase of development needs to be recognized and then that validation get implemented. |
| Cost and Complexity | As sequential phases need to be functional in case of V-Model hence the cost is higher as compared to that of Waterfall Model also the complexity is more than Waterfall.More customer Involvement | In the Waterfall Model, due to linear development, only one phase of development is operational and hence cost and complexity is low as compared to that of V-Model.Less customer Involvement |
| Defects | In the V-Model, the probability of total number of defects in the development of application is low as testing is done in parallel to the development. | In the Waterfall Model, the probability of total number of defects in the development of application is high as testing is done post development. |

**11.Waterfall Model (Reason for selecting)**

* As a business analyst, my recommendation would be to use the Waterfall model for this project. The Waterfall model is a linear sequential approach where each phase of the software development process is completed before moving onto the next phase. This model is suitable for projects with clear and well-defined requirements, which is the case for the online agriculture product store project. The project has a clear objective of developing an e-commerce platform for farmers to buy agriculture products, and the requirements for the project have been shared by the stakeholders.
* Waterfall Model is best Suitable for small projects
* On the other hand, the V model is an extension of the Waterfall model, and it is used for testing and verification. It is useful when the requirements are clear and well-defined. However, it is not an appropriate approach for software development projects as it does not provide a framework for design and development. Therefore, based on the project's clear requirements, I recommend the Waterfall model for this project.

**12. Gantt Chart**

 A Gantt chart is a visual tool that helps project managers and teams plan and track a project's progress. It's a type of bar chart that shows the tasks involved in a project, their start and end dates, and any dependencies between them.
 It is prepared by a Project Manager & Its nothing but a Work Breakdown Structure (WBS)





**13. Fixed Bid and Billing Projects**

 **1.Fixed Bid project** is a project in which the time and scope is fixed within a budget and has a deadline associate with it. In fixed bid model, the client will give all the details, specs and mock-ups and all the requirements upfront, so that vendor can provide a Bid showing the project cost. In this model, vendor should be good in estimating the time and budget, as they need to explain the client, as how much time it would take for them to finish the project and how much it would cost. This model has less financial risk, however it has no flexibility or room for adjustments, as the budget and time is fixed. This model usually works with smaller projects with limited features and clear requirements.

 **2.Billing Model** (Time and Material) is a project where the project is billed in hourly basis. Vendor will set up a team and presented to the client to bill them for their time spent on development. This model is flexible in nature, as changes can be added in the middle of the project. This model allows client to monitor the progress as developers present reports on work completed.

**14.Timesheets of a BA in various stages of SDLC**

 A timesheet is a time-tracking tool that helps employers keep an eye on manpower costs. Timesheets are used by management, human resources and accounting departments to record time and pay employees based on the calculation of their total work hours.

RG Timesheet of a BA: 

RA Timesheet of a BA:

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 