Nurturing Process - Capstone Project-1

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Question 1 – BPM

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

Answer:-

a. <u>Goal:</u>

- i. To provide user friendly Online Web / mobile application, farmers and Companies which manufacture agriculture products like fertilizers, seeds and pesticides manufacturing Companies) can communicate directly with each other.
- ii. To facilitate farmers to buy seeds, fertilizers and pesticides from anywhere through internet connectivity.
- iii. To provide facility to getting agricultural products delivered at farmer's doorstep.

b. Inputs :

- i. Farmers' requirements and their needs.
- ii. Agricultural products- fertilizers, seeds and pesticides.
- iii. Manufacturing companies.

c. <u>Resources</u> :

- i. Agricultural products
- ii. anufacturing companies
- iii. Project team working on project.
- iv. Delivery Team
- v. Internet connectivity
- vi. Device through which system will be accessible Computer/Laptop & Mobile phone.

d. Activities (performed in specific order)

- i. Signup and Login for Farmers and manufacturers.
- ii. Accept the product details from manufacturing companies.
- iii. Listing the products and display it to the farmers.
- iv. Farmer will browse (search) and select the product,
- v. Farmer will buy the product using their convenient payment gateway (It could be COD, Credit/Debit card or UPI)/
- vi. Farmer will get notified via email along with the order details once the order is confirmed.
- vii. Farmer can track their order using delivery tracker.

e. <u>Output :</u>

- i. Website/ Mobile app for farmers to purchase agricultural products like fertilizers seed and pesticides.
- ii. Platform for manufacturing companies to list their agricultural products.
- iii. Completed orders.
- iv. Shipped products to customer.

f. End Values to Customer

- i. User friendly and easy to use application for farmers.
- ii. Easy online ordering and can be accessible from anywhere, anytime.
- iii. Online store available on both Web and Mobile devices.
- iv. Increase in agricultural production, Time and money saving for farmers and farmer's satisfaction.

v. Reliable shipping and delivery services.

Question 2 – SWOT

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 2-

SWOT stands for Strengths, Weaknesses, Opportunities and Threats. In my opinion below aspects of SWOT should be considered by Mr Karthik-

Here Strengths and Weaknesses are internal to the company while Opportunities and Threats are external to the company.

S.	STRENGTHS	WEAKNESS	OPPORTUNITIES	THREATS
1	Mr Henry is already a successful businessman and his company SOONY is an established firm. Hence his connections can be used for the marketing and outreach.	The remote location of targeted end users where products needs to be delivered.	This project is the first of its kind. It has not developed before by any company.	Are farmers educated about online store or are they comfortable in ordering the products online?
2	Project Budget is good. It is 2 crores for 18 months project.	Limited duration of the project which is only 18 months for building both web and mobile application.	Product is providing solution to the farmer's problem and can potentially capture large user base.	Is the Internet connectivity proper in rural areas?
3	The project is the CSR initiative which means company is not only targeting profit but also taken active and positive social role in the world around them.	Team is handling this kind of project for the first time so there is no previous expertise in this domain.	Via this project, collaboration and partnerships between manufacturing companies and supplies can be increased.	Project may face competition from other online agricultural product store if got developed by the time of release of project.
4	Mr Henry's friends- Peter, Kevin and Ben are available as key stakeholder to provide their valuable inputs for the project.	Lack of resources to handle project at Mr henry's company(SOONY)	Company is entering into the business of online selling of products and can expand the system in future.	Quality of the products being delivered cannot be assured which can effect user trust.

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 3-

- i. <u>Hardware</u> Laptops, servers, clients, peers, storage, required networking equipment, and development tools.
 Application should be able to handle huge traffic and multiple users should be able to access the app at the same time, so hardware requirement needs to be figured out to
- make the system scalable.
 ii. <u>Software</u> All the development software including licensed java kits required to develop Web and Mobile applications. Here I needs to be determined if any third party software components or APIs are required to develop the application.

iii. Trained Resources –

- a. Mr Karthik as Delivery Head.
- b. Mr Vandanam as Project Manager.
- c. Ms' Juhi as senior java Developer.
- d. Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo as Java Developer.
- e. Mr Mike as Network Admin.
- f. Mr Janson and Ms Alekya as Testers.
- g. I (Kirti Raheja) as BA.
- iv. <u>Budget</u> 2 cr
- v. Time Frame 18 months

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 4-

AS-IS Process:

- i. Farmers have to physically visit the market to buy agricultural products such as fertilizers, seeds, pesticides.
- ii. Farmers don't have access to the variety of agricultural products as they have to rely on intermediaries with limited options for which they need to pay higher prices and sometimes even low quality products.
- iii. Farmers often face difficulty in finding the right products according to their specific crop requirements.
- iv. 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:

- i. Farmers will be able to order the required agricultural products online, saving their time and efforts.
- ii. Farmer can buy products directly from the manufacturers at affordable prices, eliminating intermediaries.

- iii. 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.
- iv. 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:

- i. The online store should be user friendly and accessible to farmers who may not have much technical knowledge.
- ii. The payment gateway should be secure and reliable to ensure smooth transactions.
- iii. The online store should have an effective supply chain management system to ensure timely delivery of products.
- iv. The online store should have a robust customer support system to address any issues or queries raised by farmers,

Question 5 – Risk Analysis

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

<u>Answer 5-</u>As a BA, risks should be identified and managed to ensure the success of project. Below are the BA risks and project risks to be considered-

<u>BA Risks:</u>

- i. Lack of understanding of the agriculture Industry and specific need of farmers in remote areas.
- ii. Miscommunication with the stakeholders resulting in unclear requirements.
- iii. Unclear project objectives and scope.
- iv. Difficulty in gathering and managing stakeholder requirements due to their remote location.
- v. Insufficient resources and unavailability of the resources and the budget allocated for the project.

Project Risk:

- i. Limited internet connectivity in remote areas leading to difficulty in accessing the online store.
- ii. Delay in the delivery of materials due to unforeseen circumstances such as natural disasters or logistical issues.
- iii. Security risks associated with online transactions and personal information of the users.
- iv. Technical risks associated with the development and implementation of the online store such as software bugs or system crashes.
- v. Resistances to change from farmers who accustomed to traditional methods of purchasing agricultural products to online buying.

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.

<u>Answer 6-</u> RACI Matrix is a responsibility matrix to show the roles and responsibilities of stakeholders in a project.

RACI stands for Responsible, accountable, Consulted and Informed. In this project below are the stakeholders for which RACI chart is prepared.

i. Mr Henry – Project Sponsor

- ii. Mr Pandu Financial Head
- iii. Mr Dooku Project Coordinator
- iv. Peter, Kevin, and Ben Key Stakeholder
- v. Mr Karthik- Delivery Head
- vi. Mr Vandanam Project Manager
- vii. Ms Juhi Senior Java Developer
- viii. Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo Java Developers
- ix. Mr Mike network Admin
- x. Mr John DB Admin
- xi. Mr Jason and Ms Alekya Tester
- xii. Srishti Gupta BA

R- Responsible, A- Accountable, C- Consulted, and I - Informed

Tasks	Mr Henry (Project Sponsor)	Peter, Kevin, and Ben (Key Stakeholder)	Mr Karthik (Delivery Head)	Mr Vandanam (Project Manager)	Ms Juhi – (Senior Java Developer)	Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo - Java (Developers)	Mr Jason and Ms Alekya (Tester)	Srishti Gupta (BA)
Requirements Gathering		С		A/I				R
Requirements Analysis								R
Development				R/A	A/C	R		
Testing							R	
Implementation			R					R
UAT				R/A				I

Apart from the above tasks, Mr Mike is responsible for setting up the network infrastructure required for the project and Mr John is responsible for managing the project's Database.

Mr Pandu, the financial head, is responsible for managing the project budget, while Mr Dooku provide guidance and support the project team. Peter, Kevin, and Ben are consulted for their requirements and feedback.

Question 7 – Business Case Document

Help Mr Karthik to prepare a business case document

<u>Answer 7-</u> Business case documents are prepared during the project initiation phase and their purpose is to include all the project's objectives, costs and benefits to convince stakeholders of its value.

Project Name	Online Agriculture Product Store
Client	Soony Ltd.
Project Sponsor	Mr. Henry
Project Manager	Mr. Vandanam
Duration	18 months
Executive Summary	The purpose of this business case is to propose the development of an Online Agriculture product store to facilities remote area farmer to buy agriculture products.

Problem Statement	Farmer in remote areas face difficulties in procuring fertilizers, seeds and pesticides, which are essential for farming
Solutions	 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 navigations.
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. Company's manufactures will have a platform to reach out to farmer directly. The application will save time and money for farmers.
Costs	The budget for the project is 2crores INR which include the cost of development, testing and maintenance.
Key stakeholders	Mr Henry – Project Sponsor Mr Pandu – Financial Head Mr Dooku – Project Coordinator Peter, Kevin, and Ben – Key Stakeholder Mr Karthik- Delivery Head Mr Vandanam – Project Manager Ms Juhi – Senior Java Developer Mr Teyson, Ms Lucie, Mr Tucker, Mr Bravo - Java Developers Mr Mike – network Admin Mr John – DB Admin Mr Jason and Ms Alekya – Tester All are the stakeholders.
Risk	 The application may face technical issue during development and deployment. There may be delay in development due ti unforeseen circumstances.
Conclusion	The online Agriculture products store.

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 8-

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 consist of several methodologies or approaches that can be used to develop software applications. These methodologies include Sequential, Iterative, Evolutionary, and Agile.

Sequential:

Sequential methodology, also known as waterfall model, is a linear approach where each phase of the software development process must be completed before moving on 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 of where changes need to make during the development process.

Iterative:

The Iterative methodology involve multiple iterations or cycle 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 the next iteration. This methodology is useful for projects where requirements are not well- defined or may evolve during the development process.

Evolutionary:

The Evolutionary methodology is similar to the Iterative methodology in that it involve 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.

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 requirement. The methodology is ideal for project where there is a need for rapid delivery of working software.

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

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 9-

i. Waterfall Model-

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.

ii. <u>RUP Model-</u>

The rational Unified process (RUP) is an iterative Software development process framework created by the rational software corporation, a division of IBM since 2003. RUP is Iterative, meaning repeating and agile. Iterative because all of the process's core activities repeat throughout the project. It's a process of gradual improvement and learning from previous iterations, as how to improve the next. In RUP the life cycle of a project, or a development of software, is divided into four phases: modelling, analysis, and design, implementation, testing and application. The four consecutive phases are:

- Inception Phase
- Elaboration phase
- Construction phase
- Transition phase

iii. Spiral Model-

Spiral Model is an SDLC metrology which combines Iterative development and waterfall model. It is used for Risk management. This SDLC model is mostly used for large and complicated project. The spring model enable gradual releases and refinement of product through each phase of the spring as well as the ability to build prototype at each phase. It can manage unknown risk 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
- ii) Performing risk analysis.
- 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 performance.

Iv Scrum Model-

Scrum is an angle development methodology used in the development of software based on an iterative and incremental processed.

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 deliver to the client with the least possible effort when requested. The process has as a starting points, a list of objectives/requirements that make up the project plan. It is client of the prioritizes these objectives considering a balance of the value and the cost thereof that is how the iteration and consequent deliveries are determined.

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 team and SMEs involved.

Question 10 – Waterfall Vs V-Model

Write down the differences between waterfall model and V model.

Answer 10:

The main difference between waterfall model and V model is that in waterfall model, the testing activities are carried out after the development activities are over. On the other hand, in V model, testing activities start with the first stage itself. On other words, waterfall model is a continuous process, while V model is a simultaneous process.

S. No.	Waterfall Model	V- Model
1	It is a continuous process	It is simultaneous process
2	Testing activities are carried out after the development activities are over.	Testing activities start with the first stage itself.
3	Software made in waterfall model has more defects as compared to software made in v model.	Software made in V model has lesser defects as compared to waterfall model.
4	It is used when requirements are fixed	If the requirements of the user are uncertain and keep changing, then V model is better alternative.
5	Making changes in the software in the waterfall method is costly affair	Making changes in the software on the V model is comparatively cheaper.

Question 11 – Justify your choice

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

Answer 11:

As a business analyst, my recommendation would be to use the Waterfall model for this project. The waterfall method is a linear sequential approach where each phase of the software development process is complete before moving onto the next phase. This model is suitable for projects with clear and well defined requirements which in case for the online agriculture product store project.

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 12:

Project Task	Start date	End date	Time (in days)	Time (in hrs)
Requirements Gathering	01-02-2024	13-03-2024	30	240

Requirements Analysis	14-03-2024	24-04-2024	30	240
Design	25-04-2024	19-06-2024	40	320
Development 1	20-06-2024	02-10-2024	75	600
Test 1	03-10-2024	04-12-2024	45	360
Development 2	05-12-2024	12-03-2025	70	560
Test 2	13-03-2025	23-04-2025	30	240
Development 3	24-04-2025	16-07-2025	60	480
Test 3	17-07-2025	27-08-2025	30	240
Development 4	28-08-2025	19-11-2025	60	480
Test 4	20-11-2025	31-12-2025	30	240
UAT	01-01-2026	18-02-2026	35	280
Total			535	4280



Question 13 – Fixed Bid Vs Billing

Explain the difference between Fixed Bid and Billing projects.

Answer 13:

- 1. <u>Fixed Bid Model-</u> Fixed Bid model is a model in which the time and scope is fixed with in a budget And has a deadline associated 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 adjustment as the budget and time is fixed.
- <u>Billing Model-</u> Billing Model is a project where the project is billed on hourly basis. Vendor will set up the team and present the same 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 on timely basis.

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 n Implementation Timesheet of a BA

Answer 14:-

Design Timesheet of a BA

Design Timesheet of BA						
	Resource Name – Srishti Gupta					
	Designation – Business	Analyst				
	Hour rate – 50\$/h	r				
Date	Task	In Time	Out Time	Duration		
				(in hrs)		
24.03.2025	Communicating with client about	08:00	07:00	11		
	design and solution					
25.03.2025	Assessing design options	08:30	05:30	9		
26.03.2025	Assessing design options	09:00	05:30	8.5		
27.03.2025	Verify and Validate the requirements	08:00	05:30	9		
28.03.2025	Collaborate with team to finalise	08:00	05:30	9.5		
	system design architecture					
	47					
	Total Payment Amount			2350\$		

Development Timesheet of a BA

	Development Timesheet of BA Resource Name – Srishti Gupta Designation – Business Analyst Hour rate – 50\$/hr					
Date	Task	In Time	Out Time	Duration (in hrs)		
31.03.2025	Coordinating with team and checking on the approvals after each development stage	09:00	04:00	7		
01.04.2025	Coordinating with team and checking on the approvals after each development stage	08:30	05:30	9		
02.04.2025	Clarifying all queries and brainstorming with dev. team	09:00	05:30	8.5		
03.04.2025	Clarifying all queries and brainstorming with dev. team	08:00	04:00	8		
04.04.2025	Working on change in requirements in development stage from clients	08:00	05:30	9.5		
	42					
	2100\$					

Testing Timesheet of a BA

Testing Timesheet of BA

(
	Resource Name – Srishti Gupta					
	Designation – Business Analyst					
	Hour rate – 50\$/h	r				
Date	Task	In Time	Out Time	Duration		
				(in hrs)		
07.04.2025	Work with testing team to create	09:00	04:00	7		
	system test plans					
08.04.2025	Create and execute the system test	08:30	05:30	9		
	cases					
09.04.2025	Review system cases prepared by	09:00	05:30	8.5		
	testing team					
10.04.2025	Review system cases prepared by	08:00	04:00	8		
	testing team					
11.04.2025	Working with testing team and taking	08:00	05:30	9.5		
	acceptance from client					
	42					
	Total Payment Amount					

UAT Timesheet of a BA

UAT Timesheet of BA						
	Resource Name – Srishti Gupta					
	Designation – Business	Analyst				
	Hour rate – 50\$/h	r				
Date	Task	In Time	Out Time	Duration		
44.04.0005			0.4.00			
14.04.2025	Develop the detailed UAT test plan	09:00	04:00	7		
15.04.2025	Develop the test case scenario	08:30	05:30	9		
16.04.2025	Create UAT test cases	09:00	05:30	8.5		
17.04.2025	Test case data preparation	08:00	04:00	8		
18.04.2025	Run the test cases and documents the	08:00	05:30	9.5		
test results						
	42					
	Total Payment Amount			2100\$		

Deployment n Implementation Timesheet of a BA

	Deployment and Implementation Timesheet of BA					
	Resource Name – Srishti Gupta					
	Designation – Business	Analyst				
	Hour rate – 50\$/h	n				
Date	Task	In Time	Out Time	Duration		
				(in hrs)		
21.04.2025	Design RTM and forward to client	09:00	04:00	7		
22.04.2025	Coordinate to complete manual and	08:30	05:30	9		
	functional specifications					
23.04.2025	Training sessions for end user	09:00	05:30	8.5		
24.04.2025	Coordinate UAT with stakeholders	08:00	04:00	8		
25.04.2025	Collaborate with IT team for system	08:00	05:30	9.5		
deployment						
	42					
	Total Payment Amount			2100\$		