CAPSTONE PROJECT -1 ONLINE AGRICULTURE PRODUCTS STORE

Question 1 – BPM (Business Process Model)

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

Ans: -

Goal:

The goal of an online agriculture store is to provide a platform for customers to purchase agricultural products and services conveniently through the internet.

Inputs:

The inputs for an online agriculture store include:

- **Product information:** Details about the agricultural products available for sale, such as descriptions, prices, and availability.
- **Customer information:** Data about the customers, including their preferences, contact details, and purchase history.
- **Order information:** Details about the orders placed by customers, including the products, quantities, and delivery preferences.

Resources:

The resources required for an online agriculture store include:

- **Website or online platform:** A user-friendly website or platform where customers can browse and purchase agricultural products.
- **Inventory management system:** A system to track and manage the availability of products.
- **Payment gateway:** A secure payment system to process customer payments.
- **Delivery logistics:** A mechanism to handle product delivery to customers.

Outputs:

The outputs of an online agriculture store include:

- **Completed orders:** Products that have been successfully purchased by customers.
- **Order confirmations:** Notifications sent to customers to confirm their orders.
- **Delivery updates:** Notifications sent to customers to track the progress of their deliveries.

- **Customer feedback:** Feedback provided by customers regarding their shopping experience.

Activities:

The activities involved in the business process model for an online agriculture store include:

- **Product listing:** Uploading and maintaining accurate and up-to-date product information on the website.
- **Order processing:** Receiving and processing customer orders, including payment verification and order fulfillment.
- **Inventory management:** Monitoring and updating product availability to ensure accurate stock levels.
- **Customer support:** Providing assistance to customers regarding product inquiries, order tracking, and issue resolution.
- **Marketing and promotions:** Implementing marketing strategies to attract and retain customers, such as discounts, promotions, and loyalty programs.

Value created to the end Customer:

The online agriculture store creates value for the end customer in several ways:

- **Convenience:** Customers can browse and purchase agricultural products from the comfort of their homes or offices.
- **Access to a wide range of products:** Customers have access to a diverse selection of agricultural products from various suppliers.
- **Transparency:** Customers can view detailed product information, prices, and customer reviews to make informed purchasing decisions.
- **Timely delivery:** Customers receive their orders at their preferred locations, saving them time and effort.
- **Customer support:** Customers can seek assistance and resolve any issues they encounter during the shopping process.

Question 2 – SWOT

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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: -

To conduct a SWOT analysis for an online agricultural store, Mr. Karthik should consider the following aspects:

Strengths:

- **Wide range of products:** The online store may have a diverse selection of agricultural products, catering to the needs of different customers.
- **Convenience:** Online shopping offers convenience to customers, allowing them to browse and purchase products from the comfort of their homes.
- **Cost-effective:** Operating an online store can be more cost-effective compared to a physical store, as it eliminates the need for rent and other overhead expenses.
- **Accessibility:** The online store can reach a wider audience, including customers from remote areas who may not have access to physical stores.

Weaknesses:

- **Limited sensory experience:** Customers cannot physically touch or examine the products before purchasing, which may lead to hesitation or dissatisfaction.
- **Technical issues:** Online stores may face technical glitches or downtime, affecting the user experience and potentially leading to lost sales.
- **Lack of personal interaction:** Online stores may lack the personal touch and customer service that physical stores can provide.
- **Shipping and logistics:** Managing the logistics of delivering agricultural products can be challenging, especially for perishable items or large quantities.

Opportunities:

- **Market expansion:** The online store can tap into new markets and reach customers beyond their local area, potentially increasing sales and revenue.
- **Diversification:** The online store can explore offering additional services or products related to agriculture, such as consulting or educational resources.
- **Partnerships:** Collaborating with other agricultural businesses or influencers can help increase brand visibility and attract new customers.

- **Data-driven decision making:** The online store can leverage customer data to gain insights into purchasing patterns and preferences, enabling targeted marketing strategies.

Threats:

- **Competition:** The online agricultural store may face competition from other online retailers or local physical stores offering similar products.
- **Cybersecurity risks:** Online stores are vulnerable to cyber threats, such as data breaches or hacking attempts, which can compromise customer information and damage the store's reputation.
- **Changing consumer behavior:** Shifts in consumer preferences or buying habits can impact the demand for agricultural products and affect the store's sales.
- **Regulatory challenges:** Compliance with agricultural regulations, such as certifications or permits, can pose challenges and increase operational costs.

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

Ans: -

When conducting a feasibility study for an online agricultural store, there are several key points to consider. These points include hardware and software requirements, trained resources, budget, and time frame. Let's explore each of these points in detail:

Hardware Requirements

1. **Servers:** Determine the number and specifications of servers required to host the online store. Consider factors such as website traffic, database storage, and processing power.
2. **Networking:** Assess the network infrastructure needed to ensure smooth and secure communication between the online store and customers, suppliers, and other stakeholders.
3. **Devices:** Identify the devices (computers, tablets, smartphones) that customers and employees will use to access the online store. Ensure compatibility across different platforms and screen sizes.

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Software Requirements

1. **E-commerce Platform:** Choose a suitable e-commerce platform that supports agricultural products and provides features like product listings, shopping cart, payment gateways, and inventory management.
2. **Content Management System (CMS):** Consider using a CMS to manage website content, product descriptions, and images. This will make it easier to update and maintain the online store.
3. **Security Measures:** Implement robust security measures to protect customer data, prevent unauthorized access, and ensure secure online transactions.

Trained Resources

1. **Technical Expertise:** Assess the availability of trained resources with expertise in Java and web development. Consider their knowledge of e-commerce platforms, CMS, and security protocols.
2. **Marketing and Sales:** Determine the skills required for marketing and promoting the online agricultural store. This may include digital marketing, social media management, and customer support.

Budget

1. **Development Costs:** Estimate the costs associated with website development, including software licenses, server infrastructure, and hiring developers if needed.
2. **Maintenance Costs:** Consider ongoing expenses such as hosting fees, software updates, security measures, and customer support.
3. **Marketing and Promotion:** Allocate a budget for marketing and advertising campaigns to attract customers and increase brand visibility.

Time Frame

1. **Development Timeline**: Define a realistic timeline for website development, testing, and deployment. Consider factors such as complexity, customization requirements, and availability of resources.
2. **Launch and Growth**: Plan for the time required to attract customers, establish partnerships with suppliers, and optimize the online store based on user feedback.

By considering these points in your feasibility study, Mr. Karthik will be able to assess the viability and potential success of an online agricultural store in the Java technology domain.

Question 4 – Gap Analysis:

1. **Website Design and User Experience**: Compare the current website design and user experience with the desired future state. Identify any gaps in terms of navigation, layout, responsiveness, and overall user-friendliness.
2. **Product Catalog and Inventory Management**: Analyze the existing product catalog and inventory management system. Identify any gaps in terms of product categorization, search functionality, stock management, and integration with suppliers.
3. **Order Processing and Fulfillment**: Evaluate the current order processing and fulfillment process. Identify any gaps in terms of order placement, payment processing, order tracking, and delivery management.
4. **Customer Relationship Management**: Assess the existing customer relationship management system. Identify any gaps in terms of customer data management, personalized marketing, customer support, and feedback management.
5. **Marketing and Promotion**: Compare the current marketing and promotion strategies with the desired future state. Identify any gaps in terms of online advertising, social media presence, email marketing, and customer engagement.
6. **Analytics and Reporting**: Evaluate the existing analytics and reporting capabilities. Identify any gaps in terms of data collection, analysis, reporting, and decision-making support.
7. **Security and Privacy**: Assess the current security and privacy measures in place. Identify any gaps in terms of data protection, secure transactions, user privacy, and compliance with regulations.
8. **Integration and Scalability**: Analyze the existing system's integration capabilities and scalability. Identify any gaps in terms of integrating with third-party systems, scalability to handle increased traffic and transactions, and future expansion plans.
9. **Training and Support**: Evaluate the current training and support provided to users. Identify any gaps in terms of user documentation, training materials, customer support channels, and self-help resources.

Question 5 – Risk Analysis:

Business Analysis Risks

- **Market Demand:** There may be a lack of demand for agricultural products online, leading to low sales and revenue.

- **Competition:** The presence of established online agricultural stores may make it difficult to attract customers and gain market share.
- **Supplier Reliability:** Dependence on suppliers for timely delivery of agricultural products may lead to delays or stockouts.
- **Pricing Strategy**: Incorrect pricing strategies may result in either low profit margins or uncompetitive prices.
- **Customer Adoption:** Customers may be hesitant to adopt online platforms for purchasing agricultural products due to trust or convenience issues.

Process/Project Risks

- **Technology Infrastructure:** Inadequate or unreliable technology infrastructure may lead to website downtime or slow performance.
- **Data Security:** The online store may be vulnerable to data breaches, leading to the compromise of customer information.
- **Payment Processing:** Issues with payment processing systems may result in failed transactions or financial losses.
- **Logistics and Delivery:** Challenges in managing logistics and ensuring timely delivery of agricultural products to customers.
- **Regulatory Compliance:** Failure to comply with agricultural regulations and certifications may result in legal penalties or loss of reputation.

Question 6 – Stakeholder Analysis (RACI Matrix)

Below is the list of Stakeholders.

Project Stakeholders

- Business Analyst – Rohini
- Delivery Head – Mr Karthik
- Project Manager – Mr Vanadanam
- Development Team – MS Juhi, Mr. Teyson, Ms Lucie, Mr Tucker, Mr Bravo
- Testing Team - Mr Jason and Ms Alekya
- Network Admin - Mr Mike and DB Admin is John.

Business Stakeholders

- Business Sponsor - Mr. Henry
- Influencers - Peter, Kevin and Ben.
- Finance team - Mr Pandu
- Project Team - Mr Doku

Question 7 – Business Case Document

Sr. No.	Questions
1	**Why is this project initiated?**
	Mr. Henry identified need for farmers to deliver them agriculture products on their doorstep and opportunity for himself to capitalize an opportunity.
2	**What are the current Problems?**
	Difficulties in procuring fertilizers which are very important for farm. Buying seeds for farming certain crops and lack of pesticides which could help in greatly reducing pests in crops.
3	**With this project, how many problems could be solved?**
	This project will facilitate farmers to buy seeds, pesticides, and fertilizers from anywhere through internet connectivity.
4	**What are the resources required?**
	Financial resources such as banks, investors. Manpower such as packers, delivery boys Developers and testers to test and develop the project. Sellers/Dealers to tie up and sell products online.
	How many organizational changes is required to adopt this technology?
	No Change required as such
	What is the time frame to recover ROI?
	6 Months
	How to identify stakeholders?
	Stakeholders are identified on below basis: Understanding purpose of identifying stakeholders. Determine their impact on the project. Their needs in relation to the project. Mr. Henry, Peter, Kevin, Ben, Farmers and sellers are the prime stakeholders

Following is the high-level scope for this engagement:

- Requirement Study

- Design
- Testing
- Development

Question 8 – Four SDLC Methodologies

Waterfall is broken down into phases, and other modern methodologies can even pull from these phases and utilize them, these phases are:

- Requirement Analysis
- Planning
- Architectural Design
- Software Development
- Testing
- Deployment
- Maintenance

According to the Waterfall method, the software development process goes through all the SDLC phases with no overlapping and consists of a single development cycle. According to the fact that it is a linear sequential life cycle model, any phase in the development process can begin only if the previous one is complete. Teams are large and everyone on the team like business analysts, architects, developers, tester, operations, etc. all work within their own divisions.

months or even years to complete, which means, if it doesn't meet user expectations,

changes are extremely slow and expensive. In many cases, defects are not recognised/fixed

at all.

Likewise, due to the lack of feedback from customers or other stakeholders during the design

and development process, it's quite common for Waterfall teams to build unnecessary or under-used features, leading to wastage of time, effort, and capital.

2. The Iterative Model – Rational Unified process

The Iterative methodology was an early precursor to Agile. The iterative process is the practice of

building, refining, and improving a project/product.

With the Iterative Model, only the major requirements are known from the beginning. Based on

these, the development team creates a quick and cheap first version of the software. Then, as

additional requirements are identified, additional iterations of the software are designed and built.

Each iteration goes through all the phases of the SDLC, and these cycles are repeated until

completion. It is common for the team to work on several SDLC phases at the same time.

3. Evolutionary - Spiral Model

A Spiral Model of Software Development and Enhancement." The Spiral Model boils down to a

metamodel, which evaluates the specific risk profile of the project before recommending an

approach that blends aspects of the other popular methodologies of the day, including Iterative and

Waterfall. As such, it rejects a one size fits all approach to process model adoption.

4. Agile

Agile is the mainstream methodology used in modern software development and expands its

influence beyond coding into many aspects of product development, from ideation to customer

experience.

The Agile methodology breaks a project down into multiple cycles, each passing through some or all

the SDLC phases. The focus is on people and how they work together to get the project done. Agile

calls for continuous collaboration between team members and stakeholders with regular cycles of

feedback and iteration.

The Agile Manifesto's 4 Core Values

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

Agile Roles

Agile Roles assign responsibilities to members of the team. They are different than positions

as a single person can take on multiple Agile roles depending on the scope of the project.

Conversely, multiple people can share the same role. Here are some of the roles in an Agile

Project:

Product Owner – He/she defines the product vision based on all insights, feedback, and

ideas gathered. He/she is the owner of the product requirements and works closely with the

development team to communicate the vision by documenting it in short narratives called

User Stories. User Stories typically include a name, description, reference to any external

documents, and an explanation of how to test the implementation. Product Owners often

maintain a backlog of User Stories if there are too many to be executed concurrently.

Scrum Master – This role is all about making sure the team is following Agile principles,

values, and processes.

Team Member – All members of the development team have different skills and

collaborate to build functional software. Teams would include Developers, QA engineers,

business analysts, database engineers, etc and more depending on the project scope.

Advantages of Agile Methodology

- Deliver software well-tailored to the understanding of customer demands.
- Software is deployed more quickly and improved more regularly.
- Better code hygiene including style, readability, and structuring.
- Flexible and adaptable process enables pivots or changes mid-project.
- Doesn't require a complete list of requirements upfront.
- Makes room to act on organizational learning as the project progresses.
- Transparency and continuous communication with involved stakeholders.

Agile Frameworks

Organizations can choose to adopt a single Agile framework, or they can combine elements

of multiple frameworks to suit the needs of the project and characteristics of the team.

Scrum is a very popular Agile framework characterized by continuous collaboration, frequent

deliveries, and special development cycles called 'Sprints'. Scrum revolves around the

following checkpoints:

- Planning meetings- in which the team identifies and discusses the Sprint priorities.
- Commitment meetings- in which the team reviews the backlog of user stories to determine

how much effort it involves and how much work can be done during the upcoming Sprint.

- Daily standup meetings- which are notably short meetings that ensure everyone is aligned.

In this regard, each team member communicates updates on story status, blockers, or

concerns.

- Demo meetings- which the team attends at the end of each Sprint to show the

functionalities implemented during the current sprint to the Product Owner.

• Retrospective meetings- which are also hosted at the end of each Sprint to discuss lessons

learned, what went well, and what needs improvement.

Scrum introduces the Scrum Master role to the Agile method. The Scrum Master's job is to manage and improve processes, help the team stay authentic to Agile values, and focus on maximizing productivity. A good Scrum Master ensures that the process and progress are transparent to all stakeholders.

Question 9 – Waterfall RUP Spiral and Scrum Models

They discussed models in SDLC like waterfall RUP Spiral and Scrum. You put forth you're

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:

As a BA I would be choosing Waterfall methodology because:

It is a simple & easy to understand model. The complete process is divided into several phases. One phase should be completed to reach the next phase.

The first phase is requirement gathering and analysis. The requirements are then documented. It is called the Software Requirement Specification (SRS). The next is the swot system design phase. It is to design the entire software architecture. Next phase is the implementation phase. It is to start coding the small units. These units are combined to form the complete system and tested in the integration and testing phase. After the testing is completed, the software is distributed to the market. The activities such as maintenance of the software and adding new features come under deployment and maintenance.

Question 10 – Waterfall Vs V-Model

Write down the differences between waterfall model and V model.

Sr. No	**Waterfall Model**	**V Model**
1	The waterfall model is a relatively linear sequential design approach to develop software projects.	The V model is a model in which the execution of the phases happen in a sequential manner in a v shape.
2	The waterfall model is a continuous process.	The V model is a simultaneous process.
3	In waterfall model, the total defects in the developed software is higher.	In v model, the total defects in the developed software are lower.
4	In waterfall model, the defects are identified in the testing phase.	In v model, the defects are identified from the initial phase.

Question 11 – Justify your choice - 1 Marks.

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

Ans:

As a BA I would be choosing Waterfall methodology.

Waterfall model is an easy to understand and simple model. The complete process is divided into

several phases. One phase should be completed to reach the next phase.

The first phase is requirement gathering and analysis. The requirements are then documented. It is called the Software Requirement Specification (SRS).

The next is the system design phase. It is to design the entire software architecture.

Next phase is the implementation phase. It is to start coding the small units. These units are combined to form the complete system and tested in the integration and testing phase. After the testing is completed, the software is distributed to the market. The activities such as maintenance of the software and adding new features come under deployment and maintenance.

This model is appropriate for small projects and when the requirements are very clear.

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.

Ans: -

	Week 1	**Week 8**	**Week 15**	**Week 22**	**Week 29**	**Week 36**	**Week 43**	**Week 50**	**Week 57**	**Week 64**	**Week 71**	**Week 78**
	RG											
		RA										
			DESIGN									
				D1								
					T1							
						D2						

							T2					
								D3				
									T3			
										D4		
											T4	
												UAT
Resources												
PM						**1**						
BA						**1**						
Java Developers			**5**	**5**		**5**		**5**		**5**		
Testers												
DB Admin						**1**						
NW Admin						**1**						

Question 13 – Fixed Bid Vs Billing

Fixed Bid: The Requirements are frozen at the start of the project and estimates are made based on

those requirements. The Resource estimation for the entire project is done beforehand. Based on

the project requirement the number of resources required at each stage is decided. The cost of

developing the entire product is estimated once the requirements are discussed. Cost can increase or

decrease when a change is introduced, each change would involve a plan realignment. In a few cases,

iterations are introduced to improve software quality. Each stage is executed with defined timelines.

A change cannot be accommodated here. Some organizations initially agree on the price of each

Change that will be introduced, and a Change Request is created for it to be executed. The timelines

for the development of the entire software are predefined and the development firm should adhere

to it as it is contractually bound.

Billing: The requirements are defined at the beginning here. These requirements may increase while

software development. The resource requirements vary based on the user stories and changes

introduced. Budget may increase in case of a complex feature-intensive delivery and can reduce

when the changes are simple. Work is estimated, based on the resources required to develop each

User Story. The combination of these deliverables can be used for the budget estimation. Hence, as

each User Story is taken up, (parallelly or sequentially) the resources and utilities on each can be

defined. Here change requests can be easily accommodated. Resources and timelines are flexible

and can be adjusted based on the revised course. Timelines for individual iterations are defined. The

timelines for delivery are defined considering no dynamic changes in the requirements.

Question 14 – Prepare Timesheets of a BA in various stages of SDLC

a) Design Timesheet of a BA - Once the analysis completed, we will design the product

Day 1	Date	Task	Log In	Log Out	Hours	
Monday	14/4/2025	Preparing test cases	8:00 AM	9:00 AM	1	
		Allocating the reuqirements	9:00 AM	10:00 AM	1	
		Identifying Improvement opportunities	10:00 AM	11:00 AM	1	
		Assessing design options	11:00 AM	2:00 PM	3	
		Estimating benefits and costs	2:00 PM	3:00 PM	1	
		Communicate with client about design a	3:00 PM	5:00 PM	2	
		Recommending solutions	5:00 PM	6:00 PM	1	

b) Development Timesheet of a BA- Developer team will design the product

Day 1	Date	Task	Log In	Log Out	Hours
Tuesday	15/4/2025	Coordinate meetings with the team	8:00 AM	9:00 AM	1
		Checking on the approvals after each development phases	9:00 AM	11:00 AM	2
		Clarifies all uries of technical teams at the end of each phases	11:00 AM	1:00 PM	2
		Outlining business reqirements	1:00 PM	2:00 PM	1
		Working on Change in reuirements in development stage from client	2:00 PM	4:00 PM	2

c) Testing Timesheet of a BA- Testing team will do testing of the developed product

Day 1	Date	Task	Log In	Log Out	Hours
Wednesday	16/4/2025	Work with testing team to create system plan	8:00 AM	9:00 AM	1
		Create and execute the system test cases	9:00 AM	11:00 AM	2
		Review system cases prepared by testing team	11:00 AM	1:00 PM	2
		Provide reuirements clarifications when required by the testing team	1:00 PM	2:00 PM	1
		Take sign off from client on client project acceptence form	2:00 PM	4:00 PM	2

d) UAT Timesheet of a BA- This UAT testing will be done by BA

Day 1	Date	Task	Log In	Log Out	Hours
Thusday	17/4/2025	Develop the detailed UAT test plan	8:00 AM	9:00 AM	1
		Develop the test case senarios	9:00 AM	11:00 AM	2
		Create UAT test cases	11:00 AM	1:00 PM	2
		Test case data preparation	1:00 PM	2:00 PM	1
		Run the test cases	2:00 PM	4:00 PM	2

e) Deployment n Implementation Timesheet of a BA- After user acceptance test done, then deployment and implementation will be done.

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Day 1	Date	Task	Log In	Log Out	Hours
Friday	18/4/2025	Design RTM and forword to client	8:00 AM	9:00 AM	1
		Coordinate to complete manual	9:00 AM	11:00 AM	2
		Training sessions for the end users	11:00 AM	3:00 PM	4
		Prepare a lession learning from the	3:00 PM	4:00 PM	1