

CAPSTONE PROJECT 1: ONLINE AGRICULTURE PRODUCTS STORE

By Raunak Sharma

QUESTION – 01

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

ANSWER – 01

Business Process Model is a data of the business process and its sub process. It helps organization to document the workflows, automate the processes & pin-point crucial problems. BA can give end-to-end views on the business process through BPM.

The Business Process Model for an Online Agriculture Store is as following:

- a) **Goal** – Build a user friendly platform/application for farmers and agriculture products manufacturer & suppliers to bridge the gap between them, which will help in increase in the sale of products.
- b) **Inputs** – Products Catalogue, Vendor/Suppliers Profile, Payment Gateway and Technology for Website/Software.
- c) **Resources** – Products, Funds, Server, User – Buyer/Seller and Manpower/Team – Developing, Testing, Marketing, Support for customer and supplier.
- d) **Output** – A user friendly agriculture product website/app for farmers for purchasing seed, pesticides, fertilizers etc. with smooth payment and delivery of products.
- e) **Activities** –
 - i. **Supplier** – Registering themselves on platform, listing of products, sale of products and delivering the products.
 - ii. **Buyer/Farmers** – Creating user login and login on platform, browsing products through catalogue, adding to cart and completing the purchase by making payment from various modes of payment.
 - iii. **Application/Website** – Access to the buyer/supplier, confirming/intimating the sale of product to buyer/supplier, providing the payment support/gateway and completing the payment, delivering the products through its deliver channels to the buyer, giving payment to suppliers, delivery intimations, cancellation of product and refund of money.

- f) **Value Addition** – Remote area farmers can easily get agriculture products from manufacturers/sellers/dealers etc. It will be convenient for customers to buy online, and they can save time and travelling cost.

QUESTION – 02

Mr. Karthik is doing SWOT analysis before he accepts this project. What aspects he should consider as Strengths, as Weaknesses, as Opportunities and as Threats.

ANSWER – 02

SWOT analysis serves as a strategic assessment method employed to identify and assess the Strengths, Weaknesses, Opportunities, and Threats involved in a project.

The SWOT analysis for an Online Agriculture Store is as following:

Strength

- Business knowledge of Mr. Henry.
- Result oriented resources for development.
- First Mover Advantage of market.
- Ground Knowledge from Stakeholders.
- Access to funds and time span of 18m to develop the application.

Weakness

- Availability of stock at all the time.
- Everyone cannot be tech savvy.
- Access to internet connectivity in remote location.
- Weather can affect the delivery and its cost.

Opportunities

- Access to big and untapped market.
- Increase the convenience of customer which grow the brand value.

Threat

- Generic Technology which can used by competitors.
- Delivery at remote area can be concern.
- Local vendors in the area.
- Fraud suppliers who are on boarded on platform.

QUESTION – 03

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 – 03

Feasibility study is an assessment of the practicality of a proposed plan or project. A feasibility analyses the viability of a project to determine whether the project or venture is likely to succeed. The feasibility study focuses on helping answer the essential question of “should we proceed with the proposed idea or not”. We have to work on identifying the possibilities of project success within some constraints such as technology, budget, manpower and time.

Hardware – As it is e-commerce platform, the hardware for such platform is the servers to keep available database for smooth functioning of website/application.

Software – We have existing tech such as payment gateway platforms, website for ecommerce for creating platform as per the requirement.

Trained Resources – We have available pool of talented resources in required numbers.

Budget and Time – We have budget of Rs. 2 Cr with 18m of time frame.

On the basis of above understanding we can assume that the project is feasible to go ahead.

QUESTION – 04

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 – 04

GAP Analysis is an assessment tool, which will compare the current state and desired future state of an organization in order to identify differences that need to be addressed.

It will revolve around -

- Where are we?
- Where do we want to be?

AS IS PROCESS: Farmers are facing difficulties in procuring fertilizers, seeds, pesticides and other agricultural products which is important for farming.

TO BE PROCESS: To avoid purchase of agricultural products manually, client is making an online platform. It will be a one stop solution to connect farmers to suppliers/sellers, online, anywhere and anytime which will reduce the time and improve the availability of products and delivered at their doorsteps.

QUESTION – 05

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

ANSWER – 05

Risk Analysis is done to determine if the proposed project carries more risk than the organizations capacity to support. Risk Identification is the process to identify the business, financial, technological and operational risk.

BA Risks – Improper requirement gathering, change request during project can lead to scope creep, proper management of resources during project for timely project delivery, domain knowledge and wrong identification of third party partners for delivery and payment.

Process/Project Risks – Farmers may not be tech savvy, may prefer offline store over online purchase, payment related issues like failure or refund and internet connectivity in remote areas.

Internal/External Risks – Govt. policies, operating risks, competitions from other website and local vendors.

Operational Risks – Logistics and delivery lapses, delivery personnel mismanagements, high cost of delivering at remote areas.

QUESTION – 06

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

ANSWER – 06

A RACI chart, also called a RACI matrix, is a type of responsibility assignment matrix (RAM) in project management. In practice, it's a simple spreadsheet or table that lists all stakeholders on a project and their level involvement in each task, denoted with the

letters R, A, C or I which stands for Responsible, Accountable, Consulted and Informed respectively.

The Stakeholder Analysis Based on the RACI Matrix for an Online Agriculture Store is as following:

List of identified stakeholder as follows,

- Project Sponsor – Mr. Henry
- Project Coordinator – Mr. Dooku
- Finance Head – Mr. Pandu
- Delivery Head – Mr. Karthik
- Project Manager – Mr. Vandanam
- Developer Team – Ms. Juhi, Mr. Teyson, Mr. Tucker, Mr. Bravo
- Network Admin – Mr. Mike
- Database Admin – Mr. John
- Tester – Mr. Jason and Ms. Alekya
- Business Analyst – Mr. Raunak
- Consultant – Peter, Kevin and Ben

RACI MATRIX for key stakeholders is as follows -

Name	Designation	Responsible	Accountable	Consulted	Informed
Mr. Henry	Sponsor	Yes			
Mr. Pandu	Finance Head	Yes			
Mr. Dooku	Project Coordinator		Yes		
Mr. Peter, Kevin & Ben	Friends			Yes	
Mr. Vandanam	PM		Yes		
Vendors and Customer	User				Yes

QUESTION – 07

Help Mr. Karthik to prepare a business case document.

ANSWER – 07

A Business Case Document is formal written argument intended to convince a decision maker to approve some kind of action. A Business Case provides justification for undertaking a project or program.

Business Case Document must answer the following questions?

- **Why Project is initiated?**

Mr. Henry visited his friends and identified need of farmers for getting agri. products at doorstep with multiple options of suppliers and to capitalize the business opportunities.

- **What are the current problems?**

Farmers are struggling to procure quality agri. products hassle free and at reduce costs.

- **What are the resources required?**

Human resource for development of application/website, vendors for tie-ups, technical and financial resources related to development of application/website.

- **How much organizational change is required to adopt this technology?**

No Change required as such other than technological understanding to support smooth functioning of business.

- **With this project how many problems could be solved?**

It will resolve the problem faced by the farmers for procuring agri. products.

- **Time frame to recover ROI?**

The time frame of completion of project is 18m and it will ideal if the ROI will be recover in 24m.

- **How to identify stakeholders?**

We have prepared a RACI matrix and identified stakeholders of this project.

QUESTION – 08

The Committee of Mr. Henry, Mr. Pandu, 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.

ANSWER – 08

SDLC (Software development Life Cycle) is a software development methodology and systematic process for building software that ensures the quality and correctness of the software built. It aims to produce high quality software that meets customer expectations. It consists of detailed plan which explains how to plan, build and maintain specific software. It has its own process and deliverable that feed into the next phase.

STAGES OF SDLC –

- Requirement Gathering.
- Requirement Analysis
- Designing
- Development
- Testing
- Deployment
- Maintenance

Here we are going to discuss 4 SDLC methodologies which are –

- A. SEQUENTIAL – WATERFALL
- B. ITERATIVE – RATIONAL UNIFIED PROCESS
- C. EVOLUTIONARY – SPIRAL
- D. AGILE – SCRUM

1. SEQUENTIAL – WATERFALL

- It is referred as a linear sequential life cycle model; also, most common and classic model used for software development.
- In a waterfall model, each phase must be completed in its entirety before the next phase can begin.
- At the end of each phase, a review takes place to assess that the project is on its right path and whether to continue with project or not.
- In this method, entire project is delivered at the end of the deadline.

In sequential – waterfall methodologies SDLC runs in mentioned phases –

- Requirement Gathering
- Requirement Analysis
- Design
- Development
- Testing
- Deployment
- Maintenance

2. ITERATIVE – RATIONAL UNIFIED PROCESS (RUP)

- RUP is software development process for object-oriented model.
- In this method software is delivered in the modules.
- The whole process is divided into a particular number of iterations and during each of them developers build a limited number of features.
- The main goal of RUP is to create high quality software with a predictable budget and time frame.

Iterative model has four phases that are as follows –

- **Inception –**

During the Inception phase, we –

- Determine the project's goals
- Align our stakeholders around them
- Assess the project's viability and suitability
- Carry out an initial risk analysis to find potential major risks to the success of your project.
- Develop a business case and secure funding
- Develop the structure and high-level plan for the project

- **Elaboration –**

During the Elaboration phase, we analyze the project's requirements in depth, to fully understand the end-product.

We also aim to:

- Mitigate any high-risk aspects of the project.
- Ensure the project team builds a comprehensive, shared understanding of the system.
- Elaborate and refine the users' requirements
- Create a preliminary design

- **Construction –**

This is the phase where we develop the software system. The principle we follow is to construct it, as far as possible, from pre-existing, tested components. Where features need something new, this is also when we code them.

Once we have built an application, it is also tested in the construction stage.

- **Transition –**

The final stage in the RUP product development life cycle marks the transition from development to production, where the software becomes available to its users.

The transition phase sees:

- Final end-to-end testing of the software
- Dealing with problems and defects
- Software release and distribution to customers or end-users

3. EVOLUTIONARY – SPIRAL

Spiral Model is an evolutionary software process model that couples the iterative feature of prototyping with the controlled and systematic aspects of the linear

sequential model. It implements the potential for rapid development of new versions of the software. It gives more emphases placed on the risk analysis.

It has four phases –

- Planning – Requirement Gathering.
- Risk analysis – Identify risk and alternative solution.
- Engineering – Software Development & Testing.
- Evolution – Allow customer to evaluate output.

The software project repeatedly passes through these phases in iterations called spiral.

4. AGILE – SCRUM

Agile is the most popular method to use. In this methodology, project is getting delivered from the beginning. Clients start using the software immediately.

Continuous support goes on and change request are acceptable are possible at each phases during the delivery.

Agile scrum methodology is a sprint – based project management system with the goal of delivering the highest value to stakeholders.

Agile lets teams develop project in small increments called “Sprints” and allows for more effective collaboration among teams working on complex projects.

Key aspects of Scrum –

- **Sprints –**
Scrum teams work in short, iterative cycles called sprints, typically lasting 1-4 weeks.
- **Sprint Planning –**
At the beginning of each sprint, the team plans the work that will be completed during that sprint.
- **Daily Scrum –**
A daily, short meeting where the team discusses progress, roadblocks, and upcoming tasks.
- **Sprint Review –**
At the end of the sprint, the team demonstrates the completed work to stakeholders and gathers feedback.
- **Sprint Retrospective –**
A meeting where the team reflects on the sprint, identifies areas for improvement, and plans for the next sprint.

QUESTION – 09

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 – 09

The Waterfall, RUP (Rational Unified Process), Spiral, and Scrum models are distinct software development methodologies.

- **Waterfall Model –**

A sequential, plan-driven model where each phase (requirements, design, implementation, testing, deployment, maintenance) is completed sequentially, with no going back.

Strengths – Simple to understand, easy to manage, and suitable for projects with well-defined requirements.

Weaknesses – Not flexible, difficulty accommodating changes, and software delivery is delayed until late in the cycle.

- **RUP (Rational Unified Process) –**

An iterative and incremental approach that combines aspects of linear and agile methodologies.

Phases – Inception, Elaboration, Construction, and Transition, each further broken down into iterations.

Strengths – Flexibility, risk management, and iterative development.

Weakness – Mostly dependent on the ability of the experts and professionals to assign activities.

- **Spiral Model –**

An iterative model that emphasizes risk analysis and allows for incremental refinement in each iteration.

Strengths – Well-suited for large, complex projects, and projects with evolving requirements, risk management, and accommodating changes.

Weaknesses – Can be complex, requires specialized expertise, and may not be suitable for small projects.

- **Scrum –**

An agile framework that uses iterative sprints to develop software in short cycles.

Strengths – Adaptability, flexibility, faster delivery, and improved team communication.

Weaknesses – May not be suitable for projects with poorly defined requirements or those that require a fully defined process.

In my capacity as a business analyst, I would advise using water fall model, as it has structured approach with fix stages. 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. At the end of each phases, reviews are done to know if the project is going on the correct path or not.

QUESTION – 10

Write down the differences between waterfall model and V model.

ANSWER – 10

Difference between Waterfall v/s V Model –

WATERFALL MODEL	V – MODEL
In waterfall model, testing activities start after the development activities are over.	In v – model, testing activities start with the first stage.
Waterfall model is a continuous process.	V – Model is a simultaneous process.
Waterfall model is a simple model.	V – Model is an intermediate model.
Waterfall model is low-cost model.	V – Model is expensive model.
Less flexible	More flexible

QUESTION – 11

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

ANSWER – 11

In this project, waterfall model would be good option, as it has structured approach with fix stages.

At the end of each phases, reviews will be done to know if the project is going on the correct path or not.

Since the waterfall model is ideal when the project has clear and well defined requirement, like this project where Mr. Henry has requested for e – commerce platform for agriculture products, we will be using the Waterfall Model.

QUESTION – 12

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

A Gantt Chart is project management tool that illustrates a project plan. It is the most popular way of showing activities/task/events displayed against time.

Typically, it includes two sections the left side outlines a list of tasks, while the right side has a timeline with schedule bar that visualize work.

GANNT CHART FOR ONLINE AGRICULTURE PRODUCT STORE:

Gantt Chart Phase Wise								
Phases	Week 1	Week 12	Week 24	Week 36	Week 48	Week 60	Week 72	Week 78
RG	7 Weeks							
RA		7 Weeks						
Design			17 Weeks					
Dev.				38 Weeks				
Test						18 Weeks		
Dep.								3 Weeks

Gantt Chart Resource Wise									
Resource	Week 1	Week 12	Week 24	Week 36	Week 48	Week 60	Week 72	Week 78	
PM	1								
BA	1								
DB		1							
Dev.				5					
Test						3			
NW	1								

QUESTION – 13

Explain the difference between Fixed Bid and Billing projects.

ANSWER – 13

Without billing cash flow we will dry up and business start facing problems in day-to-day activities. There are various billing process and each of them working well with different types of projects. Factors like project duration, employee billing rates, types of industry as well as diversity and number of services offered affect project billing.

In turn, project billing influences the financial health of your business. Thus, you have to put a lot of efforts before choosing a project billing method. The different types of billing methods are Fixed Bid, Hourly Rate Billing, Assignee Hourly Rate, The Retainer, Pricing the Milestone; out of this Fixed Bid Model and Billing Model is discussed in detail below.

- **FIXED BID MODEL –**

A Fixed Bid Model is a model that guarantees a fixed budget for the project, regardless of the time and expense. It allows the client to plan and set an exact budget. It is the best suitable approach for projects with a strictly defined scope and requirements that won't change.

Any changes will require additional estimation and additional contract.

So, one of the main requirements of using the fixed cost pricing model is to precisely define the scope and technical requirements upfront.

- **BILLING MODEL –**

Billing Model involves regularly paying for work completed. With this model, the client plays a greater role in the development of the software solution and carries all risks related to the scope of work.

The level of responsibility that the client carries for the whole development process with billing model is much higher than with fixed bid project.

This model allows greater flexibility in terms of project scope. The workflow is strictly planned here.

QUESTION 14

Prepare Timesheets of a BA in various stages of SDLC

1. **Design Timesheet of a BA.**
2. **Development Timesheet of a BA.**
3. **Testing Timesheet of a BA.**
4. **UAT Timesheet of a BA.**
5. **Deployment and Implementation Timesheet of a BA.**

ANSWER 14

Timesheets of BA is at different phases is as follows –

Time Sheet – Design Phase
Project – Online Agriculture Store

Day Date	9am to 11am	11am to 12pm	12pm to 2pm	2pm to 3pm	3pm To 5pm	5pm to 6pm
Monday 02 JUN 25	Prep. Test Case	Prep. Test Case	Status Update to Client		Prep. Test Case	Prep. Test Case
Tuesday 03 JUN 25	Prep. End User Manual	Prep. Test Case	Arch. IT Solution		E-R Diagram	RTM Update
Wednesday 04 JUN 25	E-R Diagram	Data Flow Diagram	Discussion with GUI Designer		Prep. End User Manual	RTM Update
Thursday 05 JUN 25	E-R Diagram	Data Flow Diagram	Screen Design		Status Update to Client	Status Update to Client
Friday 06 JUN 25	Data Flow Diagram	Screen Design	Screen Design		Prep. End User Manual	RTM Update
Saturday 07 JUN 25	Weekly Off					
Sunday 08 JUN 25	Weekly Off					

Time Sheet – Development Phase
Project – Online Agriculture Store

Day Date	9am to 11am	11am to 12pm	12pm to 2pm	2pm to 3pm	3pm To 5pm	5pm to 6pm
Monday 07 JULY 25	JAD Session	Query Session	Status Update to Client		JAD Session	Query Session
Tuesday 08 JULY 25	JAD Session	Query Session	Discussion with Dev. Team		Updating End User Manual	RTM Update
Wednesday 09 JULY 25	Meeting With Client	Meeting with PM	Status Meeting with Tech Team		Query Session	Updating End User Manual
Thursday 10 JULY 25	Discussion with Dev. Team	Query Session	Updating End User Manual		Updating End User Manual	RTM Update
Friday 11 JULY 25	Team Status Meeting	Meeting with PM	Updating End User Manual		RTM Update	Updating End User Manual
Saturday 12 JULY 25	Weekly Off					
Sunday 13 JULY 25	Weekly Off					

Time Sheet – Testing Phase
Project – Online Agriculture Store

Day Date	9am to 11am	11am to 12pm	12pm to 2pm	2pm to 3pm	3pm To 5pm	5pm to 6pm
Monday 01 SEP 25	Prep. Test Case	High Level Testing	Prep. Test Case		High Level Testing	Prep. Test Case
Tuesday 02 SEP 25	Prep. Test Case	High Level Testing	Prep. Client for UAT		RTM Update	End User Manual Update
Wednesday 03 SEP 25	Test Data from Client	High Level Testing	Test Data from Client		High Level Testing	Test Data from Client
Thursday 04 SEP 25	End User Manual Update	RTM Update	Meeting with PM		RTM Update	Sign off
Friday 05 SEP 25	National Holiday				National Holiday	
Saturday 06 SEP 25	Weekly Off					
Sunday 07 SEP 25	Weekly Off					

Time Sheet – User Accepting Test (UAT) Phase
Project – Online Agriculture Store

Day Date	9am to 11am	11am to 12pm	12pm to 2pm	2pm to 3pm	3pm To 5pm	5pm to 6pm
Monday 22 SEP 25	Meeting with PM	Status Update to Client	Change Request Handling		Prepare UAT Plan	Prepare UAT Plan
Tuesday 23 SEP 25	Prepare UAT Plan	Create UAT Cases	Create UAT Cases		End User Manual Update	RTM Update
Wednesday 24 SEP 25	Change Request Handling	Test and result Analysis	Test and result Analysis		Change Request Handling	Test and result Analysis
Thursday 25 SEP 25	Change Request Handling	Prepare UAT Plan	Create UAT Cases		Updating End User Manual	RTM Update
Friday 26 SEP 25	Confirmation from Client	Meeting with PM	End User Manual Update		RTM Update	Sign off
Saturday 27 SEP 25	Weekly Off					
Sunday 28 SEP 25	Weekly Off					

Time Sheet – Deployment and Implementation Phase
Project – Online Agriculture Store

Day Date	9am to 11am	11am to 12pm	12pm to 2pm	2pm to 3pm	3pm To 5pm	5pm to 6pm
Monday 06 OCT 25	Forward RTM to PM	Meeting with PM	Status Update to Client		Coordinate to complete End User Manual	Coordinate to complete End User Manual
Tuesday 07 OCT 25	Coordinate to complete End User Manual	Coordinate to complete End User Manual	End User Training Session		End User Training Session	End User Training Session
Wednesday 08 OCT 25	Coordinate to complete End User Manual	End User Training Session	End User Training Session		End User Training Session	End User Training Session
Thursday 09 OCT 25	Coordinate to complete End User Manual	Coordinate to complete End User Manual	End User Training Session		End User Training Session	Prep. Lessons Learned from Project
Friday 10 OCT 25	End User Training Session	Prep. Lessons Learned from Project	Coordinate to complete End User Manual.		Prep. Lessons Learned from Project	Prep. Lessons Learned from Project
Saturday 11 OCT 25	Weekly Off					
Sunday 12 OCT 25	Weekly Off					