**CAPSTONE PROJECT 1**

**PART – 1**

**ONLINE AGRICULTURAL PRODUCT STORE**

1. **Question 1 – BPM**

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

* **Answer:**
* ***Goal:*** The project aims to create an online store or platform for the farmers from the remote areas to so that they can by agriculture products such as Pesticides, fertilizers and seeds.
* ***Input:*** Details of the product form the manufacturers, the customer order and the information regarding payments.
* ***Resources:***  IT Infrastructure, Developer, Tester, Customer Support
* ***Outputs:*** A user-friendly online shopping platform will be created to help the farmers to order their desired items according to their need and receive them easily along with user friendly payment system.
* ***Activities:***
* ***Website or Platform Development and Maintenance:*** Ensure the seamless operation, continuous enhancement, and upkeep of the online platform.
* ***Product Information and Pricing Updates:*** Regularly update product details, availability, and pricing to reflect accurate and up-to-date information.
* ***Order Management and Fulfilment:*** Oversee the processing of customer orders, secure payment handling, and efficient delivery coordination.
* ***Customer Support and Issue Resolution:*** Respond promptly to customer inquiries and address any concerns or issues to ensure a positive user experience.
* ***Value created to the end Customer:***
* ***Convenient Purchasing from Home:*** Farmers can effortlessly buy their desired products without leaving their homes.
* ***Time Efficiency:*** Eliminates the need for farmers to visit physical stores, saving valuable time.
* ***Access to a Wide Product Range:*** Provides farmers with diverse product options to suit their specific needs.
* ***Direct Purchase from Manufacturers:*** Enables farmers to bypass intermediaries and buy directly from manufacturers, ensuring better pricing and authenticity***.***
* ***Improved Planning and Revenue Growth:*** Facilitates advanced planning of purchases and deliveries, helping farmers boost efficiency, sales, and overall revenue.
1. **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:**

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| ***Strength:**** Supported by Mr. Henry and Stakeholders: The project is backed by Mr. Henry, a successful businessman, along with stakeholders who offer valuable insights.
* Skilled IT Team: APT IT Solutions contributes a team of experienced developers and IT professionals dedicated to the project.
* Mission-Driven: The project's mission is to deliver effective IT solutions to benefit rural communities.
* High Potential for Success: With the growing popularity of online marketing platforms, the project has strong potential for success.
 | ***Weakness:*** * Strict 18-Month Timeline: The project must be completed within a limited timeframe of 18 months.
* Lack of Agriculture Project Experience: The company may have no prior experience in developing projects specific to the agriculture sector.
* Budget Constraints: The allocated budget of ₹2 crore may be insufficient to cover all project expenses.
* Knowledge Gaps: The company may lack expertise in the agriculture industry and a thorough understanding of farmers' needs.
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| ***Opportunities:**** New Opportunities for Agriculture: The project could create fresh business opportunities in the agricultural sector.
* Support for Rural Farmers: It offers new possibilities and benefits for farmers in rural areas.
* Enhanced Company Reputation: A successful project can boost the company's reputation and serve as a showcase of its capabilities.
 | ***Threats:*** * Reluctance to Adopt Technology: Farmers might be hesitant to use the new technology.
* Challenges in Rural Deliveries: Ensuring product delivery to remote rural areas could be difficult.
* Limited Internet Connectivity: Poor internet access in rural areas may hinder the platform's usage.
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1. **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:**
* ***Hardware Preparation:*** Mr. Karthik must ensure the company has the necessary hardware, including servers, storage, and network infrastructure, while planning for future scalability as the project grows.
* ***Software Evaluation****:* He should assess the current software systems and libraries used by the company to confirm their compatibility with Java and their suitability for the project.
* ***Skilled Resources****:* Mr. Karthik needs to identify the availability of trained resources proficient in Java and ensure there are enough skilled and experienced team members for the project.
* ***Budget Analysis****:* He must evaluate the project costs and determine if the ₹2 crore budget is sufficient to cover all expenses.
* ***Timeline Assessment****:* Mr. Karthik should review the 18-month timeframe to ensure it is feasible given the project's complexity and account for potential challenges and delays.
1. **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:** GAP Analysis is a strategic planning technique used to compare the current state (where you are now) with the desired future state (where you want to be). It helps identify gaps between these two states and outlines what needs to be done to bridge them.
* ***AS IS:***
* Farmers rely on traditional methods, visiting physical agriculture shops to purchase fertilizers, seeds, and pesticides.
* There is a lack of direct connection between manufacturers and farmers.
* Home delivery services for agricultural products are unavailable.
* Farmers have limited access to a wide range of agricultural products to choose from.
* There is no platform for farmers to rate agricultural product manufacturers.
* Farmers lack a platform to provide feedback to agricultural product manufacturers.
* Farmers cannot purchase agricultural products anytime or from anywhere.
* ***TO BE:***
* Farmers can access an online agricultural product store to purchase fertilizers, seeds, and pesticides.
* The application will allow manufacturers to upload product details and display them to farmers.
* Home delivery services for agricultural products are available.
* Farmers can select agricultural products from a wide range of options.
* Farmers now have a platform to rate agricultural product manufacturers.
* A platform is provided for farmers to give feedback to agricultural product manufacturers.
* Farmers can purchase products anytime and from anywhere.
1. **Question 5—Risk Analysis**

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

* **Answer:**
* ***BA*** ***Risks:***
* **Requirement Gathering**: Insufficient collection and analysis of requirements may negatively affect the project's final outcome.
* **Stakeholder Management**: Conflicting needs or opinions among stakeholders, such as farmers and the project team, can create challenges in reaching consensus on requirements.
* **Communication**: Miscommunication between the Business Analyst, project team, and stakeholders may lead to misunderstandings or incorrect assumptions about the requirements.
* **Change Management**: Modifications to requirements during the project could cause delays or increase costs.
* ***Project Risks:***
* ***Budget Constraints:*** The allocated budget may fall short of covering the development and implementation costs, potentially causing financial challenges
* ***Technical Challenges****:* Development and implementation of the online store may encounter technical issues, which could affect the timeline or the final outcome.
* ***User Adoption/ Acceptance****:* The platform's success hinges on the willingness of farmers and sellers to embrace and actively use it.
1. **Question 6 – Stakeholder Analysis**

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

* **Answer**

R (Responsible)

A (Accountable)

C (Consulted)

I (Informed)

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| **Responsible** | *Mr. Karthik (Delivery Head, APT IT Solutions)**Mr. Vandanam (Project Manager, APT IT Solutions)**Ms. Juhi (Senior Java Developer, APT IT Solutions)**Mr. Teyson, Ms. Lucie, Mr. Tucker, Mr. Bravo (Java Developers, APT IT Solutions)**Mr. Mike (Network Admin, APT IT Solutions)**John (DB Admin, APT IT Solutions)**Mr. Jason and Ms. Alekya(Tester, APT IT Solutions)* |
| **Accountable** | *Mr. Henry (Client, SOONY Company)**Mr. Pandu (Financial Head, SOONY Company)**Mr. Dooku (Project Coordinator* |
| **Consulted**  | *Peter, Kevin, Ben (Stakeholders farmers from Remote Village)* |
| **Informed**  | *Farmers and Companies (Manufacturers)* |

1. **Question 7 – Business Case Document**

Help Mr Karthik to prepare a business case document

* **Answer:**

Usually, business case documents are developed by the senior BA, senior business mangers and the business Architect. Business case documents help address the following open-ended questions.

* **Why is this project Initiated?**

In the case study, Mr. Henry is a successful businessman and one of the wealthiest individuals in the city, who wishes to help others achieve their dreams. One day, Mr. Henry meets his childhood friends—Peter, Kevin, and Ben, who are all farmers. During the meeting, Peter, Kevin, and Ben share their challenges as farmers, which could be addressed through IT solutions. Motivated by their concerns, Mr. Henry decides to develop an online agricultural store to help solve the problems faced by farmers.

* **What are the current problems?**
* Farmers rely on traditional methods, visiting physical agriculture shops to purchase fertilizers, seeds, and pesticides.
* There is no direct connection between manufacturers and farmers.
* Home delivery services are not available.
* Farmers have limited options when selecting agricultural products from a narrow product range.
* Farmers do not have a platform to rate agricultural product manufacturers.
* **With this project how many problems could be solved?**

With the help of this project, we aim to solve the following problems:

* Farmers will have the ability to visit an online agriculture product store to purchase fertilizers, seeds, and pesticides.
* The new application will allow manufacturers to upload product details (fertilizers, seeds, pesticides) and display them to farmers.
* Home delivery services will be available for agricultural products.
* Farmers will have access to a wide range of agricultural products to choose from.
* Farmers will have a platform to rate agricultural product manufacturers.
* **What are the Resources Required?**
* Mobile app for the online agricultural product store
* Online agricultural web store
* **Time frame to recover ROI?**

This project is initiated as part of a CSR activity, with a budget of 2 Crores INR and a duration of 18 months.

* **How much organizational change is Required to adopt this technology?**

The online agriculture product store is a new venture for the organization and the agriculture industry. As a result, the organization needs to establish an entirely new team to manage all activities related to the store. Additionally, the organization lacks prior knowledge and experience in this industry, making it essential to build expertise from the ground up.

* **How to identify stakeholders?**

In my view, a stakeholder is any individual, group, or organization that is directly or indirectly affected or influenced by the online agriculture store.

1. **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:**
* **Sequential**: This methodology follows a step-by-step linear process through each phase of the SDLC, making it ideal for projects with clearly defined requirements, minimal risk, and predictable outcomes.
* **Iterative**: This approach involves building software in iterations, where each iteration enhances the previous one, making it suitable for projects with complex requirements and high risk.
* **Evolutionary**: This methodology focuses on developing a basic software version and progressively refining it, making it ideal for projects with complex requirements and significant risk.
* **Agile**: This method emphasizes an iterative and incremental approach, fostering close collaboration between the development team and stakeholders, and is best suited for projects with rapidly evolving requirements, high risk, and complex environments.
1. **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**
* ***Agile:*** An iterative and incremental methodology that encourages close collaboration between the development team and stakeholders. It's ideal for projects with rapidly changing requirements, high risks, and complex environments.
* ***Waterfall:*** A sequential model where each phase must be completed before moving to the next. Best suited for projects with well-defined requirements and clear goals.
* ***RUP (Rational Unified Process):*** A unified, iterative approach that follows a set of best practices for software development. It’s suitable for complex projects with evolving requirements.
* ***Spiral:*** Combines sequential and iterative methods, with each iteration building on the previous one. This model is ideal for high-risk projects with uncertain requirements.
* ***Scrum:*** An agile methodology that focuses on teamwork and collaboration. It is particularly effective for projects with rapidly changing requirements and complex problem-solving needs.

Based on the feedback from subject matter experts (SMEs), the V-Model is considered the most suitable and adaptable methodology for this project. It offers greater flexibility and can accommodate changes throughout the project lifecycle, which is crucial given the potential need for modifications as the project progresses. This approach ensures that the project can adjust to evolving requirements while maintaining a structured development process.

1. **Question 10 – Waterfall Vs V-Model**

Write down the differences between waterfall model and V model.

* **Answer:**

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| ***Waterfall Model*** | ***V Model*** |
| It is a sequential development process where progress moves in a downward, step-by-step manner from one phase to the next. | It is a variation of the waterfall model, where each development stage is followed by a corresponding testing phase. |
| It is continuous process | It is a simultaneous process |
| Testing activities are conducted after the completion of the development activities. | Testing activities begin right from the first stage. |
| Software developed using the waterfall model typically has more defects compared to software created with the V-Model. | Software developed using the V-Model generally has fewer defects compared to software created using the waterfall method. |
| The waterfall model is used when the user's requirements are well-defined and fixed. | If the user's requirements are uncertain and constantly changing, the V-Model is a better alternative. |
| Making changes to the software in the waterfall model is expensive and can be difficult. | Making changes to the software in the V-Model is relatively more cost-effective compared to the waterfall model. |

1. **Question 11 – Justify your choice**

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

* **Answer:**

The V-Model is chosen because it is recommended by subject matter experts (SMEs) and is more suited for the project. This model accommodates changes during the project, making it ideal for situations where requirements may change due to regulatory factors.

1. 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:**



1. **Question 13 – Fixed Bid vs Billing**

Explain the difference between Fixed Bid and Billing projects

* **Answer:**
* ***Fixed Bid Model:*** A Fixed Bid project is billed at a fixed amount, regardless of the hours worked. This amount can be applied to the entire project or allocated on a weekly or monthly basis. As Fixed Bid projects are duration-based, they must have a defined start and end date.
* ***Billing Model:*** In this model, the resources involved in the project are billed to the client on an hourly basis. For example: Project Manager – $130/hr, Solution Architect – $55/hr, Programmers – $50/hr, Senior Programmers – $80/hr, Network Engineer – $80/hr, Database Administrator – $80/hr, and Business Analyst – $60/hr.
* ***Timesheet Billing:*** Timesheet billing is utilized by individuals, organizations, and professionals who provide services to clients based on billable hours.
1. **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:**

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| **Design Timesheet of a BA** |
| Date  | Activity | In time | Out Time | Total Hours |
| 05-01-2025 | Reviewing user requirements | 10:00 | 18:00 | 8 hrs |
| 06-01-2025 | Creating use cases and workflows | 10:00 | 15:00 | 5 hrs |
| 07-01-2025 | Designing Database Schema | 10:00 | 18:00 | 8 hrs |
| 08-01-2025 | Creating Wireframes | 9:00 | 15:00 | 6 hrs |
| 09-01-2025 | Reviewing and refining design | 10:00 | 14:00 | 4 hrs |
| 10-01-2025 | Creating Design Specifications | 11:00 | 15:00 | 4 hrs |
| 11-01-2025 | Meeting with Development Team | 11:00 | 14:00 | 3 hrs |
| 12-01-2025 | Updating design based on Feedback | 12:00 | 18:00 | 6 hrs |
| 13-01-2025 | Finalizing Design Documents | 10:00 | 18:00 | 8 hrs |
| 14-01-2025 | Reviewing and approving design | 11:00 | 18:00 | 7 hrs |
| Total |  |  |  | 59 hrs |

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| **Development Timesheet of a BA** |
| Date | Activity | In Time  | Out Time | Total Hours |
| 20-01-2025 | Meeting with Developers | 11:00 | 16:00 | 5 hrs |
| 21-01-2025 | Conduct a session to elucidate design of the software | 10:00 | 18:00 | 8 hrs |
| 22-01-2025 | Conduct a session for design development | 10:00 | 15:00 | 4 hrs |
| 23-01-2025 | Reviewed test plans for upcoming release | 11:00 | 15:00 | 4 hrs |
| Total |  |  |  | 21 hrs |

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| **Testing Timesheet of a BA** |
| Date | Activity | In Time | Out Time | Total Hours |
| 25-01-2025 | Work with Testing team to create system | 11.00 | 14:00 | 3 hrs |
| 26-01-2025 | Create and execute the system test cases | 10:00 | 13:00 | 3 hrs |
| 27-01-2025 | Review system cases prepared by Testing | 10:00 | 14:00 | 4 hrs |
| 28-01-2025 | Analyse test results and reported issues | 11:00 | 15:00 | 4 hrs |
| 29-01-2025 | Tested integration of Module A with Module B | 10:00 | 13:00 | 3 hrs |
| Total |  |  |  | 17 hrs |

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| **UAT Timesheet of a BA** |
| Date | Activity | In Time | Out Time | Total Hours |
| 01-02-2025 | Prepare UAT test plan and test cases | 11:00 | 15:00 | 4 hrs |
| 02-02-2025 | Review UAT test plan with stakeholders | 10:00 | 16:00 | 6 hrs |
| 03-02-2025 | Execute UAT Test Cases | 10:00 | 18:00 | 8 hrs |
| 04-02-2025 | Troubleshoot and report defects found during UAT | 11:00 | 14:00 | 3 hrs |
| 05-02-2025 | Retest the defects once they are fixed by the development team | 10:00 | 13:00 | 3 hrs |
| 06-02-2025 | Obtain sign off from Stakeholders on UAT Completion | 11:00 | 12:00 | 1 hrs |
| Total  |  |  |  | 25 hrs |

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| **Deployment n Implementation Timesheet of a BA** |
| Date | Activity | In Time  | Out Time  | Total Hours |
| 08-02-2025 | Create Deployment Plan | 11:00 | 19:00 | 8 hrs |
| 09-02-2025 | Deploy Application to test environment | 10:00 | 16:00 | 6 hrs |
| 10-02-2025 | Deploy Application to production | 10:00 | 19:00 | 9 hrs |
| 11-02-2025 | Perform User Acceptance Testing | 11:00 | 22:00 | 10 hrs |
| 12-02-2025 | Finalize Implementation | 10:00 | 21:00 | 11 hrs |
| Total |  |  |  | 44 hrs |