**Capstone Project – 1 (Online Agriculture Store)**

**Question 1**: Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)

**Solution**:
a) **Goals**: To support farmers to buy agricultural products (Support)
b) **Inputs**: Requirements of farmer (Fertilizers, seeds, pesticides)
c) **Resources**: Internet to use mobile application or the online web
d) **Output**: Farmers buying what is required (Fertilizers or seeds or pesticides)
e) **Activities**: Farmer place order for what is required // Make payment for the product // product delivered.
f) **Value created to end customers**: Problems solved for farmer in procuring agricultural products.

**Question 2:** 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.

**Solution:
Strengths:**

1. **Money**: As Mr. Henry is wealthiest person Money would be one the strength to setup this business model.
2. **Demand**: Demand plays a crucial role in any business model. Here the demand for the agricultural products would be one of the main strengths.
3. **Customers**: Customer are the most important for the success in any business model. As Mr. Henry already have customer for the agricultural products, this would be one of the major strengths.
4. **Cost Effectiveness:** As This business model says Manufactures and Farmers can communicate, the products can be cheaper than market value minimizing all other third-party retailers for price.

**Weaknesses:**1. **Technology**: Most of the farmer might not have an idea on how to use online / internet to buy products. Hence, this might act as a weakness in the initial stages.
2. **Trust Issues**: Due to online payment farmers might initially have trust issues buying / ordering products.
3. **Delivery**: In certain rural areas or the postal codes might or might not be serviceable, so this could be one of the weaknesses.

**Opportunities:**1. **Multiple Options:** Farmer can check & buy variety or products online.
2. **Discounts:** As this business model is online & application-based farmers / customers can even get discounts, which would be one of the opportunities.
3. **Delivery at Home:** Once farmers start using the application or web, they need not to go to multiple stores to check and but which is consumes more time and energy, in such cases home delivery would be much preferable and would be one of the important opportunities.
4. **Save Time and Energy:** From the previous point, this would be an extension to save farmer time and energy to go to market for multiple times.

**Threats:**1. **Fraudulent Issues**: As this business models also involves in online payments, there would be chances for frauds for payments.
2. **Data Leakage / Data Breach**: As farmers / customers has to give their personal details, data leakage or security issues would be one of the greater threats for this business mode.
3. **Farmers non-cooperation**: All the farmers might or might not be okay for this new age technology and usage, so few might want to use the regular or traditional methods which might influence other farmers also. Hence, this could also be one of the major threats.

**Question 3**: 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.

**Solution:**

**Hardware:**1. **Based on Storage**: An ample amount of storage device is required for example a 1000GB or more according to the business requirement.
2. **Backup Systems**: Backup systems like cloud storage and also recovery system is needed, in case of loosing data. For example, Google cloud backup etc.,
3. **Network Infrastructure**: Virus Protection system, Malware protection system, Firewall protection to secure the data.

**Software**:
1. **Based on shopping cart**: Shopping cart software for managing product selection & checkout Example (add to cart & proceed to buy).
2. **Content Management System**: This system or software used to manage product listing like which and what to be listed in the website or the mobile application and which content to be used for publishing the products.
3. **Payment Gateway Software:** Payment gateway software is used for safe and secure payment transactions. For Example, Razor pay.

**Trained Resources**:
1. **Project Management:** Team like project manager would be required for plan the project procedures, preparing Gannt chart etc.,
2. **Business Analysts:** BAs are required to analyse and prepare analysis part thought the project.
3. **Designers**: Designers would be required in any project to design how and what should be the interface for the application or the online webstore.
4. **Developers**: Developers are required to develop the frontend and backend software so that the application or the web run smoothly. They develop using the coding language like Java, Python etc.,
5. **Testers**: Testers are required to test / check the developed model to check everything works properly without any hustle, before releasing the final model into the market.

**Budget**:

1. This project has been given to the company to model and the budget provided is 2 crore INR.
2. Budget depends upon the various costs involved in various departments like development and hardware costs.

**Time Frame:**
1. Time Frame for the project initially given as 18 months.

2. Time frame for a business to completely setup depends upon the resources, number of features in the model, change requests from different stakeholders and etc.,

**Question 4**: 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

**Solution:**

**Current State**:

1. Farmers badly in need of procuring the farming products (Fertilizers, seeds, pesticides).
2. Farmers have to go to multiple stores to find the good pesticides.
3. Involvement of much energy and time
4. Product once bought might or might not work as per expectations.

**Desired State:**

1. Establishment of an online web portal and mobile application to buy products handy and easy.
2. Agriculture – Technology Collaboration
3. Farmer cost friendly to save time and energy.
4. Improved farming options and profitability through cost reduction methods.

**Question 5:** List down different risk factors that may be involved (BA Risks And process/Project Risks)

**Solution:**

**Internal Risks:**

1. Dependency on manufacturers for the farming products. This could act as one of the major internal risks as to showcase the product or product details must always depend on the manufacturers to provide the required products.
2. High budget risk to develop both online and mobile application, technology development.
3. Products shelf life / product wastage risks.

**External Risks:**

1. Trust issues from customers / farmers, as most of the farmers might not be familiar with the new age technology and online payments.
2. Delivery could be one of the external risks as most of the rural postal codes might not be deliverable.
3. Changes in the government subsidy schemes for the farming products.
4. Competition from the existing market farming product stores.

**BA Risks:**

1. Incomplete Requirements gathering by Business Analyst would be greater risk moving forward in the project as BA risks.
2. Lack of Domain knowledge, as if the Business Analyst is not from the farming background or do not have any product specific knowledge that would be one of the major BA risks in setting up the business model.
3. Change requests / change requirements is also one of the most risks for a Business Analyst which comes usually from the stakeholders.

**Project Based Risks:**

1. Scope Risk is one of the project-based risks occurs when there are unclear or expanding business requirements.
2. Limited resources would be one the project risk to complete or move forward to complete the business model. Limited resources can be anything like insufficient time, budget or manpower etc.,
3. Stakeholder risks: Different expectations from different stakeholders might create scope creep.

**Question 6:** Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and Who are the influencers.

**Solution:**

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| **Stakeholder Analysis** |
| **R/A/C/I** | **Person Name** | **Designation** | **Details** |
| **Responsible** | Mr Dooku  | Project Coordinator |   |
| Ms. Juhi  | Senior Java Developer |   |
| Mr Bravo | Java Developer |   |
| Mr Teyson | Java Developer |   |
| Ms Lucie  | Java Developer |   |
| Mr Tucker | Java Developer |   |
| Mr Jason | Tester |   |
| Ms Alekya | Tester |   |
|   |
|  |
| **Accountable** | Mr Vandanam  | Project Manager |   |  |
| Akshay Kumar | Business Analyst |   |  |
|  |  |
|  |
| **Consulted** | Mr Mike | Network Admin |   |  |
| John  | DB Admin |   |  |
|   |  |
|  |
| **Informed** | Mr. Pandu  | Financial Head |   |  |
| Mr Karthik  | Delivery Head |   |  |

**Question 7:** Help Mr Karthik to prepare a business case document

**Solution:**

1. Why is this Project initiated?
 This projected initiated to solve the procurement of farming products to farmers.
2. What are the current Problems?
The current problem here is Farmers are unable to procure fertilizers which are very important for farming.
3. With this Project how many problems can be solved?
The projects solve multiple issues as follows:
a) It solves problems for farmers to procure their required fertilizers, seeds, pesticides.
b) It minimises any middle man costs so that farmers can get the products cheaper than market price.
c) Helps farmers not to waster their much time and energy as they can choose, compare and buy the products which will be delivered at home.
d) This project also encourages digital transformation in the forming industry as well.
f) As manufacturers can directly connect with farmers, they will have more reach to the rural areas to scale their products.
4. What are the resources required?
To setup this business model there are multiple resources required such as:
a. Designers to design the UI/UX for the mobile application and website
b. Developers to develop the technology to work the website and application correctly.
c. Manufacturers to get the products to list in the application or on the website.
d. Customers to buy those listed products.
e. Delivery agents to deliver the ordered products to the desired customer address.
5. How much Organizational change is required to adopt this technology?
As a Business Analyst to understand agricultural sector and their terms there would be a maximum amount of organizational change required based on the requirement for the project.
6. What is the time frame to recover the ROI (Return on Investment)?
Return on investment actually depends upon multiple factors such as scalability, customer interest, demand in the market, government schemes and many more.
7. How to identify stakeholders?

One can identify the different stakeholders using the RACI method (Responsible, Accountable, Consulted and Informed) using this technique one can identify the stakeholders in any project.

**Question 8:** 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.

**Solution:** SDLC stands for Software Development Life Cycle. SLC methodologies are frameworks that define principles, best practices, and approach for meaningful software development.

> Methodologies guide how the SDLC process is managed and executed.

> SDLC methodology can use multiple models depending upon project requirements. The different type of SDLC methodologies are as follows:

 > Sequential – waterfall
 > Iterative – RUP
 > Evolutionary – Spiral
 > Agile - Scrum

**Question 9:** They discussed models in SDLC like waterfall RUP Spiral and Scrum. You put forth your understanding on these models

**Solution:
Waterfall Model**: Waterfall model is a traditional model. Follows a structured approach with each phase having specific deliverables. Stages are as follows:

1. Requirements Gathering
2. Requirements Analysis
3. Design
4. Develop – Coding
5. Testing
6. Process
7. Deployment & implementation

**RUP Model**: RUP stands for Rational unified Process, where phase / module wise (long term project) application is developed. Hence, we can track the defects are early stages. This avoids the downward flow of the defects.

> This model has multiple stages which requires more resources and more budget.
> This Model has 2 workflows
 a. Core Process Work Flow
 > Business Modelling
 > Requirements
 > Analysis & Design
 > Implementation
 > Test
 > Deployment

 b. Core Supporting Work Flow
 > Configuration & Change Management
 > Project Management
 > Environment

> This model has 4 phases
 1. Inception
 2. Elaboration
 3. Construction
 4. Transition

**Spiral Model:** Spiral model is a risk driven process model generator for software projects.
> This model has 4 phases:

* Planning
* Risk Analysis
* Engineering and
* Evaluation

> A software model repeatedly passes through these phases in iterations (Called Spirals in this model).
> The baseline spiral, starting in the Planning phase, requirements are gathered and risk is assessed. Each subsequent spiral builds on the baseline spiral.

**Agile - Scrum:** This model can be implemented where faster delivery is required.
No documentation
Customer retention since there is no documentation
The code in itself forms the documentation.
Not supports scalability and extendibility
SDLC can be cutdown / minimised by employing seasonal Developers.

> This model has 4 main values and 12 principles.
> SCRUM can be implemented at the beginning of the project or when you sense that the project is falling behind the schedule. The model exercise full admin power.

**Question 10:** Write down the differences between waterfall model and V model. **Solution:**

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| **Waterfall Model** | **V – Model** |
| Low-cost model | Expensive Model |
| Testing activities starts at later stages | Testing activities starts with the first stage |
| Move in a linear way | Won’t move in linear way |
| Less customer involvement | More customer involvement |
| Sequential / phase – wise approach | Parallel developing and testing phase |

**Question 11:** As a BA, state your reason for choosing one model for this project

**Solution:** As a Business Analyst, I would choose Waterfall model for the project between Waterfall Model and V- Model, because:

> The requirements are standard for setting up the agricultural business model.
> Fixed budget and time frame
> Structured development and testing before realising the 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.

**Solution:** Below is the Gantt chart for the resources Project Manger, Business Analyst, Java Developers, Testers, Data Base Admin & Network Admin.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Resources | wk1 | wk2 | wk10 | wk20 | wk30 | wk40 | wk50 | wk60 | wk73 | wk80 |
|  |  |  |  |  |  |  |  |  |  |  |
| Project Manager -----------> | 1 |
|  |  |  |  |  |  |  |  |  |  |  |
| Business Analyst ---------->  | 2 |
|  |  |  |  |  |  |  |  |  |  |  |
| Java Developers ------> |  |  | 4 |  |
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| Testers ---------> |  |  |  |  |  | 2 |
|  |  |  |  |  |  |  |  |  |  |  |
| DB Admin -----> | 1 |
|  |  |  |  |  |  |  |  |  |  |  |
| NW Admin --------> | 1 |

**Question 13:** Explain the difference between Fixed Bid and Billing projects

**Solution:
Fixed Bid Project:** Fixed Bid project is one in which the service provider agrees to deliver a specific scope of work for a fixed price. The scope of work, deliverables and timeline are agreed upon upfront, and the service provider assumes the risk for any cost overruns or delays.

**Billing Project:** A Billing Project is one in which the service provider bills the client for the actual time and materials expanded on the project. The client pays for the service provider’s time and expenses, and the scope of work can be adjusted as needed throughout the project.

**Question 14:** Preparer Timesheets of a BA in various stages of SDLC.

**Solution:
Design Timesheet of a BA:**

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| **Design Timesheet of BA** |
| **S.No** | **Tasks** | **Actionable Items** | **Start Time** | **End Time** | **Duration** |
| 1 | Requirements gathering  | Meeting with stakeholders to gather business requirements | 10:00 AM | 12:00 PM | 2 hours |
| 2 | Requirements Analysis | Analysing the existing process and documentation | 12:00 PM | 2:00 PM | 2 hours |
| 3 | Functional and Non-Functional Requirements | Documenting Functional & Non-functional requirements | 3:00 PM | 4:30 PM | 1.5 hours |
| 4 | Requirement Sorting | Working on Template | 5:30 PM | 6:30 PM | 1 hour |
| 5 | Team Meeting | Meeting with team for the gather information | 6:30 PM | 8:00 PM | 1.5 hours |

**Development Timesheet of a BA:**

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| **Development Timesheet of BA** |
| **S.No** | **Tasks** | **Actionable Items** | **Start Time** | **End Time** | **Duration** |
| 1 | Technical Design Document | To discuss design meet project requirement | 10:00 AM | 12:00 PM | 2 hours |
| 2 | Handling Change Requests | Requested changes / modifications from stakeholder | 12:00 PM | 3:00 PM | 3 hours |
| 3 | Change Request Tracker for the development  | Documenting change request requirements | 4:00 PM | 6:00 PM | 2 hours |
| 4 | Team Meeting | Meeting with team regarding day changes and requimrements | 7:00 PM | 8:00 PM | 1 hour |

**Testing Timesheet of a BA:**

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| **Testing Timesheet of BA** |
| **S.No** | **Tasks** | **Actionable Items** | **Start Time** | **End Time** | **Duration** |
| 1 | Reviewing Test case document | Validating Test case document with requirement | 10:00 AM | 12:00 PM | 2 hours |
| 2 | Testing the Model | Participating in different tests to ensure model working perfectly | 12:00 PM | 4:00 PM | 4 hours |
| 3 | Review Test results & Approvals | To ensure that the test results meet business requirement | 4:00 PM | 6:00 PM | 2 hours |

**UAT Timesheet of a BA:**

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| **UAT Timesheet of BA** |
| **S.No** | **Tasks** | **Actionable Items** | **Start Time** | **End Time** | **Duration** |
| 1 | Conducting UAT Sessions | End users testing on the model developed | 10:00 AM | 12:00 PM | 2 hours |
| 2 | Feedback UAT documentation | Documenting the user feedback after test | 12:00 PM | 4:00 PM | 4 hours |
| 3 | Final UAT & sign off | Taking approval for the launch of the model | 4:00 PM | 6:00 PM | 2 hours |

**Deployment n Implementation Timesheet of a BA:**

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| **Deployment and Implementation Timesheet of BA** |
| **S.No** | **Tasks** | **Actionable Items** | **Start Time** | **End Time** | **Duration** |
| 1 | Readiness check with the release engineers | To verify that the model is ready to deploy / launch the model | 10:00 AM | 4:00 PM | 6 hours |
| 2 | Final reports and documentation | Documentation on complete project and reports | 5:00 PM | 6:00 PM | 2 hours |