



Department of CSE

FALL 2022

TEAM CEDAR

CSE 495

### **Entrepreneurship & IT Project Management**

**Assignment:** Project Monitoring and Control with  
EVM

**Submitted To:**

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# THE PROJECT PORTFOLIO PROCESS

## Step 1: Establish a Project Council

Our project portfolio process starts with the establishment of a project council. Defining and communicating the project's strategic direction is the main goal of a project council. This council will also oversee managing the funding of activities that advance the goals of the group as well as the distribution of talent and resources. The main objective of projects like cross-department or collaborations that involve both internal and external organizational divisions is to formulate and clearly express the strategic directions. Therefore, senior officials will need to be heavily involved in this council. Without the assistance of senior management, the PPP cannot achieve its primary objectives.

Our Project Team CEDAR is part of the green environment. Our company will start some startups in Bangladesh with innovative business proposal ideas. It produces innovation, business, and technologies which are beneficial to our global economic life. Our company works for the environment, peace, and climate which will be extremely user friendly and have no negative impact on natural social science.

### 4 (Four) core questions of our organization:

#### **Q1. Why should our biz venture, named "Greeneries Co.", exist?**

Answer:

Greeneries should exist to encourage people in planting which offers highly demanded unique & useful plants easily at a reasonable price and in an authentic way. It improves the image of agriculture and plant-related jobs among youth and also provides after sale service.

#### **Q2. What are the few inherently essential things that we won't compromise with?**

Answer:

- Treating all customers with courtesy, dignity, and respect
- Ensuring honesty and fairness in all actions.
- Ensuring good quality products.
- Consistently delivering on commitment.
- Not compromising with customers' trust.
- Taking the proper precautions for safety.

#### **Q3. Where do we want to go in the next 5 to 10 years?**

Answer:

In the next 5 years, our plan is to have at least a hundred thousand target customers who will buy trees constantly. To increase the skilled workforce in horticulture and develop a strong pipeline of future talent. To further our purpose, we cultivate and expand partnerships and collaborations. We will diversify funding sources and increase financial support to ensure project sustainability. And our goal is to double this number in the next 10 years.

#### **Q4. What are the game plans to really go there?**

##### Answer:

Stages will contain marketing strategies to grow our business, tree plantation campaigns, free tree distribution, etc. We will break down the number of targeted customers yearly or even monthly. We will assign actions to each breakdown and analyze the output. To increase the number of customers, we will provide an after-sell service. To attract more customers, we'll provide some special offers and gifts like buy one get one offers, 10% discount to the first 10 buyers every day. We will freely adjust our plan if we learn something new, but that doesn't mean we will change the direction of our goal.

#### **Our CEDAR Project Council Members are:**

1. Kazi Mostaq Hridoy – CEO
2. Adri Saha- MD, Managing Director
3. Faisal Ahmed Hridoy -Project Manager
4. Asad Chowdhury Dipu - GM, Production
5. MD. Riad Khan - GM, R&D
6. Chandra Shekhor - Field Manager
7. Liakot Ahmed - GM, Marketing

#### **Step 2: Identify Project Categories and Criteria**

In this phase, various project groups are formed to distribute funding equally among the initiatives that substantially advance the goals of an organization. As we are building a startup company, various issues have come out to implement these projects. Various concepts in different categories are discussed in this phase but we've decided not to choose any complex project initially. Because Bangladesh is a small country with limited resources and various issues. We focused mainly on problems related to the environment or impact the climates. We want to solve climate related issues like global warming from our country. And with this hope we've categorized our project concepts into four types. In short, we split the projects into derivative, platform, breakthrough, or technological advanced and research & development initiatives. The grades given to the criteria indicate how important they are. A project is significantly easier to manage when it is categorized or segmented into groups. It might occasionally come before the objective. Based on the amount of product and process change, the output, qualities, values will be calculated. And that's how based on the time value of money and priority we'll come up with a few 3 or 4 projects among them. Additionally, criteria are established for each area to differentiate between outstanding and superior actions.

**1. Derivative Projects:** These projects usually seek to replace or enhance existing approaches (lower-priced version, upscale version).

**2. Platform Projects:** The outcomes of these initiatives are expected to differ significantly from previous offers in terms of the product/service itself, as well as the method of production and distribution. They act as "systems" for the future generation of corporate services.

**3. Breakthrough projects:** Platform initiatives are less likely than breakthrough projects to use cutting-edge ideas. The company may have been working on a well-known "disruptive" technology for a while. Instances of breakthrough projects include transmission of data, funds pension systems, and gasoline-electric hybrid vehicles.

**4. R & D projects:** Research and development, also known as R&D, the process through which a business creates new information that it may use to build new technologies, products, services, or systems that it will either employ internally or sell is known as research and development, or R&D. Before starting production, a business performs operations or tests its products or services. It happens throughout a product or service's research and development (R&D) phase to increase its efficacy.

Analyzing multiple in-depth discussions among us while analyzing and researching the various project kinds in the context of our projects, which are as follows:

Project name	Idea	Category	Accepted/ Rejected
1. Greeneries	Opening a business that delivers unique, useful indoor & outdoor plants, flowers. Designs small-space gardening tools, opens a nursery, and provides after-sale services to enable one to specialize in native landscaping plants, flowers, decorative house plants, or any greenery they want.	Platform	Accepted
2. Agri treatment	Here one can find farmer doctors who can prevent any kind of diseases of plants as well as give guidance on which plants best depending on monsoon.	Derivative	Accepted
3. Grocery Van	A service van that moves around the city and sells necessary goods. It also provides its own mobile and web application for its user to find locations and request goods.	Breakthrough	Accepted

4. Renewable energy support	Produce and deliver solar panels and wind installers. Also provides cleaning, maintenance, and inspection services for privately held renewable energy plants.	R & D	Accepted
5. Green building development	Creates Energy Efficient Windows, Green Roof, Solar Power, Aluminum Weather Resistant Insulated Access panels, Water Conservation, and landscaping.	Breakthrough	Rejected
6. Biodegradable cleaners	Produce cleaners containing biodegradable elements such as sodium lauryl sulfate and elements derived from plants.	R & D	Rejected
7. Recycling e-wastes & refurbishing them	Open a secondhand store that recycles e-waste from electronics like mobile, TV which generate lots of toxic chemicals.	Breakthrough	Rejected
8. Sustainable digital studio	Use low-energy or natural lighting whenever possible, and be mindful of printing processes to minimize waste and inappropriate chemical disposal.	Breakthrough	Rejected
9. Ceremony Organizer	Decorate parties, events, weddings, or any kind of program with flowers, indoor plants, etc.	Platform	Rejected
10. Organic beauty products & medicines	One can find natural herbal hair oil, and skin care products delivery. Also, delivers organic herbal medicines.	Platform	Rejected

11. Grow healing tea and herbs	Produce & supply herbal & masala tea ingredients & restaurants all over the world where people can't find tea. Additionally, spices, herbs, and potpourri can be used to create holistic healing products.	Derivative	Rejected
12. Green catering business	Weddings, events, and business meetings frequently use catering, but these occasions can produce a lot of wasted food and transportation pollution. By using recyclable linens and dishware, serving locally sourced food, and composting leftovers, green caterers try to minimize their negative environmental effects.	Platform	Rejected

Table 1: Categories and Criteria wise project selection

### Step 3: Collect Project Data

#### 1. Greeneries

**Existing Products & Features:** Physical plant shop

**Products:** mobile app and website.

**Features:** encourage people in planting, and offer highly demanded plants at a reasonable price

**Platform Opportunities** - there are a few platforms available that manage online plant selling and anyone can buy and sell plants online, staying on their premises.

**Possible new products or services:** organize free plant distribution campaign

**Services:** Arrange training sessions both on agriculture and technology; Collaborate with several gardening businesses and recruit as many young and experienced people as possible.

#### 2. Agri treatment

**Existing Features:** Provide low-priced medicines to ensure plants' safety,

**New Features:** Provide tips for efficient farming, provide organic herbal medicines, and provide instant expert suggestions.

## **Detailed Data on the SM-2022 – 28/12/22**

### **3. Grocery Van**

**Existing Products & Features:** Sell all types of grocery products and daily necessary products. uses the web and applications to take orders and uses delivery men to deliver products.

**Platform Opportunities:** Grocery van is a new concept and there are a large customer segment

**Possible New Products / Services:** New R&D Opportunities Tracker, an app for van location tracing Users can request products according to their location. Van locations can also be shared for users to understand.

### **4. Renewable energy support**

**Existing Products & Technology Challenges:** Provide solar panels to ensure sustainable energy.

**New R & D opportunities:** new technology to the market of solar panel

**Industrial Feasibility and Scalability:** Produce photovoltaic cells, which directly transform solar radiation into electricity; use solar thermal power, which concentrates solar radiation with mirrors to heat a fluid that produces steam to generate electricity.

### **5. Green building development**

**Existing products and features:** water conservation, solar panel planting, noise control.

**Breakthrough Opportunities:** people want green constructions and here we grabbed the opportunity as there are less competitors

**Possible breakthroughs in productivity and revenue:** improved insulation, programmable thermostats, energy-efficient lighting, and energy-star appliances to save water, electricity, and money.

### **6. Biodegradable cleaners**

**Existing Products & Technologies Challenges:** Produce biodegradable cleaners

**New R&D Opportunities:** produce phosphate-free cleaners and provide homemade organic cleaners.

## **7. Recycling e-wastes and refurbishing**

**Existing Products and Features:** e-waste recycling, a secondhand store that recycles old products from electronics such as mobile phones and televisions.

**Breakthrough Opportunities:** less spend, much profit

**Possible Breakthrough in Productivity and Revenue:** Come up with an application that can create awareness among people, arrange for campaigns, donate used electronics to social programs, and help victims. For each donation, he or she will receive a gift.

## **8. Sustainable digital studio**

**Existing Features:** wedding shots, studios, high power lighting photography

**Breakthrough Opportunities:** this method will reduce the carbon footprint and also attract people to us who are concerned about the environment.

**Possible Breakthrough in Productivity & Revenue:** produce sustainable digital studio, utilize natural lighting, reduce frame use, plastic use, sustainable paper waste.

## **9. Ceremony Organizer**

**Existing Products and Services:** Florist who creates bridal bouquets and wedding flowers.

Platform Opportunities - reduce, reuse can minimize the cost of decorations and make good profits

**Possible new products or services:** reduce, reuse, and recycle decorations; decorate with indoor plants that keep the air purified, and use green bridal party accessories.

## **10. Organic beauty products & medicines**

**Existing products and features:** provide unauthentic and high-cost organic beauty products.

Possible new products or services- supply authentic herbal oil, cream, therapy, remedies and deliver products with green packaging.

## **11. Grow healing tea and herbs**

Existing Features- Produce & supply herbal & masala tea

New Features: supply herbal and masala tea ingredients and build restaurants all over the world where people can't find tea; deliver spice and, herbs to create holistic healing products;

## **12. Green catering business-**

**Existing products and features:** Typical catering services

**Platform:** Provide vegan food to customers.

**Platform Opportunities:** Mobiles and web-based applications for serving customs demand

**Possible new products or services:** Can provide food based on a custom demand recipe; the customer can choose what ingredients to use and which to avoid. It is a great way to help vegan customers on their journey to a plant-based lifestyle and can also be a very lucrative business venture.

## **Step 4: Assess Resource Availability**

### **Resource requirements matrix:**

- 1. Greeneries:** To start up this business we need time management, planning, build up a strong team with educated workers and need funds to implement our plan. As we are planning to open a nursery we need to collaborate with farmers and the agriculture department. It will be a challenging platform project to implement the final product web application of fast delivery of both unique indoor and outdoor plants.
- 2. Agri treatment:** For agriculture business, we need skilled doctors, agriculture experts and also need proper funding for medicines, tools for gardening.
- 3. Grocery Van:** We need skilled employees including developers, drivers and vans and sources for goods and other things.
- 4. Support renewable energy:** In order to produce renewable energy, we can utilize solar energy, wind energy, water energy to produce electricity. We can utilize the recycled elements to make solar panels, turbines etc. to produce electricity in a much more efficient way.
- 5. Green building development:** To implement green buildings we need bamboo as they are the best eco-friendly building material. We require Precast Concrete Slabs, reclaimed woods, recyclable plastic, Plant-based Polyurethane Rigid Foam etc.

- 6. Biodegradable cleaners:** To produce biodegradable cleaners we need to have some natural elements like lemon, vinegar, citric acid, tea tree oil, essential oils etc. And for packaging purposes, we can use biodegradable plastic containers.
- 7. Recycling e-wastes and refurbishing:** We need collectors to collect the e wastes. Then we need skilled workers to recycle e waste as it can be hazardous for people who do not know how dangerous these waste can be.
- 8. Sustainable digital studio:** To do this, we must have a digital camera to snap pictures, a computer for processing the pictures and a proper lighting system.
- 9. Ceremony Organizer:** Proper arrangements of natural items like plants, flowers, decorations, giving proper guidance to the organizers, paying them, proper vegan food items all these things need an amount of time, training and money.
- 10. Organic beauty products & medicines:** Customer's satisfaction, skin, hair type various information needed to make organic beauty products for all types of skin and hair. Also, creating organic medicines need experts who have proper knowledge of the usefulness of organic plants, and flowers.
- 11. Grow healing tea and herbs:** Need fresh production of organic herbal tea leaves, and sustainable tea crops, like solar-powered or sticky bug catchers where no use of chemicals like pesticides, herbicides, fungicides, or chemical fertilizers. Need to find suppliers and workers from agricultural organizations or institutions.
- 12. Green catering business:** Any great catering business starts with good food. This is a must for food safety. Need a good cook with knowledge of different types of vegetarian dishes.

### **Step 5: Reduce the Project and Criteria Set**

1. Our company is competent enough to pursue this business as there are sufficient resources and not much risk involved. There is a growing market as people living in cities cannot have access to natural plants. People nowadays are getting themselves engaged in roof gardening and they require the necessary tools to do so. We are going to provide all those tools so that people don't face the hassle of going to the stores. We will collect the plants from the locals and sell them.
2. Next the selected project is Agri treatment where our company will provide services for plants like treatment for plant diseases. In this case, sufficient knowledge of nursing plants and manpower is needed which we can collect from the agricultural institutions. This is a derivative project of greeneries that is beneficial for environmental health and has no risk to implement this service.
3. Our other project is Grocery Van. Here we will provide people's daily necessary products next to their door. Our service van will roam around the city to provide goods and products that people need. Users can easily find our van's location using our app. They can see our van location near their home and can request specific goods for delivery. In case of request, their

delivery time will be scheduled according to their needs. At the time of delivery, we will bring our whole van if the customer needs anything else.

4. The fact that resources like solar energy, wind, rain, tides, waves, biomass, and thermal energy are almost constantly available in some form is a benefit of having them stored in the earth's crust. They nearly never end. But in order to use them, we need certain devices, such as solar cells, photovoltaic cells, turbines, etc. Additionally, people must be knowledgeable about these instruments, such as how they function. People will learn about things from us, and we'll also raise their awareness of the need to protect the environment. We may also use recyclable materials to construct the tools.

### **Step 6: Prioritize the Projects within Categories**

We had chosen four projects - Greeneries (platform Project); Agri Treatment (Derivative Project); Grocery Van (Breakthrough Project); Renewable Energy Support (R & D Project).

After choosing four projects based on four different criteria, we analyzed their views on the projects using the Delphi method. At first, we built a panel of experts from the different categories mentioned above. Then we choose a facilitator. The facilitator chose a set of questions and provided them to the expert for their feedback. Based on the feedback from the first questionnaire, the facilitator set another set of questions, and after receiving feedback on another set of questions, the experts reached a consensus.

At that time, we thought we had gathered enough information, and our organization reached the conclusion of pursuing the project "Greeneries," which was based on selling plants and providing necessary tips for tree planting.

Then our organization evaluated the results and was ready to develop a strategy to handle future opportunities and risks to their project.

### **Step 7: Select the Projects to Be Funded and Held in Reserve**

Greeneries, Agri treatment these are the platform category projects which are to be funded. Here we need customer attraction, satisfaction, unique plants, nursing care, tools, and technological support. These projects have less risk to implement and are beneficial for environmental sustainability. The resources are also available as these projects are naturally based. No highly efficient technologies are needed

to be implemented in each project. So above all 12 projects if we focus on the customer's attention we can consider these projects. These might be easy to complete and so we need enough funding to complete these projects.

Grocery vans are one kind of breakthrough project where we need a sufficient number of fresh vegetables, technological support, scheduled timing, tracker, delivery man, and effort. So sufficient funding is needed to give full-time customer support.

The fourth project is renewable energy support which is in the R & D category. We need more research on how to produce renewable energy and utilize solar energy, wind energy, and water energy. So we can't implement this now. As we need more time and research on renewable energy, it is held in reserve.

### **Step 8: Implement the Process**

After observing all cases we've chosen 'Greeneries' in our main project which we will work on. From step 7, we can see that we need funding, investors, and research in the business competition. To keep ahead of the competition and determine which project we should invest in and what can be more beneficial and easier for a startup, we continuously monitor environmental impacts, customers' minds, and agricultural trends. Furthermore, we highly believe that our selected project is beneficial to both customers and our environment. Also, this will be a highly advanced and user-friendly platform for users.

## **Project Charter**

### **1. Overview**

Developing a new enterprise that sells plants and flowers of any kind, that are useful, unique, or reasonable in an authentic manner. Our business will design a website where users can find their preferred plants. The ability to specialize in native landscaping plants, flowers, decorative house plants, or any greenery one desires is also facilitated by designing small-space gardening tools, opening a nursery, and offering after-sale services. It strongly promotes plant-related employment, enhances young perceptions of agriculture, and offers after-sale assistance. It generates technologies, businesses, and innovation that benefit the global economic system.

### **2. Objective**

Our main goal for this project is to clarify the significance of plants in our global economic life for our customers so that they can easily understand what we provide them. We will conduct a survey to find out the requirements of the customers, and based on their satisfaction, we will offer their preferred plants in an authentic manner. Users can buy and sell plants online using our platform: mobile application and website. In order to satisfy customers and keep attracting them, we will organize a plant distribution campaign and discount limited offers. We'll also arrange training sessions both on agriculture and technology. By collaborating with several gardening businesses and recruiting as many young and experienced people as possible, our company will achieve a position and the earnings from our company will be divided among the project members as a revenue.

### **3. General approach**

**Application platform:** IOS & Android

**Frameworks:** Flutter

**Language:** Dart

**Database:** Firebase

The mobile app market has never been more competitive than it is today, with over 3 million apps on Google Play and over 2 million apps on Apple's App Store.

We will use cross platform frameworks flutter for quick development of IOS and Android applications. Budget concerns are usually the primary reason why mobile app developers choose one platform over another, but there's still a way to build an app for multiple platforms while sticking to our budget. Cross-platform mobile app development is about developing mobile apps to work on multiple platforms and operating systems. This is a popular method of app development because it allows developers to create apps much faster than having to develop separate codebases for every platform. Once we publish we app in appstores, the work isn't done. we'll still need to gather feedback, continue testing your app, and release code updates from time to time. This will keep our app fresh and will improve the userexperience. With cross-platform development, maintenance is much easier because updates made to your single codebase can be synced and deployed across all platforms and mobile devices.

### **4. Contractual Aspects**

We will develop a mobile application where a user can see all the product ads and details but cannot add the product into cart unless they create an account. After they create a user account they can post blogs, chat with sellers and do many other things. This is a single app that will be used by both user and seller. On the seller side, sellers need to sign up for posting ads. In the signup time seller will provide every details of their shop.

The source code must belong to the customer. This ownership allows you to use or alter the code in any way you wish. If the contract is terminated, you, as the customer, immediately receive all the code that was completed before the termination. All materials created during development must be destroyed.

Keep in mind that if open source tools have been used, they will be publicly available.

This section of the agreement is critical, especially if the project contains the personal data of clients or commercial secrets. Be sure to indicate what information is confidential and define the responsibility for its disclosure. Also, you must specify that confidentiality must be maintained after the contract is completed.

## 5. Resource requirements

Task	Requirements
1. Team Formation	Skilled manpower
2. Employee Training	Skilled Trainer, Training Cost
3. System Design & Implementation	Workforce, Working Cost
4. System Testing	Computational Resources, Workforce, Working Cost
5. Project Delivery	Workforce
6. Promotional Activities	Promotional Costs, Banner, Creative Workers, Sponsors

Table 2: Resource requirements

## 6. Personnel

In order to complete this project, we need to have multiple teams like the designer team, developer team, system testing team, promotional team and Inventory management team. We require skilled workforce for each team formation. To get the best output, we may need to hold training sessions for designing and developing phases. To achieve that, we may need trainers.

## 7. Evaluation methods

To evaluate the project, first we survey the customers' needs and satisfaction and define the requirements of our projects. Then we created an estimated budget according to our planned method. Project manager and other team members continuously monitored the whole process, collecting required data, investors, sponsors and manpower. Further evolution method we'll implement in the next phase.

## Work Breakdown Structure (WBS)

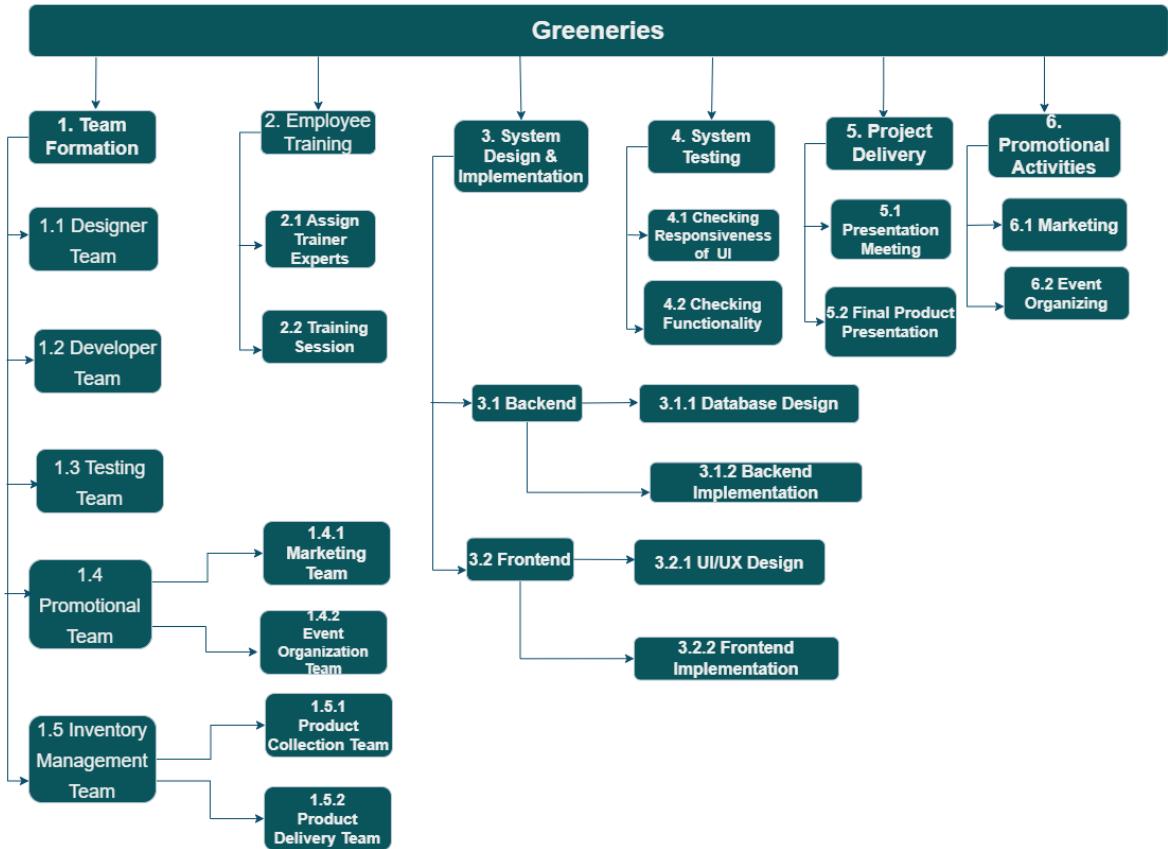


Figure 1: World Breakdown Structure

## Milestones

No	Events
1	Completed team formation.
2	Meeting with Employees
3	Workers trained
4	Completed initial phase of system Design & Implementation

5	Budget estimated
6	Found investors
7	Found sponsors for promotional Activities

Table 3: Project Milestones

### RACI Matrix

Tasks	Lvl2	Lvl3	Project Manager	Project Engineer	Risk /Compliance Manager	Field Manager	General Manager (Marketing)	General Manager (Production)	Designer	Developer	CEO
1. Team Formation	1.1 Designer Team		A	C					R	C	I
	1.2 Developer Team		A	C					C	R	I
	1.3 Testing Team		A						R	R	I
	1.4 Promotional	1.4.1 Marketing Team				R	A	C			I

	Team										
		1.4.2 Event Organiza tion Team	A			R	C				I
		1.5 Invento ry Manage ment Team	1.5.1 Produ ct Collec tion Team	A		R		C			
			1.5.2 Produ ct Delive ry Team	A		R					I
2.	Employ ee Trainin g	2.1 Assign Trainer Experts		R							A
		2.2 Training Session		R					I	I	A

3. System Design & Implem entatio n	3.1 Frontend	3.1.1 UI/U X Desig n	A	C					R		I
	3.2 Backend	3.2.1 Datab ase Desig n	A	C					R		I
4. System Testing	4.1 Checkin g Respon siveness of UI		A	I					R		I
	4.2 Checkin g Functio nality		A	I					R		I
5. Project Deliver y	5.1 Present ation Meeting		R	C							A
	5.2 Final Product Present ation		R								A

6. Promot ional Activiti es	6.1 Marketi ng		A				R					I
	6.2 Event Organiz ing		A				R					I

Table 4: RACI Matrix

### **WBS wise Resource Requirements and Resources wise Cost Budgeting**

Tasks	Task Description		Duratio n (Days)	Predec essor	Resources	Budget(Tk)
1. Team Formation	1.1 Designer Team		7	-	Skilled Workforce, Project Manager, Field Manager, Risk/Compliance Manager, General Manager (Marketing, Production), Expert Engineers	-----
	1.2 Developer Team					
	1.3 Testing Team					
	1.4 Promotional Team	1.4.1 Marketing Team				
		1.4.2 Event Organization Team				

	1.5 Inventory Management Team	1.5.1 Product Collection Team  1.5.2 Product Delivery Team				
2. Employee Training	2.1 Assign Trainer Experts		3	-	Human Resource	—
	2.2 Training Session		21	2.1	Human Resource, Computational Resources,	50,000
3. System Design & Implementa tion	3.1 Backend	3.1.1 Database Design	15	1, 2.2	Human Resource, Computational Resources	80,000
		3.1.2 Backend Implementation		1, 2.2	Human Resource, Computational Resources	
	3.2 Frontend	3.2.1 Ui/UX Design	60	3.1	Human Resource, Computational Resources	100,000
		3.2.2 Frontend Implementation		3.1	Human Resource, Computational Resources	

4. System Testing	4.1 Checking Responsiveness of UI		3	3.1-3.2	Human Resource, Computational Resources	40,000
	4.2 Checking Functionality				Human Resource, Computational Resources	
5. Project Delivery	5.1 Presentation Meeting		1	4	CEO, Project Manager, Field Manager, Risk/Compliance Manager, General Manager (Marketing, Production), Expert Engineers	10,000
	5.2 Final Project Presentation					
6. Promotional Activities	6.1 Marketing		7	5	Human Resource, Field Manager, General Manager (Marketing), Equipments (Banner,	40,000
	6.2 Event Organizing					
<b>Total Cost</b>						<b>320,000</b>

Table 5: WBS wise Resource Requirements and Resources wise Cost Budgeting

### Project's Risks Assessment

**Team Formation:** If unskilled employees are selected, it can hamper the project. Another thing is biasness. If an employee is selected due to his relationship with the project manager, he/she can be a part of the project even if he/she is not skilled enough for the project.

**Employee Training:** The trainer who is going to be chosen, he/she should be skilled enough. If not, he/she can hamper the project.

**System Design & Implementation:** The User Interface must be convenient. It should be designed in such a way that it is easy to understand. If it is complex, it will not be able to collect customers' interest. Another concern is that it must be made as per the requirements provided by the company. If the design is complex, it will be difficult to implement as well.

**System Testing:** The system should be tested thoroughly. If one of the functionalities is not tested properly it can affect the project badly. After the project is delivered and it is available to the customer and that particular fault still arises then it can hamper the business.

**Project Delivery:** If the project is delayed, it can affect the budget. If the project is Delayed, another company can come up with the same project. Thus, it can reduce the value of the project in the market.

**Promotional Activities:** General mass will not know about the project if the promotion is not done properly. If a problem arises at the time of an event, it can leave a negative impact on customers' minds. For example, the app which is going to be designed malfunctions at the time of an event, it can hamper the company image.

### **Failure Mode Effect Analysis (FMEA)**

Tasks	Failure Mode	S (Severity)	L (Likelihood)	D (Detectability)	RPN (Risk Priority Number) (SXLXD)
Team Formation	Unskilled Employees	7	4	8	224
	Biasness	6	3	7	126
Employee Training	Lack of skills	9	4	3	108
System Design and Implementation	Complex Design	9	6	7	378
	Implementation difficulty	9	7	7	441
System	System Failure	8	8	9	576

Testing					
Project Delivery	Budget Issue	6	8	9	432
	Competition	7	8	8	448
Promotional Activities	Lack of promotional skills	9	7	5	315
	App malfunction during an event	8	5	3	120

Table 6: Failure Mode Effect Analysis (FMEA) table

## **WBS wise Resource Requirements and Resources wise Cost Budgeting**

	1.5 Inventory Management Team	1.5.1 Product Collection Team						
		1.5.2 Product Delivery Team						
2. Employee Training	2.1 Assign Trainer Experts		3	-	Human Resource	—		7 Jan 2023 - 9 Jan 2023
	2.2 Training Session		21	2.1	Human Resource, Computational Resources,	50,000	45,000	9 Jan 2023 - 29 Jan 2023
3. System Design & Implementation	3.1 Backend	3.1.1 Database Design	15	2.2	Human Resource, Computational Resources	80,000	77,000	29 Jan 2023 - 12 Feb 2023
		3.1.2 Backend Implementation			Human Resource, Computational Resources			
	3.2 Frontend	3.2.1 Ui/UX Design	60	2.2	Human Resource, Computational Resources	100,000	97,500	12 Feb 2023 - 12 April 2023
		3.2.2 Frontend Implementation			Human Resource, Computational Resources			

4. System Testing	4.1 Checking Responsiv eness of UI		3	3.1, 3.2	Human Resource, Computatio nal Resources	40,000	38,000	12 April 2023- 14 April,202 3
	4.2 Checking Functiona lity				Human Resource, Computatio nal Resources			
5. Project Deliver y	5.1 Presentati on Meeting		1	4	CEO, Project Manager, Field Manager, Risk/Compli ance Manager, General Manager (Marketing, Production), Expert Engineers			14 April,2023
	5.2 Final Project Presentati on					10,000	9,000	
6. Promoti onal Activitie s	6.1 Marketing		7	5	Human Resource, Field Manager, General Manager (Marketing), Equipment (Banner,	40,000	39,000	14 April,202 3- 20 April,2023
	6.2 Event Organizi ng							
Total Cost						320,000	3,05,550	

Table 7: WBS wise Resource Requirements and Resources wise Cost Budgeting

## Gantt Chart

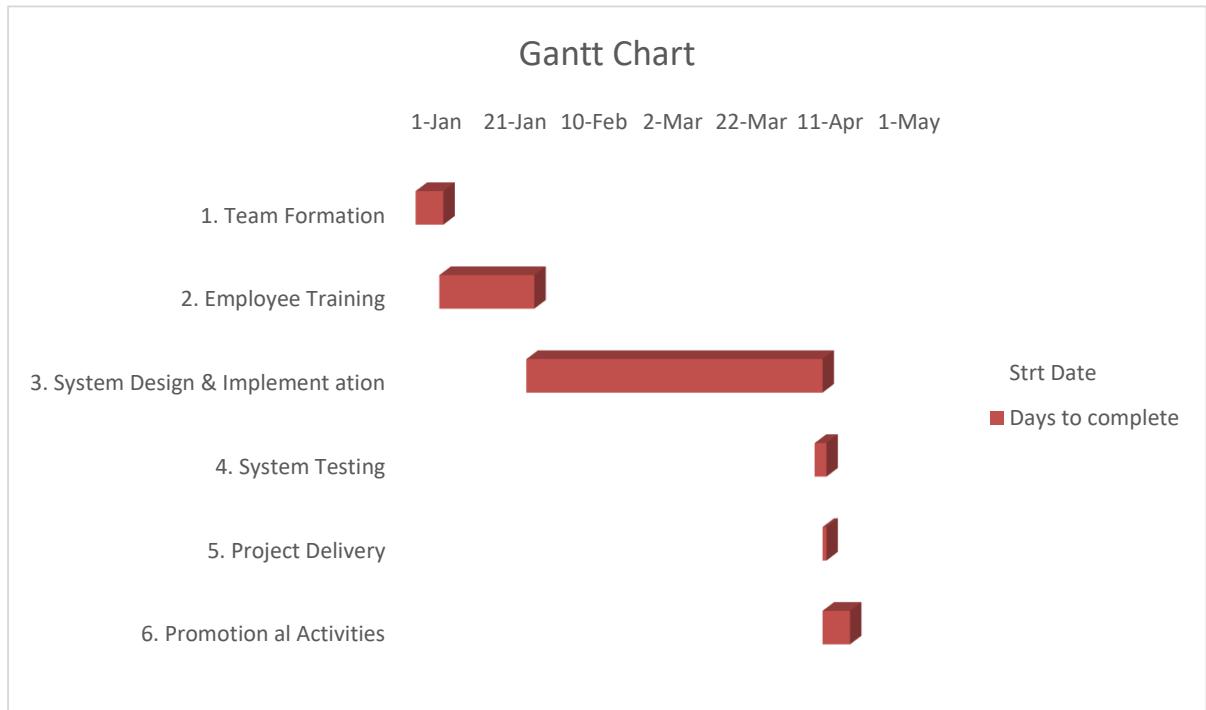


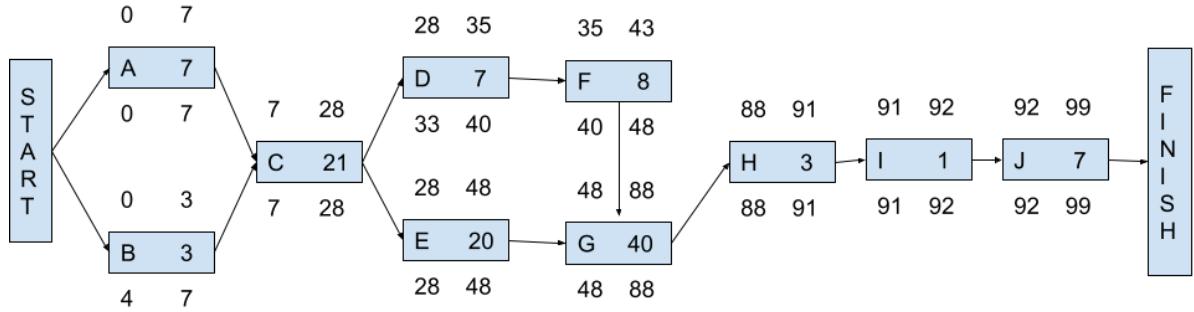
Figure 2: Gantt Chart

## Tasks dependencies table

Task ID	Tasks	Predecessor	Duration
A	1. Team Formation	-	7
B	2.1 Assign Trainer Experts	-	3
C	2.2 Training Session	B	21
D	3.1.1 Database Design	C	7
E	3.2.1 UI/UX Design	C	20
F	3.1.2 Backend Implementation	D	8
G	3.2.2 Frontend Implementation	E, F	40
H	4. System Testing	G	3
I	5. Project Delivery	H	1
J	6. Promotional Activities	I	7

Table 8: Task Dependency Table

## Scheduling Network Diagram (PERT/CPM)



So, the critical path is 99 days.

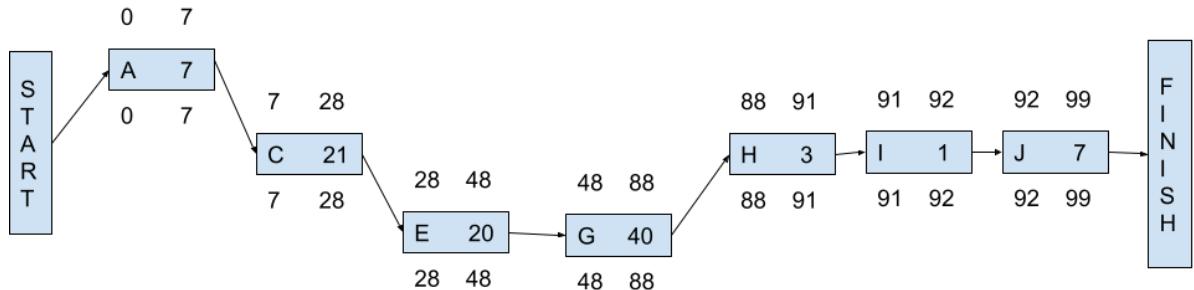


Figure 3: Critical Path

## EVM (Earn Value Management)

We see, our estimated budget for total project competition is started from 9 January 2023 to 20 April 2023, So the duration is 111 days or 15 weeks. So, we can break down our work by  $111/3=37$  days for EVM calculation.

Expected cost to complete the whole project is = 320,000 tk.

So, BAC = 3,20,000 TK

Time	Duration	Duration wise progress	Budget (TK)	Actual Cost (TK) (AC)
First 37 days	1 Jan, 2023- 6 Feb =37 days	100% of 1+ 60% of work	50,000+ (9/15) *80,000= 98,000 /-	48,000 + 47,000 = 95,000 /-
Second 37 days	7 Feb- 16 March = 74 days	33/60=55% of whole work 2	98,000+ 80,000*(6/15) + +(100,000*(55/100)) 1,85,000 /-	95,000 + 33,000 + 53,000 = 1,81,000
Third 37 days	17 March- 23 April, 2023 =111 days	45% of work 3.2+ 100% of work 4 + 100% of work 5 + 100% of work 6	1,85,000+ (45/100) *100,000+ 40,000 +10,000 + 40,000/- = 3,20,000 (TK)	1,81,000+ 44,000+41,000+ 9,000+39,000= 3,14,000 /-

Table 9.1: Earn Value Management

### EVM Calculation:

Time	PV (TK)	Progress (%)	EV (TK)	CV= EV- AC (TK)	SV= EV- PV	CP I= EV /A C	SP I= EV /P V	ETC= (BAC- EV)/CP I	EAC= ETC+AC (TK)	CR= CPI*SPI
First 37 days	1,30,000 /-	100%	1,30,000 /-	35,000 /-	0	1.368	1	0	95,000 /-	1.368
Second 37 days	1,85,000 /-	98%	1,85,000*(98/100) = 1,81,300 /-	300 /- -3700 /-	-3700	1.001	0.98	3696.303 +1,81,000 = 1,84,969.303 /-	3696.303 +1,81,000 = 1,84,969.303 /-	0.98
Third 37 days	3,20,000 /-	100%	3,20,000	6000 /-	0	1.02	1	0	0 +3,14,000 = 3,14,000 /-	1.02

Table 9.2: Earn Value Management

So above the EVM, we can see our whole project estimated duration is 111 days which we breakdown onto 3 parts. Each segment carries 37 days of whole work schedule. So, in 1<sup>st</sup> 37 days and last 37 days, the SV is 0 which means the schedule variance is right on time. The SPI is 1 which indicates that we are right on our schedule and CPI is greater than 1 so we can say we are overspending budget. In the next 2nd segments, SV is negative which indicates we are behind on our schedule but CV is positive which still indicates we can achieve more than we predict if we follow this path. SPI is less than 1 which indicates we are behind on our schedule and CPI is little greater than 1 so we can say we are not so much overspending from estimated budget.

CV is positive in every segment, so it means we can achieve more than we predict in whole project.

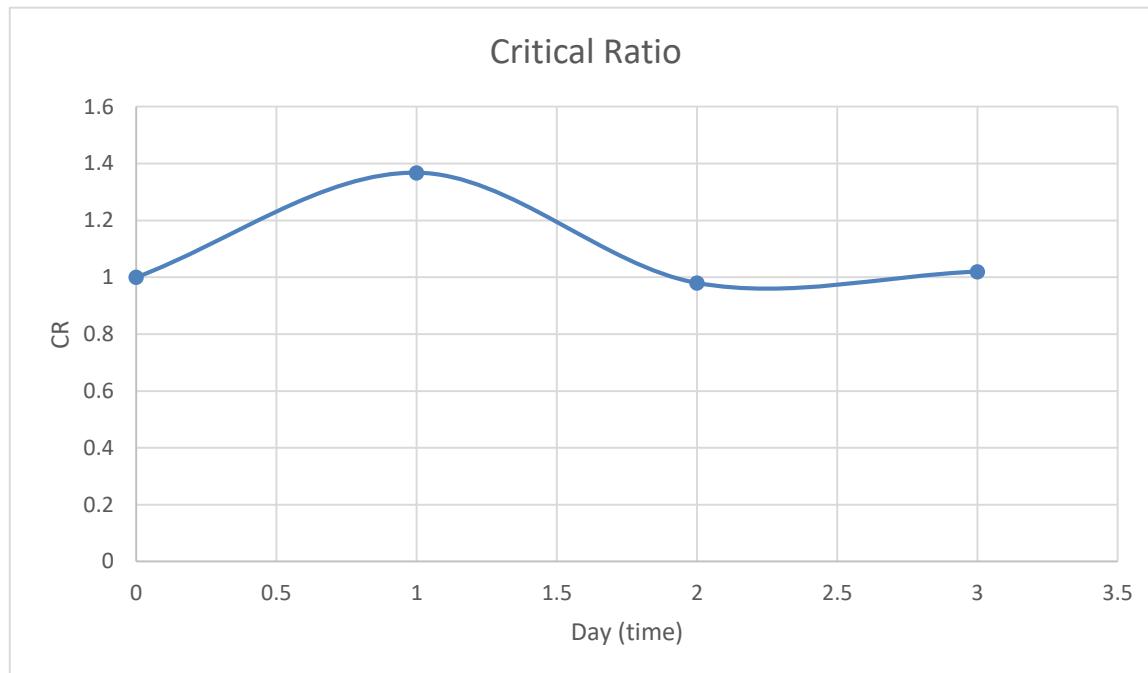


Figure 4: Critical ratio Graph

We know, the ideal CR is 1.0. In 1<sup>st</sup> phase critical ratio is greater than 1.0 which implies project doing well on both cost and schedule. When ratios below 1.0 on 2<sup>nd</sup> and 3<sup>rd</sup> phase it implies little poor performance than before. If we can complete 100% according to our plan then our project will be right on our plane.

### EVM Chart

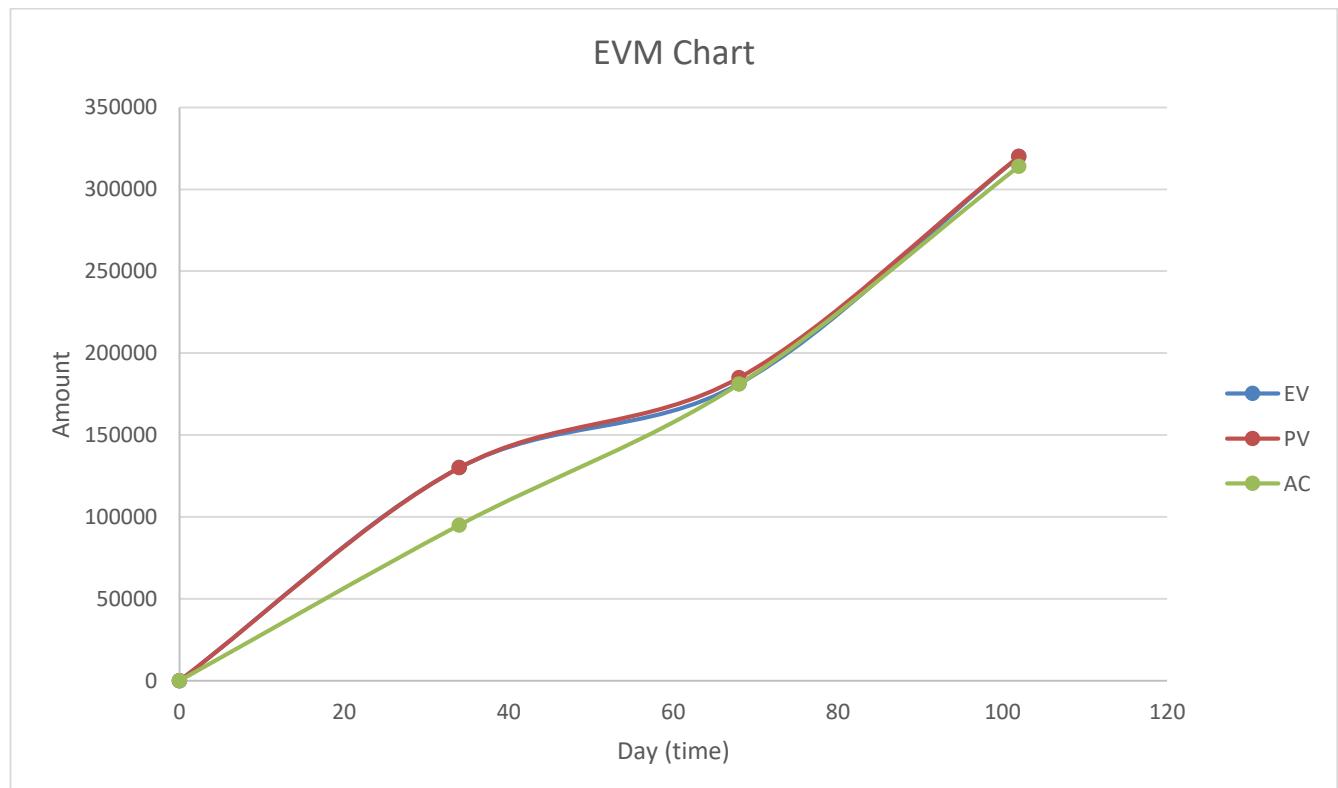


Figure 5: Earn Value Management Chart