



ENGINEERING PROJECT MANAGEMENT
BUSA2302

Course Project

Car Garage -Your Car Deserves the Best-

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Section: 3

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Project Summary

Car breakdowns are one of the common problems that most of us face on frequent base. Lack of time for car periodic inspection and emergency cases as well.

Car Garage project will provides repair of any car malfunction and maintenance services with technicians equipped on the road (replacement of car batteries, car oils, filters of all kinds, tire replacement service, car wash, etc.).

Furthermore, the project will distinguish by reaching the customer as quickly as possible to the car in its location whether at home, workplace or on the side of the road. Moreover, the target is the society in general at any time anywhere, given that people are exposed to these problems on a daily basis.

At the end, the project depends on the foundations of good work according to the strategies of successful work represented in the principles of speed and mastery. Car Garage will also increase the job opportunities and provide easier life.



1. Project Initiating

Project Charter

A. General Information

Project Title:	Car Garage
Brief Project Description:	It is a project characterized by vehicles distributed over different regions, that provides the best and fastest service to maintain and repair your car that helps the customer reach the best results for the maintenance of all types of cars, moment by moment, and skillfully.
Prepared By:	-Project Manager : Shahd khawaldeh , Project Sponsor : Roa Hanoun , Developer: Alaa Sehwal , and Risk Manger: Sahar Fayyad
Date:	2 / 7 / 2022

B. Project Objective:

- Providing the necessary tools to implement this project such as (cleaning tools, battery tools, and vehicles).
- Develop a marketing plan and plan to control the project and its continuity.
- Providing the maintenance vehicles in the most significant number of regions.
- Providing the main services related to the delivery and receipt of cars.

C. Deliverables

- Providing the integrated and itinerant workshop service, which helps in providing many of the basic things related to car repair.
- Getting rid of car malfunctions at all times, especially late at night, and in remote regions.
- Work to provide the practical service that the client wants to get quickly.
- Providing job opportunities for many people in various fields.

D. Milestones

- Communicate with vehicles Mechanicals, IT and software engineers.
- Communicate with the vehicles providers through buying or renting cars.
- Contacting the Hala Car Company to provide us with the vehicle equipment.
- Publicity and announcement.

E. Limits & Exclusions

- Israeli occupation barriers and restrictions on importing equipment or moving directly between cities
- All cars are preoccupied
- Mobile Service in remote places is not good enough to specify the direction
- Staff safety

F. Limits & Exclusions

- Determine the company headquarters
- Identify the most prosperous and vibrant areas
- Fully equipped cars
- Formation of a full integrated efficient staff
- Provide the necessary equipment to carry out the work properly

G. Responsibilities

- Choosing the most effective path on how to proceed with the project when presented with multiple options
- Maintain synergy between multiple units in the same project by acting as a point of contact
- Keep the project aligned with the objectives of the line managers or the board of directors
- Conduct quality control during development to ensure standards are met
- Change project schedules and goals as needed or as funding for project changes
- Advertising and Marketing

Figure 1 Project Charter



1.1 General Information

- Project title: Car Garage
- Contact information:
 - ➔ Manager: Car garage team
 - ➔ e-mail: carGarage@gmail.com
 - ➔ Phone: 0598021538 || landline: 02-2425604

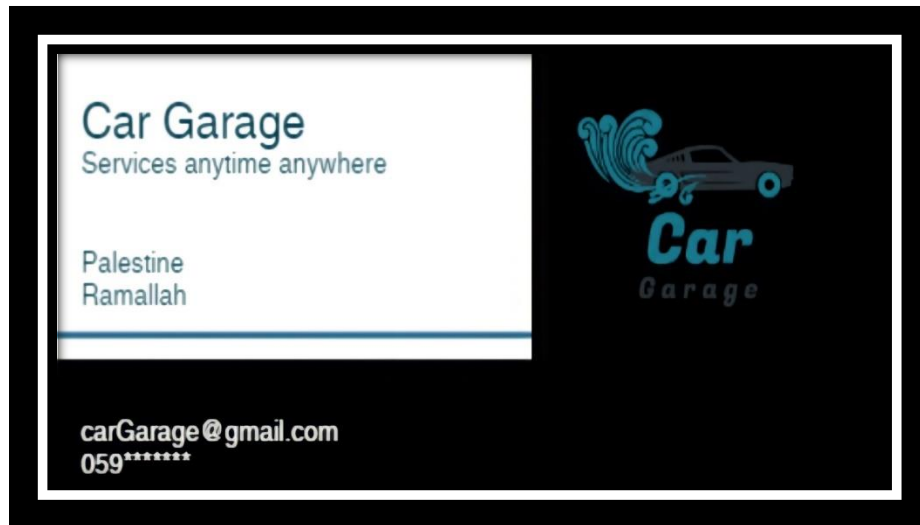


Figure 2: Business Card

1.2 Project Overview

1.2.1 Business Problem

This project is a solution to the problem of car service interruption in emergency cases, since it is a general problem that any of us may face, or is it to facilitate the lives of individuals due to the spread of private cars.

1.2.2 Project Objectives

- Communicating with the local population through application and phone number.
- Providing the necessary tools to implement this project such as (cleaning tools, battery tools, and vehicles).
- Develop a marketing plan and plan to control the project and its continuity.
- Providing the maintenance vehicles in the most significant number of regions.
- Providing the main services related to the delivery and receipt of cars.



- Providing a large number of technicians who have great experience and skill in checking cars of all shapes and sizes.

1.3 Project Scope

1.3.1 Project Description

It is a project characterized by vehicles distributed over different regions, that provides the best and fastest service to maintain and repair your car that helps the customer reach the best results for the maintenance of all types of cars, moment by moment, and skillfully. It is in line with the great technological development that exists around us by providing a special application for customers to communicate with the company. Moreover it increases the jobs opportunities, helping the drivers to get services efficiently.

1.3.2 Acceptance Criteria

1) Quality

- The project stays with high efficiency over the years, and that it remains the most important project in the country
- Customers benefit greatly and noticeably when every problem they face and turn to us.
- The project cars are modern and the repair tools are of high quality

2) Schedule

Completing the project on time within the arranged budget

3) Calculations

To calculate the coordinates in which the customer is located and find the nearest known area to reach him, For example, if the customer is in a remote area and the GPS cannot determine this area, the shortest close distance to the target is calculated to enable access to it.

1.3.3 Project deliverables

- Providing the integrated and itinerant workshop service, which helps in providing many of the basic things related to car repair.
- Getting rid of car malfunctions at all times, especially late at night, and in remote regions.
- Work to provide the practical service that the client wants to get quickly.
- Providing job opportunities for many people in various fields.

1.3.4 Limits and exclusions

- Israeli occupation barriers and restrictions on importing equipment or moving directly between cities
- All cars are preoccupied
- Mobile Service in remote places is not good enough to specify the direction
- Staff safety
- Sometimes there is not enough equipment to do the trick



1.4 Project Milestones

- Communicate with vehicles Mechanicals, IT and software engineers.
- Communicate with the vehicles providers through buying or renting cars.
- Contacting the Hala Car Company to provide us with the vehicle equipment.
- contacting the printing press to design a logo for the company and print it on the company car and on T-shirts as a uniform for the employees.
- publicity and announcement.
- Launch



Figure 3: T-shirt for Car Garage Team

1.5 Authority and Responsibility

1.5.1 Project Manager Responsibilities

- Set milestones and meet deadlines in long- and short-term plans Project tasks should be delegated to the most qualified personnel to complete them.
- Choosing the most effective path on how to proceed with the project when presented with multiple options
- Maintain synergy between multiple units in the same project by acting as a point of contact
- Keep the project aligned with the objectives of the line managers or the board of directors
- Conduct quality control during development to ensure standards are met
- Change project schedules and goals as needed or as funding for project changes
- Periodic monitoring about the implementation of the project on time with the specified budget.

1.5.2 Stakeholders' responsibilities

Project Manager	Shahd Khawaldeh	Increasing success rates.
Project Sponsor	Roa Hanoun	approves funding, the project charter, the project baseline, and high-level requirements
HR Manager	Leen Abu Omar	Hiring and interviewing staff, administering pay, benefits, and leave
Application Developer	Alaa Schwail	Programming the application that provides customers to communicate with the company and determine their locations
Risk Manager	Sahar Fayyad	To optimize organizational achievement and reduce the risks



- Employees: mechanicals, secretary, workers, accountant.
- Suppliers and resources: The Hla Company, Transit Company.
- Printing Center: Hanin Center For Printing and Adv. Services

1.6 Project Organization

Disaster Recovery Methodology

- Safety and first aid tools for employees
- Providing the largest possible number of cars or contracting with a rental company if needed

1.7 Resources and Funding

- Efficient employees with a spirit of cooperation and energy to work
- Providing cars that can withstand pressure and travel to remote areas
- The application manager should be efficient and able to work
- Provide good and sufficient equipment

1.8 Project Priorities

- Determine the company headquarters
- Identify the most prosperous and vibrant areas
- Fully equipped cars
- Formation of a full integrated efficient staff
- Provide the necessary equipment to carry out the work properly
- Advertising and Marketing
- Launch



Figure 4: Advertising example



2. Planning

2.1 Scope

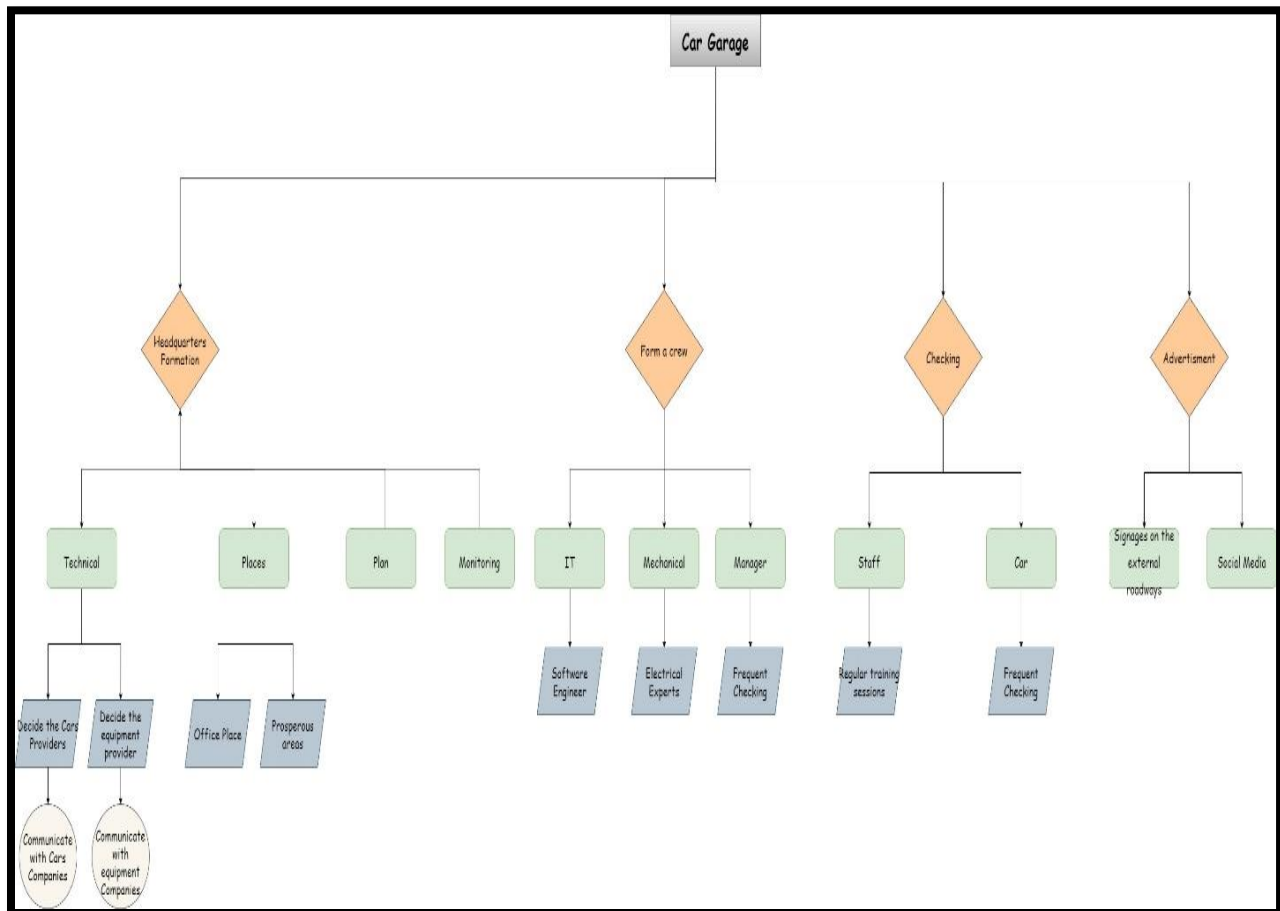


Figure 5: Work breakdown structure development

2.2 Human Resource Plan

2.2.1 Roles, Responsibilities and Staffing

- 1- **Project Manager:** The project manager creates an integrated project plan based on the charter with key stakeholders. By establishing a plan, project managers can monitor scope, cost, timelines, quality issues, and risk. The project manager identifies the tasks

that need to be completed in order to accomplish each milestone and deliverable during this phase.



- 2- **Project Secretary:** interact with guests and applicants, performing clerical duties, attend meetings, assist as a liaison between the employees and the project manager.
- 3- **Accountant:** Prepare the accounting system for the project account, keep track of project-related records, contracts, and change orders, ensure that invoices from suppliers and time sheets are approved according to the project, Performs closeout duties for projects.
- 4- **Car Driver:** Ensure that the vehicle entrusted to him is in good condition, ensure that the cabin is kept clean both inside and outside, Check the vehicle's technical condition, Suggestions about how work, routes, schedules, and so on can be improved.
- 5- **Electrical Engineers (Mechanical):** Identifying electrical requirements for given projects by analyzing technical drawings and interpreting specifications. Monitoring compliance with health and safety codes.

2.2.2 Organization Chart

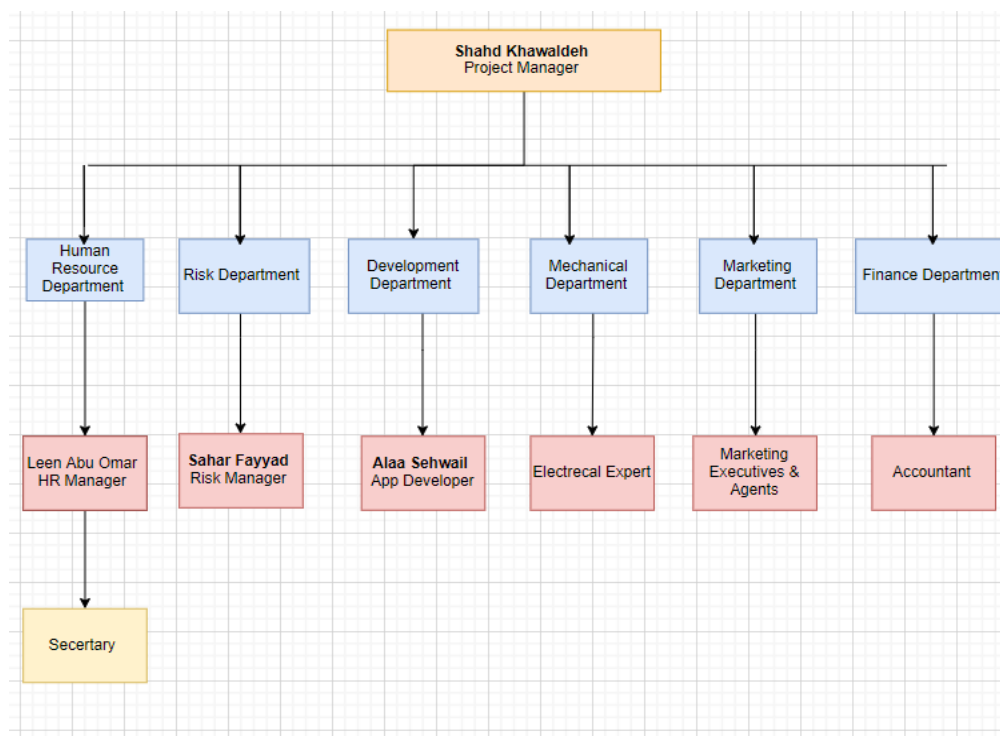


Figure 6: Organization Chart

✚ Training Needs

- Training the project accountant on the system of our company
- Training for the secretary on communicating with customers and dealing with the project application



- Training drivers on how to deal tactfully with customers and periodic training on handling problems and handling equipment in a safe manner.

+ Recognition and Rewards

- In the event that the secretary's performance was fast and distinguished with customers through the application, and he was committed in all meetings and did his work to the fullest, he deserves an annual financial reward according to his achievements each year.
- In the event that the accountant saves on the company and benefits it financially and increases the profit, he is entitled to an annual financial reward.
- Feedback for employees through the application is checked by customers, the highest score are entitled to an annual financial reward.
- In order to encourage the staff to work in the interest of the company, annual trips will be organized from the company's profits for all employees, and religious occasions will be celebrated every year.

+ Compliance and Safety

- Insurances for cars, employees and for the office

2.3 Communication Plan

- After determining the stakeholders in the initiating process, here we are going to answer the following questions:

Table 1: Communication plan

What info does each stakeholder needs?	<ul style="list-style-type: none"> - The secretary: needs to know how to deal with the application, the customers, and the meetings - Hla Company: needs to know about the required equipment for repairing cars - Transit Company: needs to know the purpose of the required car - The accountant: needs to know about the spent money monthly and yearly - Driver: needs to know the best route to reach the goal.
How often he needs that info?	Regularly
In what format he needs that info?	Reports, e-mails
Who is responsible for providing the needed info to the stakeholders?	The Project Manager



2.4 Procurement Plan

First, a procurement management plan lists all the procurements required for the project as well as the requirements that are expected to accompany them. Schedule development requires this step. As a result, it facilitates the estimation of the overall project schedule by creating timelines for implementing a procurement for the project.

Monitoring the entire procurement process is made easier with a procurement plan. It is possible to track progress by comparing the actual procurement with the procurement plan when the project is executed. Discrepancies can be corrected by adjusting procurements.

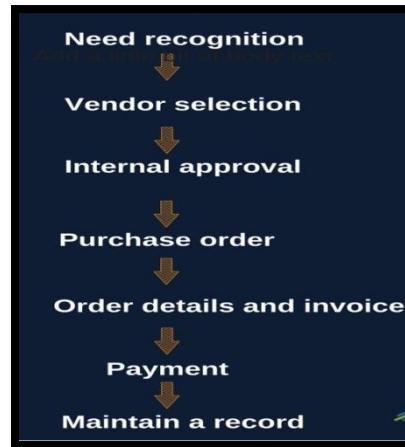


Figure 7: Procurement Plan Process ^[1]

2.5 Risk Management

The importance of determining the damages of the project lies in reducing the incidence of them and finding alternative solutions. In order for the project to be pioneering at all levels, we need to be aware of the obstacles that may arise in the future and be prepared to face them head-on.

Project Risk Factors

- **Technical Factors:**
 - Difficult to deal with complex equipment. (M)
 - Possibly exceeding current capabilities in quality expectations. (H)
 - Cut off of vehicle's gasoline. (L)
 - Lagging in the application. (H)
- **External Factors:**
 - Supply sources that may be challenging to obtain. (M)
 - Complying with government regulations that are challenging. (L)
 - Rapidly changing market forces. (M)
- **Internal Factors:**
 - The firm's priority for the project (lack in some project priorities such as marketing resources)
 - Resources needed: financial, human, and technical



2.6 Quality Planning

An important aspect of quality planning is deciding what matters most to the project. When you plan a project, you identify the critical factors for success. The project specification includes what resources are needed, what steps must be taken, and what specifications must be met such as:

- Project Quality Inspection Team.
- Acceptance criteria to be followed.
- Eliminate the gaps that occur and prevent reaching the desired goal.

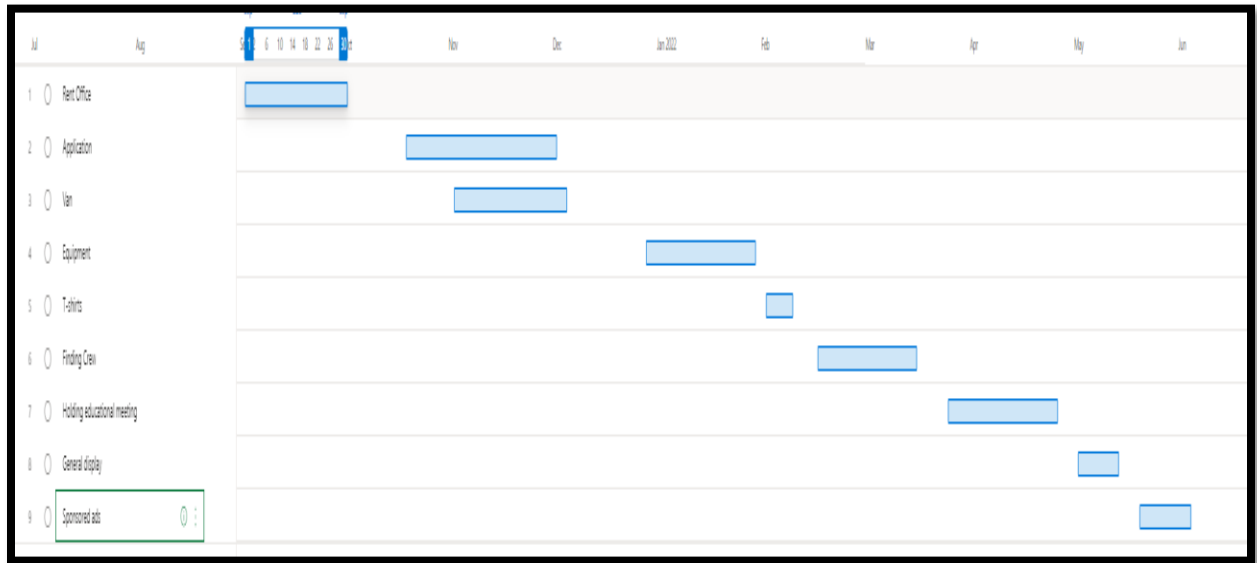
2.7 Estimating Project Time:

Table 2: Time Sechule

Tasks	Start Date	End Date	Duration (Days)
Rent office	1/9/2021	30/9/2021	30
Application	18/10/2021	30/11/2021	43
Equipment	1/11/2021	5/12/2021	35
Van	27/12/2021	27/1/2022	30
T-shirts	30/1/2022	7/2/2022	9
Finding the Crew	15/2/2022	15/3/2022	29
Holding educational Meeting	25/3/2022	25/4/2022	31
General display	30/4/2022	14/5/2022	15
Sponsored ads	20/5/2022	3/6/2022	15



Gantt Chart



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Figure 8: Gantt Chart

2.8 Estimating Project Cost:

Table 3: Cost Schedule

Tasks	Cost (\$)	Ratio (%)
1. Advertising	1416	1.7%
2. checks	425	0.5%
Insurance	425	0.5%
3. The crew	28896	35.2%
Mechanical workers	425 * 12	6.2%
Electrical workers	425 * 12	6.2%
Accountant	850 * 12	12.5%
Secretary	708 * 12	10.3%
4. Others	51392	62.6%
Rent office	991.5 * 12	14.5%
Vans	32578	39.7%
Equipment	1700	2%
Application	4250	5.2%
Logo	425	0.5%
T-shirt	141	0.2%
Invoices	400	0.5%
Total	82129	100%



3. Executing

3.1 Integration

The project focusing mainly on development, the project is a social, economic project for people who have cars, to help them when got cut off in the middle of the road. In the beginning of the project we rented an office, and bought a vehicle, with the development of the project and with our profits we will get other vehicles to expand the project.

3.2 Quality management

- the Inspection Team looking at the feedback in our social application and notice if the people Satisfied with the treatment of the staff
- check the quality of the project if he in the time, within budget and according to specification
- Ensure that the desired goal is reached and remove the gaps

3.3 HR management

3.3.1 Team building

- Helping everyone understand how they contribute
- Developing leadership skills
- Focusing on development
- Getting everyone together
- Making communication a priority
- Reinforcing the important ideas consistently
- helping them develop supportive attitude
- Helping them understand that they need to share stress involved in quality, time, and budget goals.

3.3.2 Assess (Factors for effective and productive team)

- A team building activity has to be enjoyable and convenient
- A team building should not provoke insecurity
- It must be consistent with the company's corporate culture
- Team building activities must have clear objectives



3.3.3 Team Charter

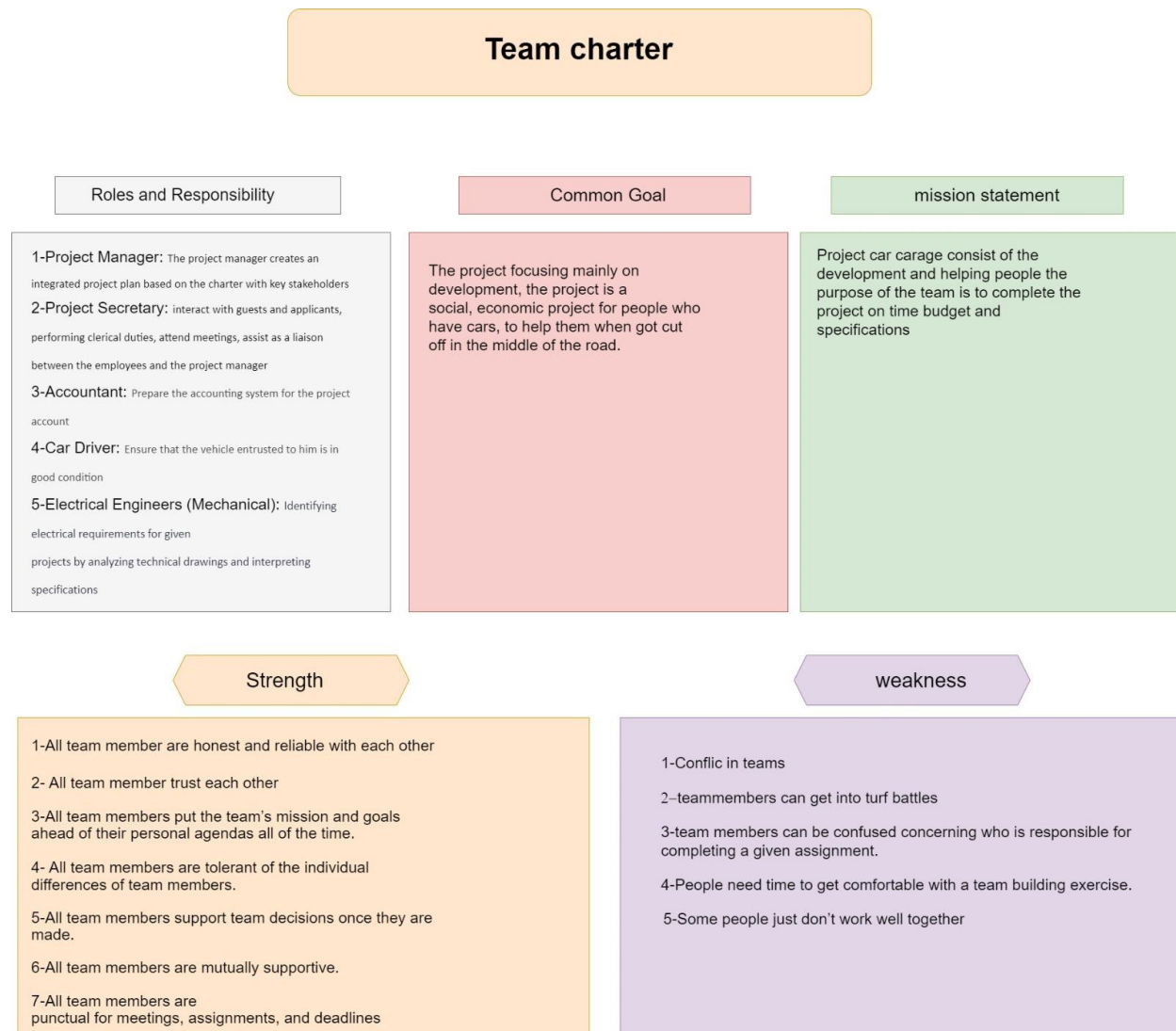


Figure 9: Team Charter





3.4 Communication management

We communicated with each stakeholder on the specific time to meet, firstly we communicated with renter to rent the office, and then we communicate with the car dealer to get the vehicle.



3.5 Procurement management:

Table 4: Resources Needed

Procure Needed Resources	Details
Jack stands, and pole jacks	<p>Many auto repairs will require raising vehicles at least temporarily.</p> 
Oil drain and oil caddy	<p>Services like changing oil and transmission fluid will need an oil caddy with enough capacity to contain the largest fluid volume.</p> 
Battery charger and jumper	<p>Many jobs will pertain to dead batteries or charging problems.</p> 
Engine hoist	<p>Engine hoists are fundamental for any garage or shop. Whether it's rebuilding, repairing or replacement, an engine Hoist will wear many hats in your shop.</p> 



4. Monitoring

Once the various elements of the project management plan have been developed and execution is underway, the work of the project must be monitored and controlled. Monitoring and controlling project work involves observing and measuring and, then, making appropriate adjustments and taking appropriate action based on the observations and measurements. Project managers and their team members monitor and control all aspects of a project during execution.

Project managers spent their time and effort controlling the following elements:

4.1 Scope

As we explained in the initiation of the project, the scope of this project is making life easier for citizens when their cars break down, so the aim in this part is to make sure that when any citizen had break down in his/her car to repair it as quick as possible, also to make sure that there is acceptance of the deliverables for the quality of the service we did, and to make sure that we can managing the change of the order where the customer can be charged for the work and can update the documents of the project – budget, schedule and cost accordingly.

4.2 Schedule

Monitoring the schedule is the most important responsibility of the project manager, so sometimes we needed to increasing the staff to achieve the repairing as in the best possible way so this increased the budget of the project, also we needed to approve for an overtime work since the breaks down happened in unexpected time, also we division the work of the employees, some of them work at night and the other in day, in addition, we can miss the deadline of an specific activity but this did not happen since it is not an optimal solution, because sometimes missing the deadline of an activity may adjust other all subsequent or even miss the deadline of the project.

4.3 Cost

Completing project within budget is one of the success criteria, so we make sure that we did that by monitoring the planned value curve with the earned value and actual cost also, we noticed for some points to achieve the project on success criteria so we influenced the factors that create changes to the authorized cost baseline like needed some expensive equipment, ensuring that all change requests are acted on in a timely manner since change requests that are either ignored or put off just create larger and more costly problems, managing the actual changes when and as they occur and ensuring that actual expenditures do not exceed budgeted expenditures in any budget period and for the overall project, monitoring cost performance to isolate and understand variances from the approved cost baseline, monitoring work



performance against funds expended so when we found that some employees don't do the work in an effective way we replaced them by another employees, informing appropriate stakeholders of all approved changes and their associated costs, acting to bring expected cost overruns within acceptable limits.

4.4 Quality

The controlling for the quality of the project by the cause-and-effect tool, the cause and effect diagram, also known as a "fishbone diagram", illustrates how a product characteristic (effect) relates to possible causes of variation (causes). As shown below, the causes include everything that might cause the problem.

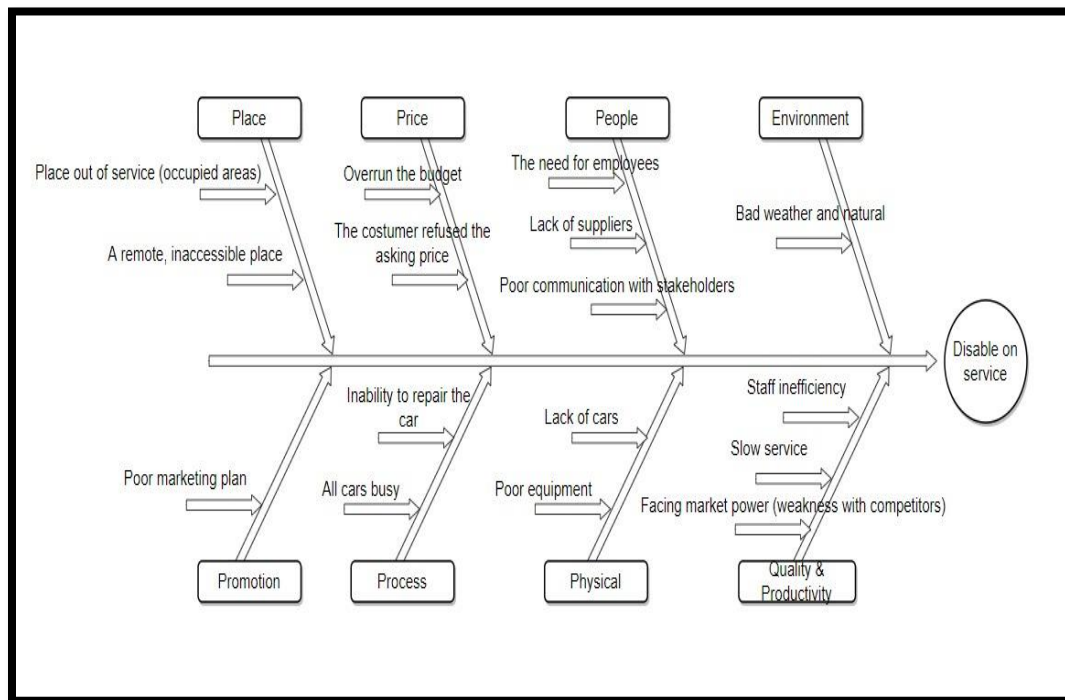


Figure 10: Cause and effect



5. Closing

Similarly, to the other four stages of project management (Initiation, Planning, Execution, Monitoring and Controlling), Project Closing also helps the organization avert unfavorable and adverse events.

5.1 Verifying the scope

Verified that the service that our project will provide matches the scope that has been documented and agreed upon

5.2 Closeout the contract

- ✓ The engineering and technology firm and the customer agree that it is closed out.
- ✓ We ensured that the customer is sufficiently satisfied.
- ✓ The firm is given another contract for a second time.
- ✓ The firm is recommended to other customers.

5.3 Close out the administrative aspects of the project

- ✓ Project team members were returned to their functional areas
- ✓ performance feedback was provided for team members
- ✓ project information was archived.

5.4 Conduct a lessons-learned review

The project was completed on time, within budget, and according to specifications, the thing remains is the customers feedback about the firm's performance which will decide the firm's future plans, for example, If the project was successful, the firm would want to adopt the best practices from the project as standard operating procedures.

5.5 Develop the project closeout report

Project Closure Report

Project Name: Car Garage Company

Department: business and engineering

Focus Area: Helping the drivers when they got off in the roads

5.6 Recognize team members

All members were given credit and asked about the following:



- **Do you wish to work with the respective project manager again on future projects?**
All of them answered yes and that the project manager was cooperative and understanding to everyone, which contributed to the success of the company
- **Do you strive to perform better on future projects?**
The answers were: yes, because this project made us loyal to this firm and we will do our best to success it more and more.
- **Can you set the right example for their peers in future projects?** The answers were: Certainly yes, there are many members who carry the spirit of leadership and have the ability to deal with problems and solve them with the least possible losses.

Accepting the comments which they made will help to develop the firm.

5.7 Complete the final step

The project manager has arranged a closeout conference with the counterpart in the customer's firm and during it, the PM made sure that the customer would like the project to be a beginning of a long beneficial relationship



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