**CVE 80018: FINITE ELEMENT METHODS AND APPLICATIONS**

Assignment 1: Finite Element Analysis of Structures

By

**HAIDER ALI (104323332)**



Submitted to

Dr. Hendrik Wijaya

Master of Professional Engineering

SWINBURNE UNIVERSITY OF TECHNOLOGY, AUSTRALI

**Question 1:**

(a) This crucial project management process entails determining the reasons why a project is required and providing support for those reasons. It involves determining the issue or opportunity that the initiative seeks to solve. This evaluation assists in determining if the project is worthwhile and corresponds with the strategic goals of the organization. Here is a thorough explanation:

**Problem Identification:**

Start by identifying the precise issue, opportunity, or challenge that the project is trying to solve. This might be a result of a market need, a process flaw, a legal obligation, or a fresh company idea.

**Viability Analysis:**

Analyze the project's viability from a technical, financial, operational, and organizational standpoint. Check to see if the project is feasible from a technical, financial, and resource standpoint for the organization.

**Strategic Alignment:**

Consider how the project fits into the overarching aims and strategy of the company. Does it result in increased productivity, market advantage, or growth?

**Benefit analysis:**

Determine the project's prospective advantages and results. These can be higher sales, lower expenses, higher customer satisfaction ratings, or bigger market shares. Determine probable dangers and difficulties that might thwart a project's success through risk assessment. Think about your own strengths, external influences, and any hurdles. Understand the important stakeholders who will be impacted by or able to influence the project through stakeholder analysis. Evaluate your audience's wants, needs, and possible contributions.

**Evaluation of Alternatives:**

Look for other approaches to the issue or chance. Compare the advantages, disadvantages, dangers, and viability of various solutions.

**Business Case Development:**

Create a convincing business case that summarizes the assessment's results. The project's justification, advantages, disadvantages, expenses, risks, and prospective return on investment are described in the business case.

(b) **Project initiating group check list in the beginning stage:**

A project's starting group must provide a solid foundation at this early stage to ensure the project's success. Here is a thorough check list:

Create a thorough project charter that describes the project's goals, deliverables, stakeholders, and high-level hazards.

Stakeholder Identification: List all internal and external parties with a stake in the project. Recognize their influences, expectations, and areas of interest.

Conduct a thorough feasibility study to evaluate the project's technical, financial, operational, and scheduling viability.

Identify any risks and uncertainties that might have an influence on the project through risk assessment. Create a rough risk management strategy. Clearly describe the scope of the project, including what is included and what is not. Ensure compliance with expectations of stakeholders.

**Resource Assessment**: Calculate the amount of people, money, equipment, and materials needed for the project. Establish reporting structures, assign roles and tasks, and assemble the project team.

**Plan for Information Sharing:** Create a communication strategy defining how team members, stakeholders, and leadership will exchange information.

**High-Level Schedule:** Draught a tentative project schedule that identifies significant deadlines and milestones. Determine whether you'll need outside partners or vendors, and if so, describe your procurement approach.

**Project Kickoff strategy:** Arrange a project kickoff meeting to inform all stakeholders on the project's goals and starting strategy. Establish a governance framework with distinct roles and responsibilities for decision-making. A budget should be set up initially to pay for the project's earliest phases and requirements. Obtain official approval and sign-off from important stakeholders to indicate their support for the start of the project.

**Documentation:** For future reference, make sure to keep a record of all choices, agreements, and plans made during the initiation stage.

2) **Appropriate Organizational Structure:**

Assume you are in charge of a building project, such as the construction of a new office complex. You might use an organizational structure called a "Strong Matrix" to effectively manage this difficult task.

**Within this framework:**

**Project Manager (PM):** This person assumes command and is in charge of the entire project. They are in charge of determining the project's course, making crucial choices, and ensuring that its objectives are realized.

**Functional managers** are the leaders of particular project-related departments or functions, such as engineering, procurement, construction, and quality control. They offer specialized expertise and materials to guarantee that every facet of the project is managed successfully.

**Project Team:** Your project team is made up of members from several departments who each bring a unique set of skills to the table. To accomplish the project's goals, they collaborate under the direction of the project manager.

The benefits of functional competence and project manager-focused emphasis are combined in this matrix framework. It enables smooth departmental collaboration while keeping a distinct project-oriented focus. Let's now contrast this structure with the functional organizational structure of the contractor organization:

When an organization is functional:

**Advantages:** Each department's experts are highly specialized and may focus on their own field of knowledge. Within each functional unit, reporting lines are clearly established.

**Challenges:** Coordinating and communicating amongst many departments may prove difficult. The success of the project as a whole may be impacted by the lack of a committed project focus.

When compared to the two, the Matrix structure aims to achieve harmony. It makes use of functional knowledge while also guaranteeing a consistent project direction, improving project management and producing positive results.

