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College of Management

Project Management

Title In English:

**The impact of operations strategy on project management: an applied study
on engineers working in engineering projects In the Kingdom of Saudi Arabia**

Title In Arabic:

**"أثر استراتيجية العمليات على إدارة المشاريع: دراسة تطبيقية على المهندسين العاملين في المشاريع الهندسية في المملكة
العربية السعودية"**

This is the capstone project requirement for the Master of Project Management

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**The impact of operations strategy on project management: an applied study on engineers
working in engineering projects.**

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Abstract:

The study aimed to know the reality of implementing the operations strategy (operations technology, production planning and control, management and organization) within the project, identify the challenges facing the implementation of the operations strategy within the project, and determine the impact of the operations strategy in project management. The study used the descriptive analytical approach, and relied on the questionnaire as a tool for this study. The sample size was (54) individuals. The study reached results of the reality of the operations strategy within engineering projects that came to a high degree. Degree, and thus the reality of the operations strategy is improved through “the group takes into account the integration between employing competencies and the technology used in it,” and “the group is keen on using modern technologies.” and technological methods. The group quickly addresses interruptions in production operations. The group uses automatic control systems (computers) throughout production operations. The group uses clear written standards to evaluate the performance of production operations. The study also showed that the challenges facing the implementation of the operations strategy within the project were of a high degree, and thus the challenges facing the implementation of operations within the project are improved through “the project management is keen to use operations research methods (CPM, (PERT) To reduce the time required in operations, the project management adheres to the quality standards followed in the Engineering Authority. The project management is also committed to preparing and implementing accurate delivery schedules. The completion of work is matched and monitored so that it matches the schedule for each activity in the project. The project management uses control systems. Effective in managing its projects to reduce the costs of production operations, the study recommended the following: - The management of the project under discussion must increase attention to the dimensions of

operations strategy in general and the dimension of flexibility in particular to enhance its role in improving marketing performance.

Keywords

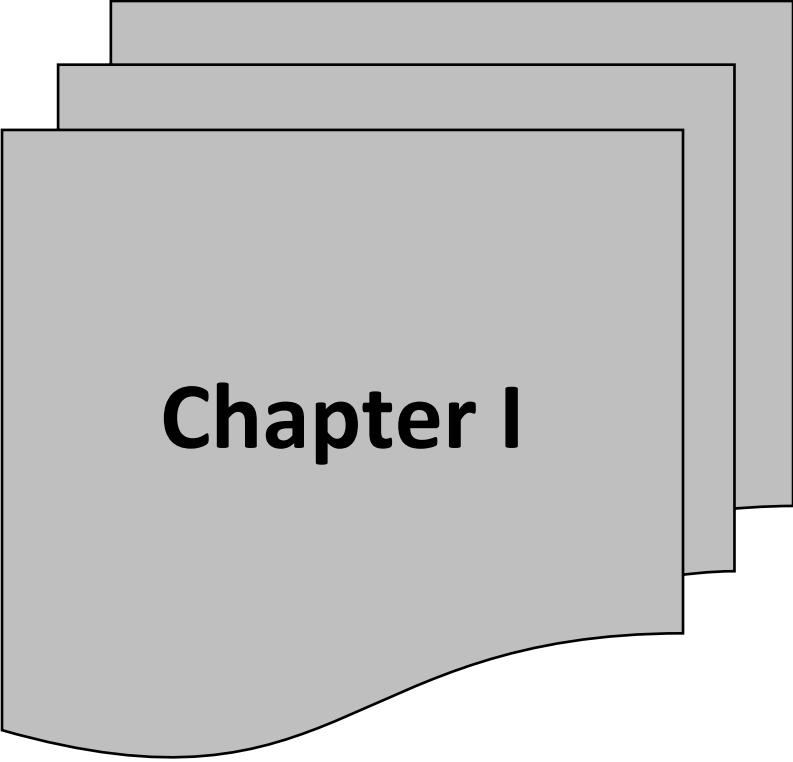
Process technology, production planning and control, management and organization, flexibility and quality.

الملخص

هدفت الدراسة إلى معرفة واقع تنفيذ استراتيجيات العمليات (تقنية العمليات، تخطيط ومراقبة الإنتاج، الإدارة والتنظيم) داخل المشروع، وتحديد التحديات التي تواجه تنفيذ استراتيجيات العمليات داخل المشروع، وتحديد أثر العمليات الإستراتيجية في إدارة المشاريع، استخدمت الدراسة المنهج الوصفي التحليلي، واعتمدت على الاستبيان كأداة لهذه الدراسة، وبلغ حجم العينة (54) مفردة، وتوصلت الدراسة إلى أن واقع استراتيجية العمليات ضمن المشاريع الهندسية جاءت بدرجة عالية، وبالتالي يتم تحسين واقع استراتيجية العمليات من خلال "مراعاة المجموعة للتكامل بين توظيف الكفاءات والتكنولوجيا المستخدمة فيها"، و"حرص المجموعة على استخدام التقنيات الحديثة والأساليب التكنولوجية، وتعالج المجموعة بسرعة الانقطاعات في عمليات الإنتاج. تستخدم المجموعة أنظمة التحكم الآلي (الكمبيوتر) في كافة عمليات الإنتاج، وتستخدم المجموعة معايير مكتوبة واضحة لتقييم أداء عمليات الإنتاج، كما أظهرت الدراسة أن التحديات التي تواجه تنفيذ استراتيجية العمليات داخل المشروع كانت بدرجة عالية، وبالتالي يتم تحسين التحديات التي تواجه تنفيذ العمليات داخل المشروع من خلال "حرص إدارة المشروع على استخدام أساليب بحوث العمليات (CPM, PERT) لتقليل الوقت اللازم في العمليات، تلتزم إدارة المشروع بمعايير الجودة المتبعة في الهيئة الهندسية، كما تلتزم إدارة المشروع بإعداد وتنفيذ جداول تسليم دقيقة، كما تتم مطابقة ومراقبة إنجاز الأعمال أن يكون مطابقاً للجدول الزمني لكل نشاط في المشروع، وتستخدم إدارة المشروع أنظمة رقابية فعالة في إدارة مشاريعها لتقليل تكاليف العمليات الإنتاجية، وأوصت الدراسة بما يلي: - يجب على إدارة المشروع قيد البحث الاهتمام أكثر بـ أبعاد استراتيجية العمليات بشكل عام وبُعد المرونة بشكل خاص لتعزيز دورها في تحسين الأداء التسويقي.

الكلمات المفتاحية:

تكنولوجيا العمليات، تخطيط ومراقبة الإنتاج، الإدارة والتنظيم، المرونة، الجودة.



Chapter I

1.1 Introduction

The impact of operations strategy on project management is a critical aspect of organizational success. Operations strategy refers to the decisions and actions taken to shape the operational capabilities of a company, while project management involves planning, organizing, and executing specific initiatives to achieve defined objectives within a set timeframe and budget. The alignment between operations strategy and project management is crucial as it directly influences the efficiency, effectiveness, and overall outcomes of projects (Bordoloi et al., 2019).

Operations strategy sets the framework for how resources, including people, technology, and processes, are utilized within an organization. It encompasses decisions related to production methods, quality control, supply chain management, capacity planning, and more. These strategic choices have a profound impact on project management, as they determine the availability and allocation of resources, the level of coordination and collaboration required, and the overall feasibility and success of project deliverables (Sirisomboonsuk et al., 2018).

Effective project management relies on a clear understanding and integration of the organization's operations strategy. When operations strategy is well-aligned with project goals, it provides a solid foundation for project planning and execution. The strategic decisions made at the operations level can influence project timelines, resource availability, risk management approaches, and the overall project scope (Demirel & Camcı, 2022).

A well-defined operations strategy can enhance project management by streamlining processes, optimizing resource allocation, and ensuring consistency across projects. It enables organizations to leverage their operational capabilities, such as efficient production processes or robust supply chains, to support project implementation. On the other hand, a misalignment

between operations strategy and project management can lead to resource constraints, delays, cost overruns, and compromised project outcomes (Yaghtin & Abbasi,2018).

1.2 Research Problem

The impact of operations strategy on project management presents a significant challenge for organizations. While operations strategy and project management are two distinct areas, their alignment is crucial for successful project execution and overall organizational performance. However, the lack of understanding and integration between operations strategy and project management often leads to inefficiencies, delays, and compromised project outcomes. The problem lies in the misalignment between the decisions and actions taken at the operations strategy level and their implications for project management. Organizations may fail to recognize the importance of considering operational capabilities, resource availability, and process efficiencies when planning and executing projects. This disconnects results in resource constraints, project delays, cost overruns, and a failure to meet project objectives (Davila et al.,2023).

the absence of a well-defined operations strategy that supports project management can lead to inconsistent approaches, lack of coordination, and difficulty in resource allocation across projects. This lack of alignment hampers the organization's ability to leverage its operational strengths and optimize project outcomes. Additionally, the evolving nature of business environments, technological advancements, and changing customer demands further exacerbate the challenge. Organizations struggle to adapt their operations strategy to meet the evolving project requirements and fail to incorporate agile and flexible approaches into project management practices(Mesías et al.,2020). **According to the problem statement, the current research tries to answer the following question: From the main question (What is the impact of operations strategy on project management? the following questions branch out:**

1. What is the reality of implementing the operations strategy (Process technology, Production planning and control, Management and Organization) within the project?
2. What are the challenges facing implementing the operations strategy within the project?
3. What is the impact of operations strategy on project management?

1.3 The importance of the research:

Research on the impact of operations strategy on project management is important for several reasons:

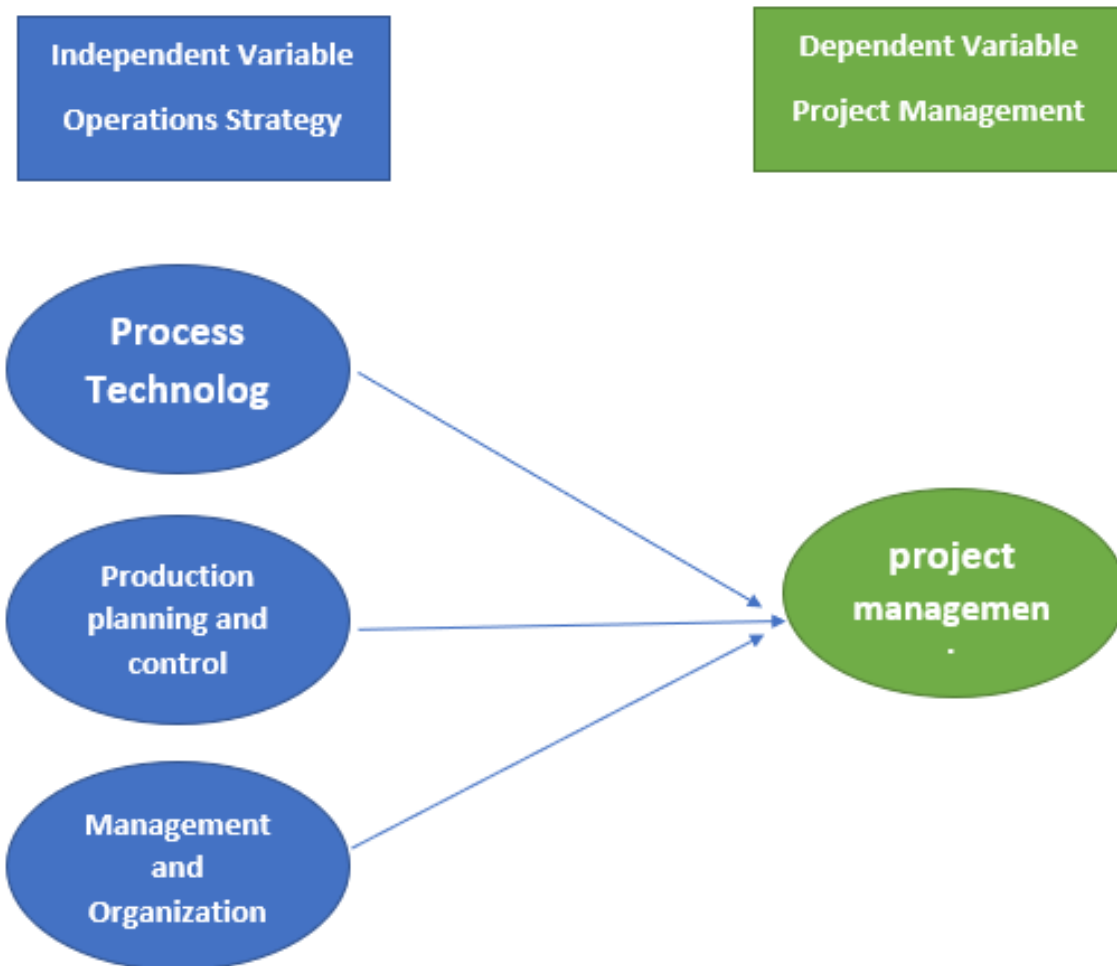
1- Theoretical importance:

- ✓ Operations strategy decisions have direct impacts on project costs, helping organizations develop cost-effective strategies, improve financial performance, and ensure successful completion of projects within budget constraints.
- ✓ Operations strategy must be aligned with the organization's strategic objectives as it helps organizations ensure that projects contribute to achieving strategic objectives and enhancing the organization's competitive position.
- ✓ Operations strategy focuses on continuous improvement and enhancing efficiency through project management, identifying improvement opportunities, implementing best practices, improving processes, and achieving higher project performance.

2- Practical importance:

- ✓ Operations strategy plays a critical role in project success and understand the impact of operations strategy on project management by identifying the key factors that contribute to successful project outcomes.

- ✓ Operations strategy decisions can greatly impact risk management in project management. By understanding this impact, organizations can develop effective risk management practices to reduce project risk and enhance project success.



1.4 Research Hypotheses:

It is clear to us from the previous figure, that the current research attempts to study the impact of operations strategy on project management:

- 1- **The independent variable:** The independent variable for research is represented in
 - **Operations Strategy** (Process technology, Production planning and control, management and organization)

2- The Dependent variable: The dependent variable for research is represented in:

- **Project management**

Therefore, the current research is based on the following hypotheses

- There is a statistically significant effect of operations strategies on project management

1.5 Literature review

In this section, we will discuss previous studies and literature that previously addressed variables

- 1- Study by (Koch et al.,2015): Title: Understanding operations strategizing in project-based organizations: middle managers' interaction and strategy praxis.**

The study aimed to focus on the content of high-level strategies, and to a lesser extent on their practical implementation. Little attention has been paid to middle managers who mediate the distance between the strategic goal of production organizations and their operational reality. The role and strategic agency of these managers has been shown to be influential in shaping, disrupting, and enabling the operating system, but they remain surprisingly absent from much of the entrepreneurship literature. In this paper, we examine the role of middle managers in OS practice through a strategy-as-practice framework. We study two project-based organizations, one in Denmark and one in the United Kingdom, that are developing lean production processes. In the Danish case, the bottom-up change strategy was initiated by project actors, while in the UK, the top-down change strategy was imposed as a strategic management initiative. In both cases, middle managers played a crucial role in mediating and translating intentions. We show how the practical application of strategy and process leadership is highly distributed within project-based organizations regardless of where change begins. The findings have resonance for theory about

middle managers' agency, and for understanding micro-organizational activities of OS formulation and implementation within project-based forms of organization.

2- Study by (Yaghtim&Abbasi,2018‘ Title: Selecting appropriate operations strategy using project management concepts: An economic analysis approach

The study aims to have an effective operations strategy (OS) as an essential element in protecting the competitive capabilities of any company. The operating system supports the business strategy and should be carefully selected in such a way that it can position the organization among competitors. The main objective of this study is to provide valuable insights to project managers to choose the most suitable operating system for their organization using an economic analysis approach. We propose a seven-step algorithm that makes decision makers able to make the optimal decision to choose an organization's operating system based on the economic analysis of operating system alternatives. This is the first study that presents an operating system selection framework and includes project management and operating system contents. First we consider each OS alternative as a program (a set of projects) and define a set of projects for required actions at the intersections of the OS matrix related to each program. Then, by identifying the dependencies between each program's projects as well as providing some information about the projects, we can estimate the programs' cash flows. Thus, we can evaluate the software financially and choose the most profitable and suitable operating system. The presented algorithm helps managers implement the most financially effective operating system for their company. The validity of the algorithm was demonstrated by conducting a case study.

3- Study by (Oliveira et al.,2018)· Title: Critical success factors in project management: Analysis of the indicators that constitute the predecessors of strategy, people and operations.

The study aims to identify the critical success factors (CSF) practices that contribute to increasing the probability of success of any activity when implemented well. The study uses a quantitative approach and a descriptive nature through a survey applied to 115 professionals involved in project management. The study identifies the most important critical success factors that explain the performance of office project management among the indicators used to measure strategy, people, and processes. Based on the relationship between importance and performance, the study discusses factors that align with CSF in relation to project management. The research used structural equation modeling with partial least squares and analysis of importance and performance maps. The results showed that strategy is the most important predictor, and its main critical success factors are project management methodology, organizational structure, alignment of intentions, and economic and financial feasibility. In operations, the key critical success factors are the stability of the project environment in terms of risk management, quality management system, performance metrics, audits and verification of deliverables, and communication with stakeholders. For people, the key success factor is the acquisition of skills in project management and human resource training, with the aim of disseminating knowledge associated with good practices, methodologies, tools, and techniques that support project implementation.

4- Study by (Lris et al., 2019)· Title: A review of energy efficiency in ports: Operational strategies, technologies and energy management systems

The aim of the study is to conduct a systematic literature review to analyze operational strategies, technology usage, and energy management systems for improving the energy efficiency

and environmental performance of ports and terminals. The study identifies research gaps and future research directions and highlights the potential for ports to achieve further energy efficiency. The study emphasizes the importance of using innovative technology to transition from a carbon-intensive port industry to a low-carbon port model by harnessing renewable energy, alternative fuels, smarter power distribution systems, and energy consumption measurement systems. The study also highlights the need for stricter environmental regulations to limit pollutants and GHG emissions arising from energy consumption.

5- Study by (Picciotto,2020) ‘Title: Towards a ‘New Project Management ‘movement? An international development perspective

This study focuses on examining the limitations of traditional project management practices that are dominated by the principles of management by objectives. He points out that adaptable approaches to designing and managing projects in complex and turbulent operating environments can be promising, and projects conceived as experiments can contribute to sound decision-making at the top level of strategy formulation and policy making. The article also emphasizes the integrity and utility of contemporary project management scholarship and puts forward six recommendations grounded in development experience that may merit consideration by the emerging “new project management” movement. The study does not provide specific details about the six recommendations, but highlights that they are based on hard-earned lessons from development experience.

6- Study by (Korsunska et al.,2022)‘ Title: The role of Creative Potential in the Project Management Process for the Implementation of the Company’s Strategies

The aim of this study is to evaluate the role of creative capabilities in the project management process to implement company strategies. The study aims to determine the role of the company's creative capabilities in managing the company's projects and expanding potential opportunities to implement its development strategy. The study uses a set of analytical and logical research methods to determine the role of creative potential in the company's work regardless of its sector, and to identify the main aspects of innovative activity within the company in implementing creative solutions in its work. The main findings of the study include the identification of critical success factors for implementing creative solutions in project management, such as acquisition of skills in project management and human resources training, project management methodology, organizational structure, alignment of intentions, economic and financial feasibility, and stability. Project environment in terms of risk management, quality management system, performance measures, audits, verification of deliverables and communication with stakeholders. The study highlights the importance of creativity in business and innovation and the role of the leader in enhancing creativity. The study also underscores the need for project managers to creatively apply established practices and tools to successfully manage projects in today's volatile and complex marketplace. The study indicates that there is a need for more research to explore the options and prospects for introducing innovative solutions into the administrative processes of various companies, regardless of their sector, and the impact of these creative capabilities on the growth of companies and their transition to a new level. for development strategy.

7- Study by (Secundo et al., 2022). Title: Strategic decision making in project management: a knowledge visualization framework

The article aims to provide a visual representation of the knowledge involved in a system of project components and decisions to support project managers in addressing the right issues at

the right time. The study adopts a design science process to define initial objectives and requirements and to develop a knowledge visualization framework. The article identifies eight types of strategic decisions and presents a conceptual map of the project decision-making process that addresses six categories of knowledge. The framework can support project managers who are trying to build a comprehensive view of project decisions and can be a basis for developing new types of knowledge management systems for project-related applications. The article proposes a new approach to support strategic decision making in project management by adopting a knowledge visualization point of view and provides an operational tool for managers and analysts at different levels involved in project management

1.6 Research methodology:

1. Method:

This study relied on the descriptive analytical approach to identify the reality of implementing the operations strategy (operations technology, production planning and control, management and organization) within the project, to know the challenges facing the implementation of the operations strategy within the project, and to study the impact of strategic operations on project management.

2. Research Sample

- In order to create reliable data, a survey will be conducted to apply the research to a number of engineers in engineering projects

3. Research Tools

- The questionnaire will be used as a research tool, which will be applied to the selected sample in order to create reliable statistical results and indications.

4. Statistical Methods

The study will use some of the statistical tools used, which can be stated as follows:

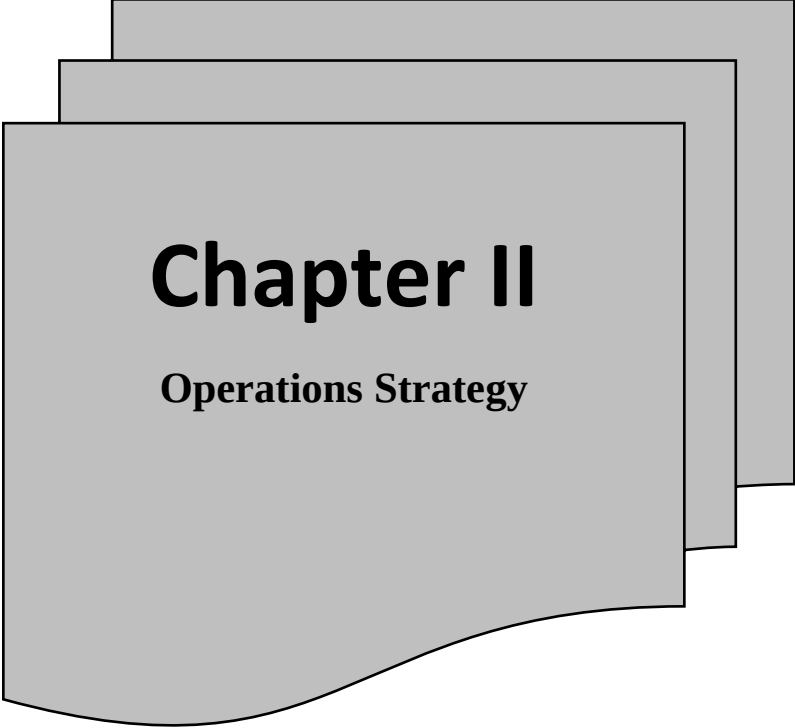
- Linear regression coefficient
- The arithmetic mean and standard deviation will be used to answer the study questions.

1.7 Research structure

- ✓ **First chapter:** Problem of the study and its importance
- ✓ **Second chapter:** Operations Strategy
- ✓ **Third chapter:** Project management and correlation between operations strategy and project management
- ✓ **Fourth chapter:** Methodological procedures
- ✓ **Fifth chapter:** Field Result
- ✓ **Sixth chapter:** Result and Proposal Analysis
- ✓ **Arabic and English References**

1. 8 Research limits

- **Time limits:** This study will be conducted during the first semester of the 2023-2024 academic year.
- **Spatial boundaries:** administrative projects to identify the reality of implementing the operations strategy (operations technology, production planning and control, management and organization) within the project, to know the challenges facing the implementation of the operations strategy within the project, and to study the impact of strategic operations on project management.
- **Human limits:** The application will be applied to a number of engineers



Chapter II

Operations Strategy

Chapter II

Operations Strategy

- **Introduction**
- **The concept of operations strategy**
- **Design and build an operations strategy**
- **Operations strategy areas**
- **The objectives of operations strategy**
- **The importance of operations strategy**
- **Effectiveness of operations strategy**
- **Operations strategy decisions**
- **The key Elements of Operations Strategy**
- **Operations Strategy Development Models**
- **Critical Literature Review**

Chapter II

Operations Strategy

2.1 Introduction

Strategic thought has become one of the basic necessities for the success of organizations of all sizes and sectors in which they operate, as strategic planning and strategic management concepts are no longer necessary and an important requirement for large companies alone, but rather have become a requirement for all businesses that aim to differentiate, succeed, and achieve a sustainable competitive advantage, which prompted them to implement these Concepts in their various operations and activities, Operations are basic activities carried out by organizations to achieve their goals(Tarawneh, 2011).

In today's highly competitive business environment, managers must make strategic decisions that will help their firms achieve their long-term objectives, developing operational plans with daily experiences in mind helps businesses gain long-term competitive advantages, as a result, managers in the operations section should make wise decisions in order to create and enhance competitive advantages, this comprises a detailed review of the company's operation plan in relation to competitors and industry best practices (Beckman & Rosenfield, 2008).

These concepts spread across all types of industries as business leaders sought new management strategies and tools to address corporate growth in a competitive and rapidly changing world, this led to the emergence of project management only a few decades ago, and starting in the early 1960s, commercial organizations and others began to realize the benefit of organizing work. In projects, this vision, which focuses on projects, developed as institutions began to understand their

urgent need for communication and cooperation among their employees with the integration of their work across different departments, the prevailing influence of operations and their strategy on the fate of projects and companies has led to the establishment of a number of innovative research and studies on the positive relationship between operations strategy. And project management(Tarawneh, 2011).

Converting operations resources into goods and services is the duty of operations as a functional unit in organizations, and Researchers studying strategic management have given the idea of operations strategy a great deal of attention (Kaviani & Abbasi, 2014).

Operations strategy is one of the strategies that has received great attention in the world of management, as it affects the rest of the company's strategies, as it works to raise the efficiency and effectiveness of operations and activities, it is one of the important studies that emphasized the importance of operations strategies and others, as they indicated that the operations function in the past was within operational management, it did not give independence and formulation at the overall strategy level. Because it focuses on daily operations and activities, as Skinner believes that technology is advancing rapidly and the business environment is constantly changing, and this requires reconsidering the concepts of operations management and requires raising operations to the strategic level (Al-Adwan, 2019).

Taking advantage of the above and in order to determine the nature of the relationship between strategic operations and project management and to present a group of previous studies that provide theoretical support for the positive and influential relationship between strategic operations and project management, this chapter has been devoted to the general conceptual framework of strategic operations.

2.2 The concept of operations strategy

First: Strategies are actions that provide the guidance for the achievement of organizational goals.

The term "strategy" generally means the direction and scope of a firm over the long term, and strategic decisions are generally broad, encompassing details about product range, market scope, competitive approach and research initiatives. Very often strategy is defined as a formal plan. strategy is choosing to perform activities differently from rivals, which requires creativity and insight. Strategy is used mainly at three levels: Corporate strategy, Business strategy and Functional strategy (Gupta & Muita, 2013).

There have been several definitions of operations strategy over the years and (Slack & Lewis, 2011) defined it as a general pattern for decisions that shape the long-term capabilities of any kind of operations and the way they contribute to the overall strategy through ongoing reconciliation of market requirements with operations resources (Kaviani & Abbasi, 2014).

Operations strategy: a vision and plan for managing operations. To determine the overall direction, and is considered the basic driving force for making decisions, this vision must be integrated with the company's overall strategy and business strategy; To achieve a competitive advantage, speed up completion of operations, reduce their costs, and obtain the best quality (Al-Adwan, 2019).

While chase (2009) referred to the operations strategy as constituting policy planning decisions that best utilize a firm's production resources to up its competitive strategy in the long- term.

In the same context, (Boyer, Swink & Rosenzweig, 2015)defined it as: a set of decisions and plans that involve developing and aligning managerial policies as well as scarce resources so that they are in fit with the overall business strategy (Odollo, 2019).

And according to Gupta (2001) operations strategies are the strategies that work together to ensure that quality process, capacity and facility are developed and strengthened in an organization (Khatolwa, 2018).

It is also known as the organization's method that explains how its inputs are transformed into outputs that match the pre-determined specifications, in a way that achieves the maximum possible satisfaction of the target customer's need, as it is the starting point from which organizations realize that gaining his satisfaction and loyalty gives them justifications for continuity and survival and the ability to create a competitive advantage and the possibility of confrontation, Challenges of the external environment and adaptation to them(Abbas, 2012).

Based on the above, the researcher believes that the operations strategy is part of the organization's comprehensive strategy and it is a natural matter for its concept and definition to be an extension of the concept and definition of the general strategy, taking into account the specificity of the operational and production function related to it.

Oparanma (2010) separated operations strategies into two main groups: those that concentrated on infrastructure, such as labor, quality, procurement, and organizational structure, and those that concentrated on structural components, such as facility, capacity, and process selection. From a review of the literature, Luz Martín-Peña and Díaz-Garrido (2008) distinguished three categories of generic operations strategies: strategies for assuring high quality products that seek to recognize consumer requirements and quickly respond to them by providing quality products; strategies for decreasing costs with the goal of achieving higher efficiency; Techniques that implement new technology and operational procedures with the goal of quickly introducing new designs and products and use differentiation to incorporate client requirements(Wandiga, et. al, 2019).

The strategy is implemented when: The company relies on organizational policies and practices that are consistent with its strategy, and translates them into actions that confirm the effectiveness of organizational strategies. Based on the above, the sequence of the strategic process can be divided into the following levels: (Al-Adwan, 2019)

- **Formulating the organization's vision and mission:** The vision is a statement that gives an answer about the organization's future direction, and the mission is the framework that describes the nature of the organization's work and the reason for its existence.
- **Formulating goals:** After a decision has been made regarding the organization's basic mission, its goals can be determined, as these goals help direct the efforts of capabilities and leadership.
- **Formulating strategies:** Strategies are the means that the organization uses to achieve its goals, as they explain the method and method that the organization chooses.

2.3 Design and build an operations strategy:

To design and build an effective operations strategy, senior management must take into account the competitive priorities stemming from the organization's distinctive merit, which represents the special qualities or capabilities that give the organization a competitive advantage. These priorities are linked to the way the organization competes. The most important of these priorities are: price, quality, flexibility, location, services, technology, and senior management must analyze the external and internal environment using SOWT analysis so that it invests in opportunities, enhances weak points, and gets rid of threats and vulnerabilities(Bani Hani & Al-Ali, 2004).

Building and designing an operations strategy is linked to the strategic decisions made by managers, which are affected by a group of factors:(Bani Hani & Al-Ali, 2004).

- The senior strategy that is formulated at the senior management level, so that it shows the objectives and objectives of the operations strategy
- Strengths and weaknesses include the organization's expertise and skill, processes, existing goods, reputation, location, etc.
- Customer expectations and requests, and this includes the characteristics of the product and services provided
- Competitors, and what are they doing? What are they planning to do?
- External environmental factors include economic, social, technological and political aspects that positively or negatively affect the organization.

Steps to formulating an operations strategy:

Operations managers in business organizations are responsible for formulating and developing the operations strategy, with the aim of achieving support for the business strategy, after formulating the business strategy, the functional strategies supporting it are formulated, the operations strategy is one of those strategies whose formulation requires several sequential steps, which are as follows: (Hassan & Obaid, 2023).

- Understand business objectives in the areas of market growth, product strategy and competitive environment.
- Identifying strategic operations units that are divided into similar groups of products during product and market analysis processes and determining the characteristics of operations.
- Determine the mission of operations based on critical market success factors.

- Determine immediate technology objectives, vertical integration, organization focus, and operating policies to support strategic operations units.
- Determine current operations plans, available resources, existing technology, and the organization's management philosophy.
- Determine internal and external performance measures such as energy, utility, operating costs, profitability, productivity, quality, reliability, and flexibility.
- Matching performance-based processes with the organization's mission to identify the gap and development alternatives.
- Evaluating the costs, benefits, risks and all available alternatives with the aim of achieving competitive advantage in the long term.

2.4 Operations strategy areas

Various operations strategies are used by businesses depending on the demands of their particular markets as follow: (Master class, 2021).

- 1- **Core competency strategies:** The key components of a company's business model are the focus of core competence operations strategies. Core competence operations strategies aim to leverage an organization's current capabilities in order to enhance profitability by identifying its finest core business processes.
- 2- **Corporate strategies:** This kind of operations strategy fits well with a broader corporate strategy and complies with the mission statement of the business. Companies that employ this kind of operations strategy base production initiatives, KPIs, and decision-making procedures on a comprehensive strategic plan that is decided upon by stakeholders and corporate executives.

- 3- **Competitive strategies:** Businesses that employ this kind of strategy refine their operational procedures to set their goods and services apart from rivals' offerings. Businesses can adjust their operations strategy to move toward a competitive advantage, such as a higher-quality product or a faster lead time during production, by establishing competitive goals within a particular economy.
- 4- **Product or service strategies:** This kind of operations strategy focuses on both the creation of new products and services as well as the quality management of already-existing goods and services. Companies that use this strategy frequently base their operations plans on the findings of their research and suggestions from product managers.
- 5- **Customer-driven strategies:** Based on the customer experience, businesses that employ customer-driven strategies decide how to run their operations. To manage and satisfy client expectations, this kind of operations strategy works in tandem with sales and marketing strategies.
- 6- **Capabilities Strategy:** This strategy deals with the formation and organization of capabilities and facilities. It emphasizes the different categories and planning the location of the spaces necessary to support business initiatives, recognize future events and respond to them by empowering its members and enhancing their inspiration in achieving the organization's goals (Ali, et. al, 2023).
- 7- **Development and improvement strategy:** which deals with decisions related to how to activate the operating system on an ongoing basis, to create value for the customer in a way that competitors cannot provide by implementing or transforming an idea into a product (Mahmoud & Abdullah, 2022).

Deploying these different areas and types of operations strategies in business organizations to build the necessary competencies in providing products and services leads to superior performance, as operations strategy is viewed as a major support in organizational performance that is achieved through a series of organized events in a logical flow directly from Through the acquisition of resources and the development of capabilities, which ultimately leads to achieving the organization's competitive superior performance in light of its competitive environment (Hamood, 2023).

2.5 The objectives of operations strategy:

The competitive priorities of a company, as well as its many decision-making domains and competitive domains, define the concept of strategy. The two ideas are well-suited to one other and to the operations, structure, and infrastructure aspects that the operations management process needs to take into account. The purpose of operations strategy is to give the operations function a plan so that it may utilize resources as efficiently as possible (Magutu, et. al, 2010), An operations strategy's goals are to build organizational knowledge, enabling planning to balance resources and market requirements, and provide a larger conceptualization of "value" and service delivery (Matthias & Brown, 2016).

Operations objectives, or what are called competitive priorities, can be listed, as(Schroeder & Goldstein, 2018) explained, that they are represented by four basic objectives: cost, quality, delivery, and flexibility. Other supporting objectives can be added to them, namely innovation, safety, and sustainable operations. These objectives come from operations and are reformulated to suit the mission, and are often of the same nature. Long-term, for more than five years, it will be of a sustainable nature, and as a whole, the results of the objectives can be compared with

competitors as a standard for measuring the progress or delay of operations, as (Slack, 2018) explained, these objectives are as follows:

- 1- **Cost:** It is a measure of the resources used by operations, usually the cost of a unit of production or the cost of goods or services sold.
- 2- **Quality:** is the conformity of the product or service to customer requirements.
- 3- **Delivery:** It is the provision of the product or service quickly and on time
- 4- **Flexibility:** The ability to change operations and respond quickly

2.6 The importance of operations strategy

The importance of the operations strategy stems from it being a vital element in the overall strategy of the project or company. The reason for this is that it is responsible for the largest part of the organization's assets. Brown, for his part, points out in his justification of the importance of the operations strategy that operations resources constitute approximately 80-85% of the organization's assets. Including fixed and traded ones, in addition to the fact that the operations manager is responsible for managing a high percentage of human resources, especially those working in the first line, and achieving an effective company does not come by chance, but this is achieved by having an appropriate operations strategy and achieving interrelation between competitive factors and the operations mission (Omar & Abdel Basset, 2014).

White & vondermbse pointed out that the importance of operations strategy appears through its ability to create many opportunities to develop competitive priorities, which are represented by shortening the preparatory period for delivery, improving product quality and capability that give the organization strength over its competitors, and market share, in addition to the advantages that the organization achieves by managing Coordination of operations and these advantages are:(Farhan, 2012).

- Interconnection between operational, financial, marketing plans and information systems.
- Achieving flexibility in operations, which leads to rapid response to changes in customer requests.
- Increased productivity and improved competition in global markets.
- High level of quality in order for organizations to remain competitive in global markets.
- Examine the constraints that economic and technological considerations impose on operations.

While Evans emphasizes that the importance of operations strategy appears through its ability to develop new technology and production systems that achieve many results in terms of products, such as reducing costs, improving quality and reliability, and thus achieving competitive advantage in global markets (Farhan, 2012).

The Benefits of operations strategy

Having an operations strategy for your company or project has various advantages, including:(Indeed Editorial Team, 2023).

- 1- **Employee efficiency:** Operations strategies specify the objectives of several departments, enabling team managers and staff members to understand their shared aims. An operations plan can guarantee that each worker who supports an operation makes the most use of their time and abilities. Leaders of organizations can also find out which departments are performing well and which might use some work.
- 2- **Resource management:** Because resources are frequently limited, it is critical that organizations use them effectively. Executives can effectively allocate resources by using operations techniques to identify the areas of the company that require them most. Chief operating officers can gain further insight into the expenses associated with managing

various divisions by creating an operations plan. Following that, they can examine these expenses to determine whether they align with the organization's overarching objectives.

- 3- **Department cooperation**: An organization's cooperation between its various departments is outlined in its operations strategy. Each department is aware of its relationship to the others by means of this coordination outline. They can also understand how the objectives of their particular department, along with those of the other departments, contribute to the achievement of the organization's overarching goals. Enhanced decision-making and a sense of unity among personnel across departments can be facilitated by this.

2.7 Effectiveness of operations strategy

The distinctions between building the organization's operations resources and the broader competitive strategy should be made clear by an efficient operations plan, the operations plan ought to be suitable, thorough, logical, reliable, and stable over time, operations plans generally need to be implemented, ethical, global, and creative, the operations strategy's efficacy is contingent upon several things, one of the difficulties operations departments in businesses face is creating an efficient operations plan. The following success elements influence how an operations plan is implemented:(Mendibil, et, al, 2016).

- ✓ Top management support
- ✓ Business-driven
- ✓ Strategy drives technology
- ✓ Change strategies are integrated
- ✓ Invest in people as well as technology
- ✓ Manage technology as well as people
- ✓ Everybody in board

- ✓ Clear, explicit objectives
- ✓ Time-framed project management

For businesses, creating an operational strategy is another difficult undertaking. It is quite difficult to use the majority of an organization's resources effectively, moreover, operations managers could be spread out over different parts of the world, as a result, running the business in "real times" and managing its day-to-day details in depth are difficult, it might sometimes be difficult to accept creative and inventive modifications in some situations.

Indicators for measuring the effectiveness of the operations strategy:

Effectiveness refers to the degree of achieving the goals that express the organization's mission, which explains the reason for its existence and the actions that must be implemented, there are a number of criteria used to measure the effectiveness of the operations strategy, which are:(
Abbas, 2012).

- 1- **Internal compatibility:** This means that the strategy is compatible with the policies followed on the one hand, and with the competence of the individuals working in the organization on the other hand, as well as with the overall goals.
- 2- **External compatibility:** This indicator determines the extent of compatibility between the organization's strategy and its external environment, the strategy, according to this standard, must move in parallel with the economic and social indicators of the environment in which the organization operates, which gives it an important dimension to the environmental analysis process.
- 3- **Clarity:** The strategy must be clear and written in a language that is understandable to those who develop and implement it and to those who benefit from the organization as well, it must also be unclear to competing organizations.

- 4- **Time compatibility:** Goals become obsolete over time if they are not achieved, as are resources, this criterion relates to two parts: the first: the extent to which the strategy's time limit is appropriate for achieving the goals, and the second: the extent of the goals themselves in terms of time, and when these two parts are available, the strategy is effective.

We conclude from the above that the operations strategy adopted by the organization in order to gain its effectiveness must be compatible with the available resources and external environmental factors in a way that enables it to bear the degree of risk, whether in changing customer tastes or in the volume of production to meet demand levels.

2.8 Operations strategy decisions

The operations strategy is based on four strategic decisions formulated as a tool to determine how to achieve operations objectives, which are characterized by being integrated, these decisions are as follows: (Hamoodi, 2023).

- 1- **Product design decisions:** These are the decisions related to product design from the initial stages of design, ensuring the flexibility of new designs, components of product parts, what is the technical composition of the product, costs and revenues, as well as the product life cycle, economic feasibility study, product introduction policy, and integration Customer requirements.
- 2- **Transformational operations decisions:** These are decisions related to transformational operations with regard to planning and design of operations and the selection of technology and equipment used in production operations, as well as determining the production strategy and production systems followed, the human resources required in terms of skill and experience, choosing the work location and the internal arrangement of the organization's departments.

- 3- **Quality decisions:** Quality is important and everyone's responsibility, but quality decisions relate to designing quality systems of approved standards and inspection according to specific product specifications, and who is responsible for these specifications and their location, aiming to quickly identify customer needs and respond to them by providing high-quality products and services with After sale.
- 4- **Energy decisions:** The organization's ability to provide the product in the appropriate quantity and time requires that it possess the necessary energy to do so, the role of operations management comes in making decisions related to providing the appropriate energy of the type and number of machines and techniques used.
- 5- **Inventory decisions:** everything related to planning, organizing and controlling inventory, whether for raw materials, products under manufacturing, or finished products in quantity and quality, along with their production or purchase dates, and the required inventory levels.

The formulation, modification, and application of choices in an organization's resource allocation process are all part of operations strategy. These choices primarily serve to guarantee that competition is successfully encouraged and welcomed. In an organization, decisions are applied in terms of work shifts, equipment to be utilized, reporting structures to be used, and information types to be used. A company's decisions and their implementation together guarantee the achievement of its goals and, thus, the success of its operations strategy. Making decisions and allocating resources effectively are key factors in guaranteeing that the company maintains its competitive edge. Thus, it's critical to recognize that operations strategy is very significant (Kiloh, et. al, 2020).

2.9 The key Elements of Operations Strategy

Some common components of an operational strategy are listed below: (Das, 2022).

- 1- **Product design and assembly:** In manufacturing companies, product operations management looks for improved ways to streamline procedures including team communication and product assembling. In order to prioritize tasks, they also evaluate data regarding their products, to maximize the consumer journey from product discovery to recurring purchases, product operations management collaborates closely with customer service, supply chain, sales, and production departments.
- 2- **Packaging, delivering and storing inventory:** Businesses can choose how to keep, handle, and arrange their goods by using an inventory operations plan, it searches for more cost-effective and efficient ways to deliver and keep merchandise while cutting waste. Inventory operation strategies also seek to place the best possible order for the quantity of products, maximizing storage capacity while minimizing waste.
- 3- **Supply chain optimization:** An operations strategy's supply chain section looks for strategies to maximize the flow of goods from suppliers to a company's distributors, at every point in the supply chain, the corporate management selects the activities and supply structure, they also decide on the locations for product assembly, storage, and manufacturing.
- 4- **Quality of the final product:** By using consumer feedback analysis and popper testing, quality operations aim to create a final product or service that meets customer expectations, they also make sure that clients can receive products of the same caliber by inspecting them for consistency, production processes are closely inspected to guarantee that the finest materials are used flawlessly to produce flawlessly finished goods.
- 5- **Scheduling the use of resources:** Planning when to buy and use resources is a need for any manufacturing company. This covers the optimal times for shipments, the tasks that staff

members must perform, the departments that require the resources, and the manner in which they would be divided.

- 6- **Facilities management**: To comprehend how the current facilities relate to the company goals, it entails planning and managing facilities, it also establishes whether the current facilities are operating at peak efficiency, additionally, facilities management determines whether your business requires new facilities and, if so, looks for the best alternatives.
- 7- **Forecasting for planning**: Future planning is a component of forecasting operations. Organizational data is utilized to project the company's future and carry out practical adjustments to guarantee that it advances toward its objectives.

How to build the elements of an operations strategy into project plans

To design the integrated guide for the operations manager to implement the best basic business processes and workflow in project plans, the following steps must be followed :(Golightly, 2023).

1- Step 1: Define what the operations strategy will impact or transform:

Short-term planning helps distribute resources at the appropriate location and time, satisfies urgent customer needs, and offers standards for assessing team success, and the organizations can rethink logistics, steer market expansion prospects, and invest in cutting-edge technological solutions with the help of long-term planning, your operational plan should focus on the daily tasks and activities required to carry out the strategic plan, with a more constrained scope, effectively communicating the benefits, viability, and alignment of your plan will help you win over the leadership and gain their support.

2- Step 2: Identify and secure the essential resources required for successful strategy execution

A task force for the operations plan must be assembled collaboratively, particularly when working in pairs with other teams. Partners in human resources, marketing, finance, and other areas will support the creation of knowledge gaps and work to improve productivity while cutting expenses and providing more value, and the routine activities that each department performs keep the ship going. Department heads should discuss the best course of action to reduce interruption if your operations strategy calls for a large amount of time, owing to the intricate and varied nature of operation managers' roles, these conversations present opportunities for learning that can impact project outcomes.

3- Step 3: Co-create an action plan to secure the flow of materials, information, and resources

Even after several rounds of work, this action plan won't be finished because priorities could alter as conditions change, having a single source of truth to refer to and make minor tweaks to is the best protection for transparency in any change in the plan, depending on the business model of your organization, your action plan's contents will change, at the very least, the following should be included in your action plan document: (Fiorentino, 2016).

- Start with a memorable name that reflects the operational strategy's impact or focus.
- Provide a brief overview of the operational strategy, its objectives, and why it's relevant to the corporate strategy goals.
- Summarize the key highlights of the action plan, including prioritized objectives, task owners/contributors, timelines, and expected outcomes.

- Break down the scale and scope of the tasks or initiatives required for implementation.
- Designate accountability of department heads/individual contributors who will be responsible for any project communication updates, reviews, and approvals.
- Outline specific timelines for key activities, deliverables, and quality control checkpoints that signify actual progress.

4- Step 4: Leverage technology and be the driving force behind the strategy's implementation

Are groups at ease enough to express their thoughts, worries, and opinions? Is there an increase in projects that are delayed as a result of poor accountability? Are members of the team wondering, "What should I do today?", and our ability to lead, communicate, and solve problems is critical to the operating strategy's success, you will need to arrange the various pieces of information that are coming at you from various channels because you are collaborating with numerous teams (Wu, et. al, 2019).

From Water's point of view, the most logical way to design and build an operations strategy includes a set of stages, which are as follows:(Bani Hani & Al-Ali, 2004).

- 5- Analyzing the project strategy from an operations perspective, this clarifies the path and overall goals of the business strategy.
- 6- Analyze overall objectives and set objectives to show what the operations strategy must achieve.
- 7- Examine the current operations strategy to see the extent to which it achieves the set goals, and identify areas that need improvement.
- 8- Understand the external environment in which the operations strategy operates to identify the strength of competition.

- 9- Finding the success factors and the importance of each of them. This includes the desired characteristics of the product that meet customer expectations.
- 10- The best design of the organizational structure, control systems, and functions in order to support the production process.
- 11- Develop and define metrics to compare actual performance with optimal, planned, and competitor performance.
- 12- Implementing plans and setting goals and conditions for other levels of operational decisions.
- 13- Monitor actual performance, continuously improve, update strategies, and benefit from feedback.

2.10 Operations Strategy Development Models

The models offer a structure for organizations to create strategies for their daily operations, over time, the models have evolved in response to shifts in the business environment, however, no one model would be appropriate for every circumstance, and companies must use the models with a contingency perspective and foster creativity and innovation when modifying the models (Slack, 2010).

Below are the most important models for developing operations strategy :

1- The trade-off concept and sand cone model

In the topic of operations strategy, this model is the most traditional, specialization was the foundation upon which Skinner (1969) built the concept, the model's main contention is that businesses could not be very good in all four operational competencies—quality, cost, speed, and flexibility, one out of every two competencies would be chosen by a company to develop its competitive advantage, as a result, trade-offs would be made for the competencies that were not

prioritized, the most crucial factor in choosing which competencies to prioritize is market-based analysis (Mungai, 2014).

2- Wheelwright and Hayes Four –Stage Model

The Wheelwright and Hayes (1985) model describes how operations are adopted and recognized as a strategic tool that ensures competitive advantage over the course of four distinct phases, there are four stages in the model. Internally neutral, externally neutral, internally supportive, and externally supporting are the first four states, the lack of emphasis on flexibility, affordability, or quality characterizes the initial phase, which is referred to as internally neutral, externally neutral refers to the second stage, at this point, the organization copies industry best practices like Just in Time and Total Quality Management in an attempt to catch up to its rivals (Chetty, 2020).

Internally supportive is how the third stage is characterized, the business strategy informs and is tied to the organization's operation strategies, the organization at this level has developed and acquired best practices that are superior to those of the market or the industry, the fourth stage is the externally supporting stage, when the business strategy is developed using the information from the operations strategy, that is in line with the Sandcone Productivity Frontier, which is driven by learning organizations' inventiveness and creativity (Sohrab, et. al, 2013).

Slide 3.9

The four-stage model of operations contribution

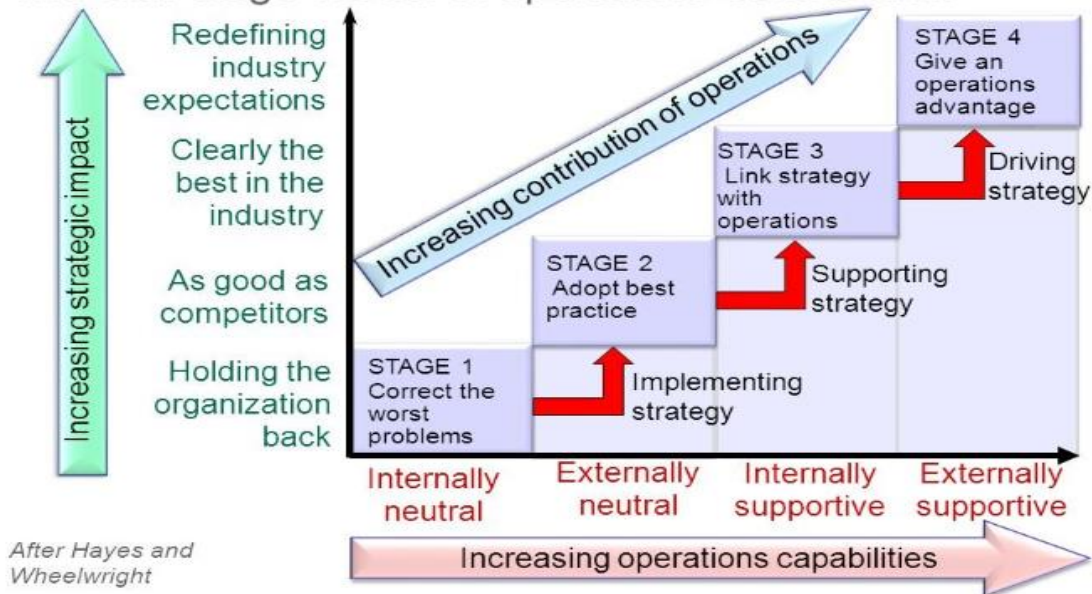


Figure (1) the four model of operations contribution

3- Content Model – Structural and Infrastructure Contents

The model, which was created by Leong et al. (1990), aids in identifying the crucial areas of decision-making that require attention when creating an operating plan, the concept distinguishes between structural and infrastructural criteria for decision making, the physical, capital-intensive, and relatively rigid structural requirements of an operations strategy are all part of its overall design. These comprise the physical facilities, their locations and sizes, their capacity and ability to meet market demands, the technology in use, and the supply chain, together, they make up the hardware of the twelve organizations (Mungai, 2014).

4- Process Model – Four Perspectives of Operations Strategy

Four distinct perspectives—top down, bottom up, marketing driven, and operations led—are identified by Slack and Lewis (2011) as the sources from which operations strategies originate. The operations strategy is connected to the departments both horizontally and vertically by the model.

The operations approach can be top-down or bottom-up vertically, the corporate strategy created by upper management is supported top down. This kind of operations approach aligns with the third stage of Wheel Wright and Hayes, the bottom-up method is the result of observing how operations behave and analyzing recurring patterns that turn into operational norms. According to Hayes et al. (2005), it's a viewpoint in which the company grows and improves its operational capabilities by making small, gradual changes based on its experiences.

Horizontally, the operations strategy might be directed by operations or by the market. The process of converting marketing requirements into operational decisions is known as "market led operations strategy." One approach to this would be to think about how the company's goods and services get orders in the marketplace (Mungai, 2014).

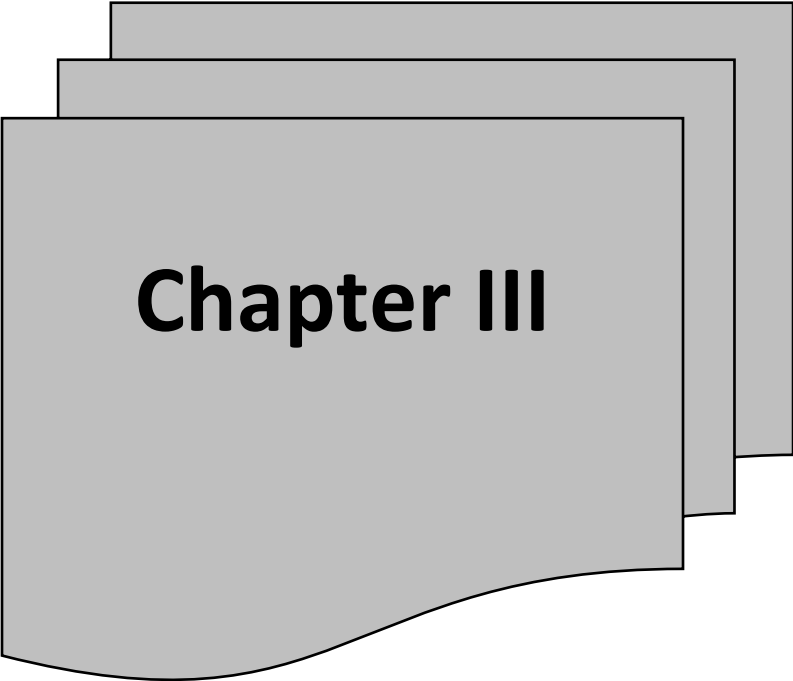
2.11 Critical Literature Review

The results of the Tarwaneh and Jebreen (2015) study revealed that operations strategy affects the management of strategic projects, and that the areas of operations strategy (information technology, production planning and control, management and organization) are interconnected, thus enhancing their influential power on the management of strategic projects. Also, the results of the analysis showed the greatest potential for the strength of this relationship. And the impact and it contributes greatly to strategic projects, **these findings are in line with the study of (hamody, 2023)** as the results showed that there is a correlation between the operations strategy

and the material requirements planning system in the project. The study also highlighted the importance of the operations strategy in opening the way for business organizations to reach their goals of survival and continuity and achieving a distinguished position in their internal and external environment.

Similar to this, the empirical analysis that conducted by (Eloísa, et, al, 2015) yielded results that indicate the strategy that companies design in the operations domain directly and favorably influences the competitive advantages that they attain in terms of quality, flexibility, delivery, service, and/or environmental protection; additionally, the development of these competitive priorities directly and favorably influences the structural and infrastructural practices that comprise the operations strategy. Furthermore, the firm's performance is positively impacted by both the operations practices and competitive advantages in operations that comprise the strategy's substance, and according to the study of (Kiki, 2010) there is a significant correlation between the dimensions of operations strategy and marketing performance.

Also, the study of wagathers (2017) researched the effect of operations strategy on customer satisfaction as a measure of competitiveness at bonfire adventures and events limited, the findings indicated existence of a strong positive correlation and its competitiveness. And in light of the collected data and the calculated results of (jepkorir, 2019) the research concludes that operations strategy affects organizational performance, and therefore firms should pursue this strategy because out of these operational activities the firm is able to deliver services.



Chapter III

Chapter III

Project management and correlation between operations strategy and project management

- Project Management and the Project Management Office
- Strategic Drivers of Project Management Systems
- Strategic Drivers of Project Management Systems
- The Project Manager
- The Importance of Project Management
- Organization Strategy and Project Selection
- The Reasons Project Managers Should Know Strategy
- The Relationship Between Operations and Project Management
- Strategic Project Management's Evolution
- Challenges of Implementing Strategic Project Management

Chapter III

3.1 Introduction

Strategically, project management is essential. With the help of a strong toolkit, people may more effectively plan, carry out, and oversee tasks to achieve particular organizational goals thanks to project management. However, project management is a results-driven approach to management that emphasizes the development of cooperative connections among a wide range of stakeholders. It is not simply a collection of tools. Those with project management experience can look forward to exciting opportunities.

Since the dawn of organized human activity, people have been working on projects. Our prehistoric ancestors were projects, the hunting parties. The Great Wall of China and the pyramids are two examples of large, intricate undertakings. Putting together a basic dinner is regarded as a project.

Project management has been more prevalent in organizations engaging on working-oriented projects in recent years. Thus, as a capable substitute to encourage change, Globally, companies are allocating resources towards employee training as a means of enhancing project management. However, market rivalry forces businesses to look for solutions to get through obstacles and make sure they survive. As a result, senior executives are beginning to acknowledge that projects have a core point of support within the company. Consequently, with a structure that incorporates project management ideas within an organization, can assist in producing organized and managed outcomes at the corporate level, not on the individual, as initiatives are an effective means of generating revenue and gaining an edge over competitors (Oliveira & Martins, 2018).

More focus will be placed on the professionalism of project management as more businesses realize the beneficial impact that it has on profitability. On the other hand, there is a contentious debate concerning the return on investment from using these techniques. This raises the idea that having a project as your main point is the only way to have an understanding of how projects are handled in organizations: Project Office, often known as the Project Management Office (PMO). The phenomenon of organizations Thus, PMO is a topic of interest for project management study. The creation of research on the subject at international conferences and in specialized publications serves as recent evidence of this state of affairs. Nevertheless, there is a knowledge vacuum and a lack of consensus regarding the factors that contribute to their success. This makes it imperative to have greater knowledge about its characteristics, the major determinants of their operations, and the difficulties they encounter. With this emphasis, managers would be better able to increase organizational performance outcomes and attain the anticipated outcomes of the projects carried out by their organizations by comprehending and putting into practice (Barclay & Osei, 2010).

3.2 Project Management and the Project Management Office:

Starting with the definition of a project, which is a “temporary endeavor undertaken to create a product, service, or result,” can help us better grasp the idea of project management. When something is temporary, it means that it has a start and an end and is created through a life cycle that is defined by five process groups initiating, planning, executing, monitoring and controlling, and closing—that overlap with each other (Borges, Carvalho, 2011).

A project is an exclusive and singular activity that culminates in a set of desired outcomes. It is comprehensive enough to necessitate a certain level of coordination as well as meticulous attention to relationships, expenses, timelines, and performance. Therefore, it should be viewed as an

amalgam of organizational resources combined to produce something new or improved upon in order to enhance performance capability in the development and implementation of organizational plans. Thus, a project is an organized method by which organizations can potentially adapt or change in order to meet the opportunities and difficulties presented by a dynamic and competitive environment. Therefore, planning, organizing, directing, and controlling resources are taken into account by project management in order to carry out a goal in a relatively short amount of time that is set out to accomplish particular goals and objectives (Maylor et al., 2015).

Owing to the growing significance of projects in organizations, two topics have been featured in project management specialized publications' agendas: Models of organizational maturity in project management and the Project Management Offices. The PMO is described as a component that has been assisting organizations in managing their operations more effectively, and the authors attest to this. by putting in place a formal framework, by assisting in reducing the risks involved, by lessening the inherent tensions that arise between operations and projects, or by offering suitable approaches (Yaghtin & Abbasi, 2018).

The Project Management Office is a formal component of an organization's organizational chart from a structural standpoint. Typically, providing executive duties to assist management (planning, monitoring, and execution control) of this organization's projects (particular projects, programmes, and portfolios) and a certain amount of lateral help/advice to a functional structure. As a result, the Project Management Office (PMO) can be divided into three levels: the Executive Project model, which is concerned with managing the portfolio of projects, the Project Support Office model, which focuses on individual projects, and the Project Management Office model, which focuses on numerous projects or programmes. Although the terminology is different, the objectives are the same and there are three PMO levels: The Strategic Projects Office oversees systems thinking

across the entire organization. Project Office Control is focused on a particular project. Project Office Business Units integrates many projects (Larson & Gray, 2011).

Organizations work on a variety of initiatives to achieve their objectives. In an effort to provide enough governance and successfully complete these projects, they set general frameworks, standards, and regulations, thereby establishing cultural norms. All of these frameworks, guidelines, rules, procedures, guidelines, techniques, supporting materials, and the culture that surrounds them when combined make up the "project management system." This acknowledges that the organization's strategy affects not just what is valued, how results are attained, and reported, but also the selection and funding of a particular project as well as the defining of its goals. According to this school of thinking, the organization's strategy determines both the projects it chooses to work on and how its project management system is set up (Davies et al., 2009).

The foundation of our analysis is the strategic value drivers. It is also unnecessary to go into great detail on strategy typologies in order to understand the argument. The many classification schemes for strategies are, in a sense, unimportant for the idea put out. Our main goal is to talk about how much value is created or lost based on how well or poorly an organization's strategic value drivers and the unique features of its project management system "fit" or "misfit." It is necessary to begin our discussion with Porter's commonly acknowledged and discussed classification scheme of strategies. He has created a technique for evaluating rivals in any particular market by first determining, then mapping, critical elements that set apart groups of businesses vying in the same market, as deeper product differentiation or value chain control through vertical integration other writers have offered various classification schemes for strategies (de Jesus et al., 2021).

In line with Porter, we have selected the level of process economics (efficiency) and product differentiation for our analysis. This decision was made with the understanding that some businesses looking to differentiate their offerings in order to compete in their markets are more likely to obtain strategic value from the successful development of new goods and services. On the other hand, companies looking to gain market share by providing less expensive solutions will primarily benefit from better process economics. This is not to say that if a company ignores one or the other, it cannot compete; quite the contrary, all competitive businesses need to provide appealing products at a price that buyers are prepared to pay. The argument is that businesses using a strategy of product differentiation to compete must create mechanisms for optimizing the return on their investments in new products and services. In contrast, cost-competing organizations need to maximize the value from their manufacturing value chain's efficiency (Sapsed et al., 2007).

Using a matrix to connect these two overarching strategic viewpoints, four strategic value driver scenarios can be distinguished, each of which outlines related value drivers that we might anticipate to be represented in the features of projects that will be carried out to accomplish the strategy and putting project management systems in place. The evaluation of various elements determines whether a given driver can be categorized as "high" or "low." As an illustration:

- Degree of product differentiation on the vertical axis.
- Innovation in the product/market combination.
- Shortness of the window of chance.
- Competition driven by innovation's intensity.
- Degree of process economic improvement on the horizontal axis.
- decrease in cycle duration or strain on it.
- Reduction of expenses (Sapsed et al., 2007).

A very distinct set of requirements for the installation of a project management system is defined for each of the four strategic value driver scenarios that resulted. The necessity for the organization to manage its projects in a way that aligns with its overarching strategic drives is the source of the requirements. We have dubbed this approach the Strategic PMS–Value Driver Portfolio approach, can be used to link particular project kinds to a particular arrangement of strategic value drivers that come from a particular strategy.

3.3The Project Manager:

In a minor sense, project managers and other managers perform similar jobs. Stated differently, they plan, direct, and inspire. However, they differ in that they manage temporary, non-recurring jobs to complete a project with a predetermined duration. Unlike functional managers, who take over pre-existing operations, project managers create a project team and organization from scratch. They must decide what needs to be done and how, rather than just supervising established processes. They must overcome the challenges that crop up at every stage of the project's lifecycle and even oversee its dissolution once it is completed. Project managers need to work with a variety of people to complete their tasks. They often serve as the initial point of contact for customers; thus, they must strike a balance between their requests and what is realistic and practicable. Project managers provide guidance, coordination, and integration to the project team, which is often made up of part-time workers dedicated to their functional areas. Frequently, they must work together with a collection of external parties—suppliers, subcontractors, and vendors—who might not be as committed to the project as they are. Performance is ultimately the responsibility of project managers, sometimes with too little authority (Savelsbergh et al., 2016).

Performance is ultimately the responsibility of supervisors of projects, sometimes with insufficient power. They must guarantee that the project's timeline, money, Key requirements for performance include all suitably traded off. However, in contrast to Project managers, their functional counterparts, typically lack the basic technical understanding necessary to make these kinds of decisions. Rather, they have to plan the project's completion by bringing the right people together at the right moment to discuss the correct problems and come to the right conclusions (Bredin & Söderlund, 2013),

Even though it's not for the timid, managing projects can be a really fulfilling experience. Working on projects makes life rarely boring because every day is unique. Since the majority of projects aim to pursue beneficial opportunities or find solutions to concrete problems, Project managers find personal fulfilment and meaning in their work. They take pleasure in coming up with fresh, original ideas. Whether it's a brand-new bridge, a project manager or team member might be quite proud of their accomplishment. a fresh good or necessary service. Project managers are frequently highly compensated stars in their companies. Project managers with skill are in high demand. Effective individuals who can complete tasks on schedule are in high demand across all industries. Evidently, the field of project management is stimulating and demanding. The goal of this text is to give students the information, viewpoint, and resources they need to take on the issue (Moradi et al., 2020).

3.4 The Importance of Project Management:

Project management is no more a management practice for unique needs. It is quickly taking on the role of the norm in company operations. The average firm is dedicating a larger portion of its effort to projects. The significance and input those initiatives provide to an organization's strategic

orientation is anticipated to increase in the next years. This is the case for a number of reasons, which are briefly covered here (Larson & Gray, 2011).

- **Compression of the Life Cycle of a Product:**

The reduction among the stages of the product life cycle is main elements driving the need for the management of projects. As an illustration, the typical product life cycle in the high-tech companies nowadays is between one and three years. Only thirty years ago, 10- to 15-year life spans were typical. For cutting-edge goods with brief lifespans, time to market has become more and more crucial. In the area of high-tech product development, it's generally accepted that a six-month project delay can cause a 33 percent reduction in the product's revenue share. Thus, quickness becomes a competitive advantage; increasing numbers of Companies rely on interdisciplinary project groups to launch innovative goods and services as soon as feasible (Larson & Gray, 2011).

- **Explosion of Knowledge**

Project intricacy has escalated due to the growth of fresh knowledge since initiatives now integrate the newest developments. For example, constructing a highway thirty years ago was a reasonably easy procedure. The complexity of materials, standards, rules, aesthetics, equipment, and necessary professionals has expanded in every sector nowadays. Similar to this, it is getting more challenging to discover a novel offering in the current digital and any era of technology that does not incorporate at least one microchip. Product complexity has increased the need to integrate divergent technologies. Divergent technology integration is now more important than ever because of the complexity of the product. In order to achieve this, project management expertise is now essential (Larson & Gray, 2011).

- **Profit, People, and the Planet: The Triple Bottom Line**

The increasing the threat that climate change poses have increased the importance of environmentally friendly business practices. Companies can no longer only focus on growing profits at the expense of the environment and society. Effective project oversight makes it possible to lower carbon footprint and use renewable resources. The goals and methods employed to finish projects have altered as a consequence of this alteration towards validity. See a Practice Snapshot: Dell's Children Turns into the World's First 'Green' Hospital (Patah, 2010).

- **Downsizing in Companies**

Organizational life has undergone a significant transformation in the past ten years. Many businesses now depend on downsizing—or rightsizing, if you're still employed—and adhering to core strengths in order to survive. The skeleton of middle management is all that remains of it. Project management is taking the place of middle management as the go-to method for making sure things get done in today's flatter and leaner organizations where change is inevitable. A further effect of corporate downsizing is a shift in how organizations handle projects. Large portions of project work are outsourced by businesses, and project managers are responsible for overseeing both their own staff and those of their colleagues in other organizations (Schniederjans & Cao, 2009).

- **A stronger emphasis on the customer**

Because of the growing competition, customer happiness is more crucial than ever. Consumers nevermore only acquire generic goods and services. They desire products and services customized to meet their specific needs. The supplier and the recipient must work together considerably more close-set in order to fulfil this mission. Salespeople and account executives are taking on more of

a project management responsibility as they work together with their business to fulfil the particular demands and requests made by customers. Increased customer demand has also led to the development of customized products and services attention. Purchasing A pair of golf clubs, for instance, was a pretty simple procedure ten years ago: you choose a collection founded on feel and pricing. There are now golf clubs designed for both players who are tall and small, players who slice the ball or who hooks it, sophisticated clubs that increase distance by utilizing the most recent metallurgical discovery, and so forth. Maintaining lucrative client connections and producing individualized goods and services both depend on effective project management. (Larson & Gray, 2011).

3.5 Organization Strategy and Project Selection

Strategy is fundamentally deciding how the organization will compete. Projects are used by organizations to translate strategy into new goods, services, and procedures that are essential to their success. For instance, distinctiveness is a key component of Intel's approach. Its initiatives focus on time to market and innovation. Intel is currently focusing its approach on specialized chips for devices other than computers, including air controls, cell phones, cars, and security systems. Cutting down on project cycle times is another objective. Cycle times at Intel, NEC, AT&T, and General Electric have all been lowered by 20–50%. The vital significance that projects and project management play in advancing strategic objectives. Project managers must think and behave strategically (Kudratova & Zhou, 2018).

Project success depends on their alignment with the organization's strategic goals. Because of the financial unpredictability, worldwide rivalry, and quick developments in technology, the current economic environment is unheard of. The success of the project depends even more on the

alignment of the plan under these conditions. A clear connection between any significant project and the strategic plan is required. Maintaining a solid connection between projects and the strategic plan is a challenging responsibility that requires ongoing attention from middle and upper management (El Yamami & Qbadou, 2018).

Establishing and sustaining a robust connection becomes increasingly challenging in organizations that are bigger and more varied. There is still a lot of data to imply that a lot of organizations lack a defined project selection procedure that is in line with the strategic strategy. Poor use of the company's resources—people, cash, equipment, and core competencies—is the outcome. On the other hand, companies with a clear connection between strategy and projects have fewer projects overall, higher project performance, and increased internal cooperation (El Yamami & Qbadou, 2018).

3.6 The Reasons Project Managers Should Know Strategy

Traditionally, project management has been completely focused on project planning and implementation. The perception was that senior management was in charge of strategy. This is an outmoded way of thinking. Project oversight, according to new school thought, is the pinnacle of operations and strategy. "It's time to expand the traditional role of the project manager from an operational to a more strategic perspective," says Aaron Shenhar with reference to this matter. Project managers will be more concerned with business issues in today's dynamic organizations, and their work will go beyond completing tasks to include attaining business objectives and outperforming competitors (Patanakul & Shenhar, 2012).

There are two main reasons why project managers need to understand their company's mission and strategy. To enable them to make the right choices and modifications is the primary justification.

For instance, a project manager's reaction to a proposal to improve a product's design in order to improve performance would differ based on whether his organization aims to achieve operational excellence through low-cost solutions or to become a product leader through innovation. Similar to this, a project manager's approach to delays could change based on strategic considerations. If a project manager's company prioritizes being first to market, she will approve overtime. If speed is not critical, another project manager will accept the delay. Project managers that are unaware of how their project fits into their organization's overall strategy often commit the following grave errors:

- concentrating on issues or fixes that are strategically low importance.
- concentrating on the current client rather than the entire market and value chain.
- placing too much emphasis on technology as a goal unto itself, leading to projects that stray and pursue cutting-edge technology that doesn't suit the plan or the needs of the client.
- attempting to address every concern raised by a client regarding a good or service rather than concentrating on the 20% that account for 80% of the value.
- pursuing excellence in an unending quest that only the project team finds meaningful (Patanakul & Shenhar, 2012).

To be effective project advocates, project managers also need to understand the strategy of their organization. Project managers need to be able to explain to upper management how their work advances the goals of their company. Aligning with business objectives provides protection and ongoing support. Additionally, project managers must be able to articulate to team members and other stakeholders the significance of particular project aims and objectives. Obtaining support for controversial trade-off decisions requires this (Boonstra, 2013).

3.7 The Relationship Between Operations and Project Management:

The phrases "project management" and "operations" are frequently conflated. When it comes to how they are carried out in the workplace, there are significant distinctions despite certain similarities. Recognizing the boundaries between these two roles is crucial for companies of all sizes looking to maximize profits. Now let's dissect. The term "operations management" refers to the general duties involved in planning, coordinating, and supervising the crucial processes that keep a firm operating. It is a profession in and of itself. These encompass project management in addition to the administration of operations linked to supply and delivery, accounting, manufacturing, IT support, maintenance, and human resources. Increasing profitability through the optimization of corporate operations is the aim (Vivek & Nanthagopan, 2021).

Operations management is the domain of project management. Although it sounds easy, managing projects is a difficult task for an operations manager to undertake as part of their KPI. Numerous duties that come with project management could easily slip through the cracks if they aren't done correctly. To put it simply, project management is a short-term role that guarantees the creation and fulfilment of a specific service, good, or outcome (Amic, 2022).

How does an operations manager assist a project manager? The Project Management Institute (PMI) recently released a global research report that identifies five competencies that are essential to the effective completion of projects: cooperative leadership, fostering connections, innovative problem-solving, strategic planning, and business acumen. It is evident how these competencies highlight operations and help the organization reach its objectives when project managers put them into practice (Amic, 2022).

The goal of both project and operations management is to boost productivity and efficiency inside the company. More specifically, activities, projects, processes, expenses, objectives, and human resources are all involved in these two company operations. When considering projects as an aspect of operations, there are several stages involved: idea, planning, sizing, creating, carrying out, managing, overseeing, and finishing. Certain stages of a project's life cycle will overlap with operations management responsibilities. For example, a project manager will collaborate closely with operations to determine the necessary resources and staffing, set a budget, and plan the work to align with the business's overall timeline when developing or upgrading a product (Amic, 2022).

3.8 Strategic Project Management's Evolution

With increasing popularity, strategic project management is a trend that is gradually taking over the business sector. This concept's key tenet is that the project management team should learn how to address the project's business issues and support the organization's goals. rather than concentrating solely on the standard OPM problems of deadlines, goals, and budgets. Three complimentary ideas were put forth: (1) convert the plan into projects, programmes, and portfolios; (2) foster collaboration in the oversight of associated projects; and (3) Making plans for the organization's future (Aubry et al, 2007).

First, it should be noted that strategic project management, which includes programmes as well as project portfolios, is viewed as a means of implementing the organization's tactics. In business, converting a strategy into initiatives and programmes is frequently regarded as essential. The synergy created by linked initiative management is a second facet of strategic alignment. Stated differently, the performance linked to overall management surpasses the total performance of the outcomes of individual projects. For instance, in the specific platform approach literature. and

projects, programmes, and portfolios, it is possible to identify benefits linked to the administration of these connections. From this point on, these benefits could be the result of wishful thinking, as they haven't been thoroughly verified by empirical investigation. Future planning is the subject of a third SPM component that is rarely covered in-depth in SPM literature (Thiry and Matthey, 2005).

Understanding the various organizational components is necessary for the functional approach inside an organization. An organizational component model was developed, with each component serving a distinct function. A group of interconnected multi-level systems was described as a structure. Technostructure operates as a result of the staff, as opposed to the line of operation's actions, that are performed by workers that are in charge of the organization's primary activity. People that operate globally within an organization form internal coalitions, which have a variety of implications on the power dynamics within the organization. The success of PMs is now closely linked to the growth of the world economy. PM is currently present in practically every industrial sector, having transcended its original boundaries of the military, defense, and engineering. (Kerzner, 2019).

Project managers are known to have a significant impact on decision-making, encourage the accomplishment of numerous objectives, and play a vital role in PM. The project manager's drive and task orientation, for example, will help the projects succeed because these behaviors are an extension of their personal values (Sabini & Alderman, 2021). The main objectives of traditional OPM are resource allocation, task coordination, and results. The main focus of work in the classic style is on concrete concepts. Yet in the updated SPM format, it covers the project manager, the project's soft, intangible components, and the strategic analysis during implementation. The new PM design incorporates cycles with real-time modifications in the cycle. This has an impact on the

process of implementation. The sequential action is broken by this act. Analysis and strategic action eliminate the boundary of calculated manoeuvres when instantaneous changes are introduced into the cycle. By doing away with a distinct phase for strategic analysis, the blur phase aids in project management's strategy implementation. In order to genuinely operate projects and cause social problems, project management (PM) requires strategic implementation (Vivek, 2020).

3.9 Challenges of Implementing Strategic Project Management:

An organization won't experience any penalties if strategies aren't put into action. Implementation, as opposed to planning, is a challenge for many organizations. due to the fact that strategy formulation and execution are highly challenging. Project management has been utilized by numerous organizations to implement their strategic management. A crucial situation that an organization encounters is accomplishing its goals with the limited resources available. Several resources are inextricably related to operational issues and aren't suitable for achieving the organization's declared objectives. When an organization implements these strategic goals, after which the plan of action is to deliver the items. Through project management, these objectives are met (Cullen et al, 2015).

Tools for managing projects, such the WBS (work breakdown structure), which breaks down the task into smaller tasks, matrix of responsibility and network analysis, can find solutions to issues like who can do what and when we can accomplish the necessary goals. Furthermore, observation skills can help you stay in control of the goals you have set and the changes you make to them as you go along. Maintaining a timetable makes it easier to determine whether the plan is implemented on the designated day of the month and whether we generally follow the correct course to fulfil our goal and vision. Risk management is the antithesis of project management; it

provides the organization with the means to assess obstacles or resistances as well as the chance to get beyond them. Consequently, it benefits the company to be ready for any unjustified deviance from the planned project (Singh, 2017).

Projects with a strategic focus must execute strategy. The reason for this is that behavioral issues during the execution of strategic projects cast a shadow over it. In addition to intellectual challenges, behavior management and problem-solving strategies would boost the project's effectiveness. Analyzing behavior, the strategic and personal agendas, and other related fields are caused by these methodologies, possibilities, as well as behavioral challenges, energy curves, and frustration over time. It is easy to budget for well-intentioned SPM while employing more uncertain tactics. Those SPM kinds are behavioral, though. Using behavior problem-raising strategies in project management appears to provide a lot of benefits, particularly for more significant initiatives (Singh, 2017).

Organizations can monitor and control strategic processes through the use of command over strategy activities. Diagnostic and interactive controls are the two types of systems for strategic control. Although diagnostic regulates are frequently employed to motivate, track, and recognize the accomplishment of strategic objectives, Organizational learning can be facilitated by interactive control systems. because they come with feedback mechanisms, developing components, including fresh concepts or altered tactical approaches. Therefore, Simons suggests utilizing dynamic controls with a focus on resolving uncertainty that could impact the concept of competitive advantage in order to influence "emerging action patterns (Kopmann et al., 2017).

Execution of Approach and Selection Achievement One strategic oversight role that might act as a link between the creation and execution of strategies is portfolio management. The total project financing influences the company's destiny with regard to how its procedures, products, and

structure are shaped. As a result, the specific strategy being followed is represented by the organization's portfolio of initiatives. Three stages are outlined in the literature for managing the project portfolio. the portfolio management process, project selection and prioritization, and resource distribution among projects. Through coordinating the selection of project investment decisions, managing risk, resources, and optimizing the project portfolio's worth, portfolio management carries out company strategy (Kopmann et al., 2017).

The current strategy process is insufficient to shape the strategy. A top-down strategy approach is used for evolving strategies to ensure organizational agility. The impact of the degree of portfolio-level strategic control was investigated by the researchers. To demonstrate the impact of measurable and developing strategies on portfolio success, a sample of 182 organizations was gathered. Strategic control acts as a mediator between the two types of tactics and enhances them both. Furthermore, three components of strategic control were identified: traditional control, implementation control, and premises control. These factors regulate how the expected and unexpected strategies are carried out (Meskendahl, 2010).

Organizational obstacles present a difficulty for SPM when putting project plans into practice. Project managers are forced to consider their job security while considering sustainability. Project execution fails due to PM practitioners' lack of SPM expertise. In SPM, having the ability to make decisions is regarded as a problem because a project manager is responsible for numerous tasks. Anecdotal evidence from the professional literature suggests that there is a very high failure rate for PMO installations. A study of 750 firms found that more than 75% of those who created a PMO shut it down after three years as it didn't provide any further benefit (Sabini & Alderman, 2021).

In the absence of a governing culture, the PMO is probably going to collapse. Project management needs to be ingrained in an organization's culture in order to be successful. The failure of a PMO can be attributed to seven factors. Among them are:

- (1) failing to specify the value proposition of the PMO,
- (2) a failure to recognize how the PMO affects project implementation abilities,
- (3) The PMO possesses becoming excessively autocratic,
- (4) The PMO's inadequate representation in the management reports. framework,
- (5) Top functional managers have not shown support for the initiative,
- (6) The Project management organization increases superfluous additional costs, and
- (7) The PMO is making an effort to exercise micromanagement projects (Keinz, 2021).

It is now widely acknowledged that the development of PMOs as an organizational form and the growing acceptance of program/portfolio management have sped up the shift towards project-based organizational structures. The majority of organizations have adopted portfolio management organizations (PMOs), which are an evolution of the classic pyramid organizational structure. In this instance, by keeping an eye on project performance, establishing a portfolio of project management (PM) techniques and competences, and allocating resources across the organization, PMOs are acting much like the quality department. Some PMOs also take on the function of finance. The PMO organizational reality is multifaceted and intricate. Organizations create a diverse range of PMOs in order to deal with reality (Cullen et al, 2015).

At the top of a corporation's pyramid, typically found in the project office or the board of directors, are project initiatives and money. Effective finance guarantees the project a strong start and has a

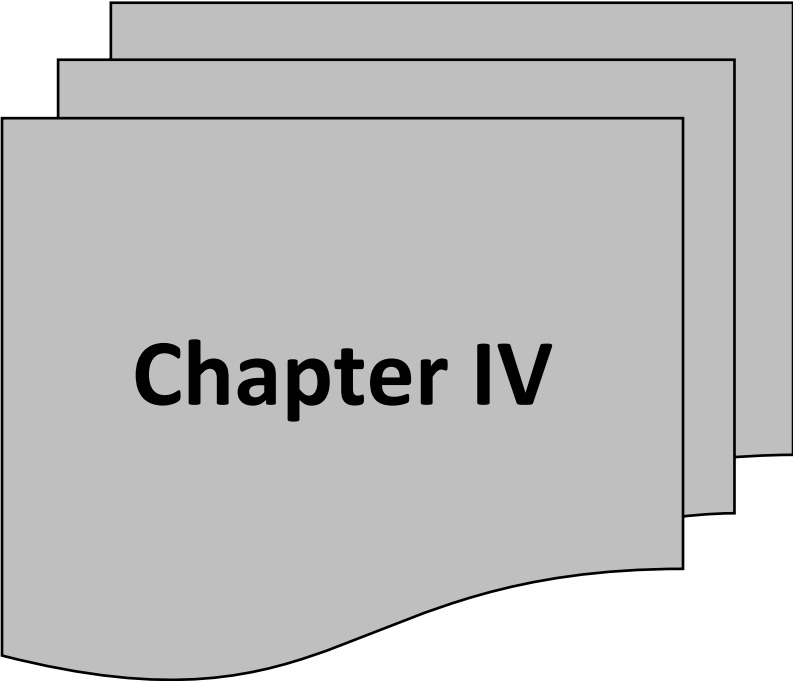
role in defining the project domain, which is mostly defined by the business strategy and the perspectives of accountable management. All of this is frequently mirrored in the project budget, human resource plans, participant delegations, and project structure. The team members' defined undertakings determine the project manager's scope of work, therefore as a result, The level of project authority and, consequently, the authority possessed by the transient establishment, define the concrete influence on a project (Cullen et al, 2015).

The project-oriented company's management system offers an integrative management strategy, backed by the use of leadership, change management, the PMO concept, strategic management, and project management theory and practice. A system like this makes it possible for the efficacy of projects and programmes to increase, which in turn boosts the efficacy of the entire organization. (Cullen, Calitz, & Nel, 2015).

The chapter has covered how the SPM emerged from the OPM in companies that used SPM publications that were already in existence. Furthermore, by reading the available literature, we were able to comprehend the relationships and linkages between SPM and OPM better. OPM addresses "how" the organization will get there, whereas SPM explains "where" the organization has decided to go. It is clear that in this case, the project's objectives need to be related to the strategic goals. However, as strategies are implemented through projects rather than the other way around, the best method to make sure that they are in line with strategy is to separate project goals from organizational objectives (Cullen, Calitz, & Nel, 2015).

The majority Most of the time, methods can be further broken down into strategies that can subsequently be implemented as programmes. Consequently, the projects would be integrated into a specific long-term strategic plan. Because of this, in order to show accountability in any organization, you need to be able to connect activities to specific organizational goals. The

integrated SPM that was discussed in this study was thought to help bridge the discrepancy between the strategy's implementation for greater efficiency and the OPM approach (Keinz, 2021).



Chapter IV

Chapter Four

Methodology

While research methodology is the process by which research problems are fully resolved, research methods encompass all approaches and strategies used to do research. It is a science that examines the methodical processes used in research (Mishra and Alok, 2017). The scientific method used to conduct research is called methodology.

The researcher reviews population and sample, data collection strategies, statistical tools, and research design in this chapter. The subsequent subsections provide a detailed illustration of each of these.

4.1 Study methodology

This study was conducted in order to answer the questions that were set. Therefore, the current study adopted the quantitative approach, which is done by identifying the reality of implementing the operations strategy (operations technology, production planning and control, management and organization) within the project, and identifying the challenges facing the implementation of the operations strategy. Within the project, and know the impact of operations strategy on project management.

During this, the researcher relied on two types of data:

4.2 Population and Sample:

4.3 Study population:

All units that the researcher seeks to investigate and from which he chooses a study sample are called the study population. The community to which the researcher seeks to generalize the results of his scientific research is another name for it, according to (Al-Khafaji, 2016). In order to save

time and effort and ensure the validity of statistical data, the researcher selected a simple random sample from the research population because it is not possible to examine the entire group for economic and social reasons. The study population includes a group of engineers working in the Kingdom of Saudi Arabia.

4.4 The study sample:

The subset of components of the research community, or that part of the community that has been selected according to scientific principles and procedures so that it accurately represents the community, is what is referred to as a sample (Muhammad, 2017, p. 312).

The researcher defined the sample of the current study as (a random sample of engineers working in companies in the Kingdom of Saudi Arabia, and the research tool was applied to a random sample, and the total sample was (). The current study relies on the questionnaire paper tool to collect the information and data targeted by this study, and the questionnaire paper included.

4.5 Data Collection:

Statistical research comprises a number of steps, the most important of which is probably figuring out how to collect data in a reliable, accurate, and scientific way in order to determine statistics. There is a substantial correlation between research findings and the statistical methods employed. Data gathering methods from a range of literary sources

- **Primary data:** This was done through conducting a field study in which a data collection tool was applied, which is the questionnaire, which was designed by the researcher. The questionnaire was then distributed to the study sample, which was represented by secondary school students, and then an analysis of this data was conducted through the use of the analysis program. Statistics (SPSS) in order to reach scientific results.

- **Secondary data:** which relates to reliable scientific information collected from scientific books, research and studies related to the subject of the study, and published research articles that are related to the variables of the study.

The study sample consisted of a number of engineers in engineering projects. The study sample amounted to 54, with an average of (42) males and (12) females. The researcher explains through the following the specifications and characteristics of the sample:

Table 1 shows the characteristics of the study sample

Variable	Categorization	F	%
gender	Male	38	38.45%
	Female	11	11%
Age	Under 30 years old.	11	11.8%
	30 –40 years old.	14	14.8%
	40- 50 years old.	28	28.5%
	50 or more.	38	38.1%
Years of Experience	1 – 5 years.	33	33.0%
	6- 10 years.	12	12.0%
	11- 15 years.	14	14.0%
Educational level	Bachelor's degree	27	27.5%
	Master's degree	12	12%
	Doctorate degree	9	9.4%
Total		54	100%

The following figures and graphs explain the sample characteristics more clearly

The sex of the sample

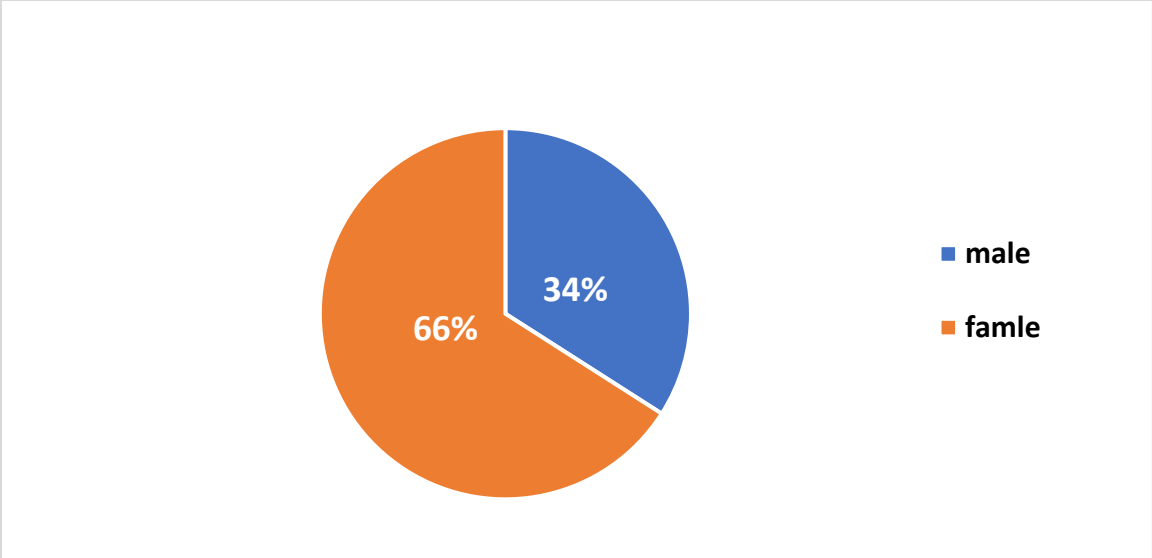
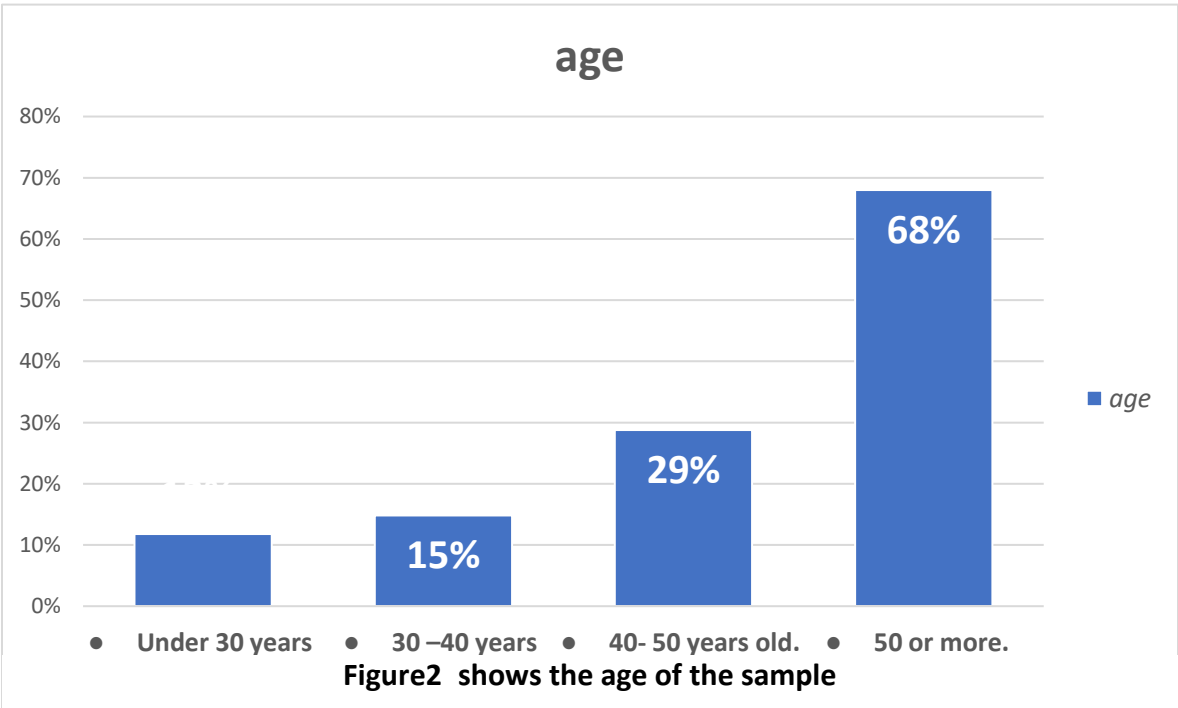


Figure 1 shows the sample size

 the age



 Educational level:

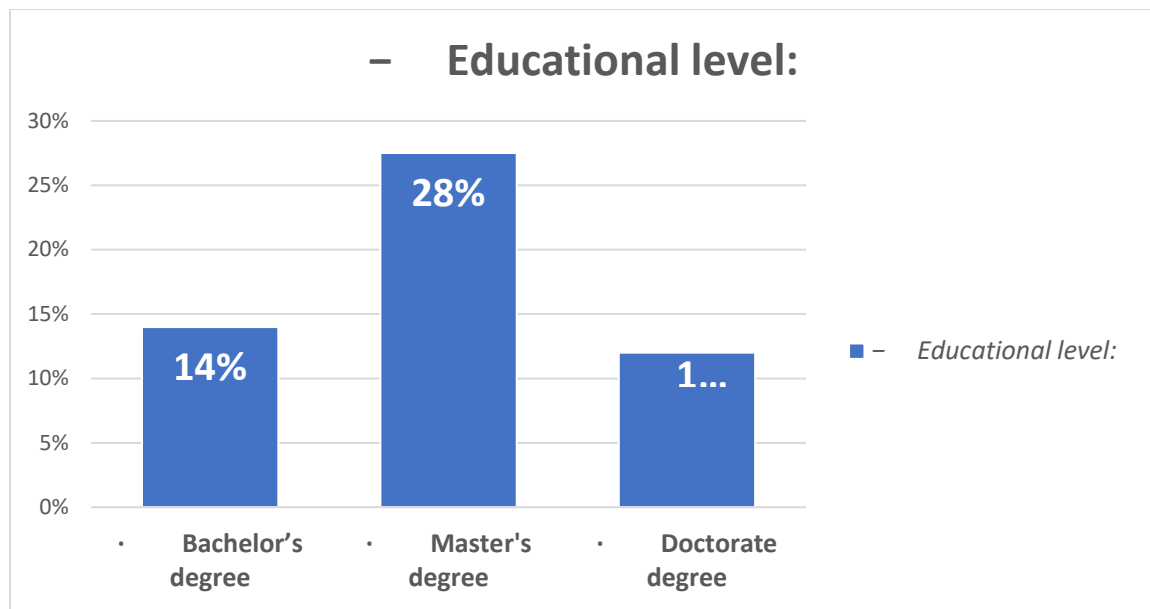


Figure3 shows the educational level of the study sample

✚ Years of Experience

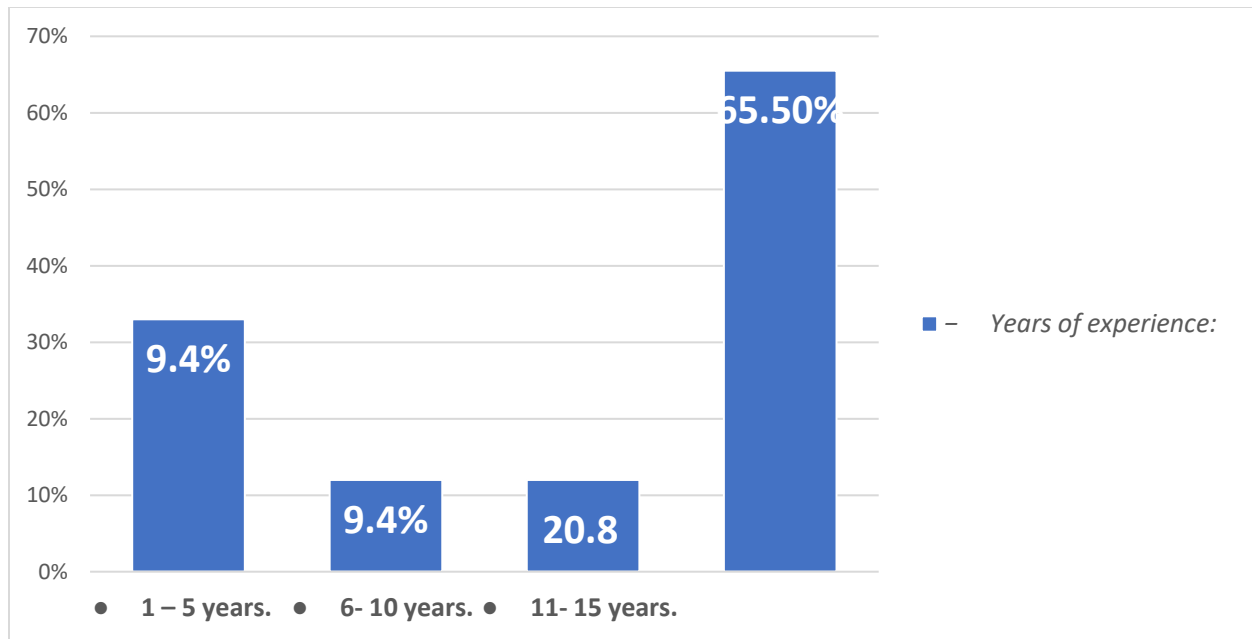


Figure4 shows the years of experience for the study sample

4.6 Tools:

The study tool consisted of three questionnaires, which were applied to the study sample, and we explain them as follows:

operations strategy on project management

- Which consists of three axes:
- The first axis: The reality of implementing the operations strategy (operations technology, production planning and control, management and organization) within the project which consists of (15) paragraph.
- The second axis: Challenges facing the implementation of the operations strategy within the project, and it consists of (15) paragraphs.
- The third axis: Challenges facing the implementation of the operations strategy within the project. It consists of (14) paragraphs.

A five-point Likert scale was used to answer the questionnaire items; The score in this questionnaire is calculated according to the following table:

Table2 shows the response levels on the Likert scale

Answer levels	Strongly Agree	Agree	neutral	not agree	Strongly Disagree
	5	4	3	2	1

4.7 Validity of the tool:

Concept Validity: As for validity, it refers to the degree to which the study or evaluation accurately reflects a particular concept that the researcher is trying to measure, and while the plant score is concerned with the accuracy of the instrument or the precise measurement procedure, validity is concerned with the success of the study in measuring what the researchers set out to measure.

Internal consistency was used to measure the validity of the tool, by measuring the extent to which each item of the questionnaire is consistent with the axis to which it belongs. The Pearson correlation coefficient was used between each item and the total score for its axis, and the following table shows it:

Table 3 shows the results of the correlation coefficient for the validity of the tool

The third axis			The second axis			The first axis		
N	R	Sig	N	R	Sig	N	R	Sig
1	0.72	0.000	1	0.51	0.000	1	0.61	0.000
2	0.75	0.000	2	0.52	0.000	2	0.55	0.000
3	0.55	0.000	3	0.54	0.000	3	0.77	0.000
4	0.66	0.000	4	0.57	0.000	4	0.74	0.000
5	0.77	0.000	5	0.60	0.000	5	0.66	0.000
6	0.88	0.000	6	0.66	0.000	6	0.73	0.000
7	0.79	0.000	7	0.76	0.000	7	0.81	0.000
8	0.67	0.000	8	0.88	0.000	8	0.55	0.000
9	0.89	0.000	9	0.78	0.000	9	0.62	0.000
10	0.88	0.000	10	0.70	0.000	10	0.83	0.000
11	0.66	0.000	11	0.66	0.000	11	0.63	0.000
12	0.69	0.000	12	0.88	0.000	12	0.83	0.000
13	0.81	0.000	13	0.77	0.000	13	0.74	0.000
14	0.73	0.000	14	0.55	0.000	14	0.85	0.000
15	0.74	0.000	15	0.66	0.000			

From this table, we can see that all items have a correlation coefficient ranging between (0.38: 0.88), and all of them were significant at a significance level of (0.000), which indicates that the questionnaire has a high validity coefficient

4.8 Reliability of the tool

The reliability Concept is “the proportion of the true variance included in the variance of the experimental scores”.

In order to calculate the reliability coefficient of the questionnaire, the researcher used Cronbach's alpha coefficient to determine the degree of stability of the tool. The following table shows the reliability coefficient.

Table 4 shows the internal consistency validity of the questionnaire

The dimension:	Number of phrases:	Cronbach's alpha
The first-dimension 1	15	0.78
The second-dimension2	15	0.79
The third dimension3	14	0.77

Factors affecting the Reliability of the questionnaire:

It is clear from the previous table that the questionnaire has a high level of reliability, as the value of the Cronbach's alpha coefficient for the questionnaire's axes ranged from (0.73 – 0.89), and for the questionnaire as a whole with its axes (0.81). This indicates that the scale has a reliability coefficient, that is, the stability of the results every time the scale is applied, and thus it is possible to rely on it. This questionnaire generalizes the results.

The relationship between test Validity and Reliability :

It becomes clear to us, by measuring the total psychometric standards of the questionnaire used, that the questionnaire has an acceptable coefficient of validity and reliability, as it became clear to us that the coefficient of validity ranges between (0.38: 0.88), and all of them were significant at

a significance level of (0.000), and thus the scale has a coefficient High validity. On the other hand, we find that the reliability coefficient of the questionnaire, by relying on the Cronbach's thousand coefficient, gives the questionnaire a score of (0.73 - 0.89), and thus the questionnaire has an acceptable reliability coefficient, which enables the researcher to rely on it.

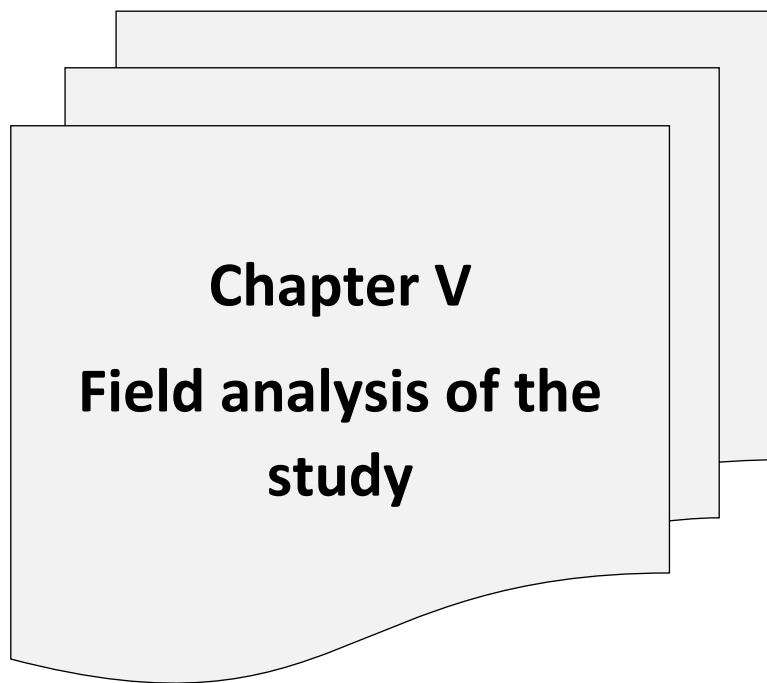
4.9 Statistical methods:

The application (SPSS-V.22) was used to enter the data that was gathered from the sample members. The data were processed using a variety of statistical techniques, such as:

- Calculating arithmetic averages and standard deviations to produce accurate scientific findings.
- Pearson's correlation coefficient and Cronbach's alpha coefficient to guarantee performance stability.

Chapter summary:

During this chapter, the methodology of the study was addressed by presenting the method that was used during the study to answer its questions. The characteristics of the study sample were also presented in detail by displaying percentages, graphs and graphs, as well as identifying the study tool and describing it comprehensively and accurately in terms of its axes. The method of answering it, and the psychometric standards of the tool in terms of validity and reliability. The chapter ended by presenting the study procedures, what was done to reach its results, and the statistical methods that were used.



Chapter V

Field analysis

5.1 Introduction:

This chapter deals with the statistical analysis of the collected data. It is a set of analytical processes that are followed in order to reach clear and meaningful scientific information and results that meet the objectives of the study that was established and answer its questions.

Statistical analysis and interpretation of results.

5.2 First: The results of the first axis: The reality of implementing the operations strategy (operations technology, production planning and control, management and organization) within the project

Both arithmetic means and standard deviations were used to identify the reality of implementing the operations strategy (operations technology, production planning and control, management and organization) within the project

Table 5 shows the mean, standard deviation, and relative weight for the operations strategy

N	Phrase	mean	Std.v	Ranking
1	The group is keen to use modern techniques and technological methods.	3.158	1.102	8
2	The group uses computers and ready-made programs.	3.847	1.094	6

3	The group takes into account the integration between employing competencies and the technology used in it.	4.778	0.425	1
4	The group takes into account the preservation of technical elements with technological expertise.	3.140	1.103	9
5	The group has operational technology that provides it with a competitive advantage.	3.223	1.268	7
6	The group is keen to use modern techniques and technological methods.	4.522	0.539	2
7	The group's rational planning and control system is characterized by comprehensive and long-term planning of production capacity.	3.223	1.268	7
8	The group quickly addresses interruptions in the course of production operations	4.224	0.688	3
9	The group maintains adherence to the principles of control over the quality of outputs	3.140	1.103	9
10	The group uses clear, written criteria to evaluate the performance of production operations.	4.113	0.644	5
11	The group uses automated control systems (computers) over the course of production operations	4.168	0.866	4
12	Project management focuses on the principle of participation in the decision-making process.	3.009	1.001	13
13	Project management works to achieve vertical integration.	3.135	1.098	10

14	Project management maintains integration between functional strategies (financial, marketing, operations).	3.111	1.091	12
15	Project management is concerned with analyzing and managing potential future risks.	3.120	1.097	11
	Total	4.2	0.998	high

It is clear from the previous table the results of the responses of a sample of the reality of the operations strategy (operations technology, production planning and control, management and organization) within the project in the first axis of the questionnaire, which is concerned with measuring “the reality of the operations strategy.” Where we found that item (3), which stated “The group takes into account the integration between employing competencies and the technology used in it,” obtained the highest arithmetic mean value (4.778) and standard deviation (0.425), followed by item (6), which stated, “The group is keen to use modern techniques and technological methods.” With an arithmetic mean value (4.522) and a standard deviation (0.539), then it is followed by item (8), which states “The group quickly addresses interruptions in the course of production operations” with an arithmetic mean value (4.224) And a standard deviation (0.603), followed by item No. (11) which stated, “The group uses automated control systems (computers) over the course of production operations,” which obtained an arithmetic mean (4.168) and a standard deviation (0.790). Followed by Item No. (10), which stipulates “The group uses clear, written criteria to evaluate the performance of production operations,” which obtained an arithmetic mean (4.113) and a standard deviation (0.644)

Then the results of the reality of the operations strategy within engineering projects came to a high degree, and therefore improving the reality of the operations strategy is achieved through “The

group takes into account the integration between employing competencies and the technology used in it,” and “The group is keen to use modern techniques.” and technological methods. And The group quickly addresses interruptions in the course of production operations. And The group uses automated control systems (computers) over the course of production operations. And The group uses clear, written criteria to evaluate the performance of production operations.

5.3 secondly: The results of the second axis: Challenges facing the implementation of the operations strategy within the project.

Both arithmetic means and standard deviations were used to identify Challenges facing the implementation of the operations strategy within the project.

Table 6 shows the mean, standard deviation, and relative weight for the operations strategy:

Phrase	mean	Std.v	Ranking
1. The group is keen to use modern techniques and technological methods.	3.333	0.9030	8
2. Project management is keen to use operations research methods (CPM, PERT) to reduce the time required in operations.	4.420	0.710	1
3. When developing the implementation plan for projects, the time frame necessary for implementation is taken into account and the start time and time are determined the end of the project.	4.120	0.650	6

4. Work completion is matched and monitored so that it is consistent with the schedule for each activity in the project.	4.303	0.590	4
5. Project management is committed to quality standards and considers them a priority.	4.102	0.642	7
6. The project management adheres to the quality standards followed by the Engineering Authority.	4.411	0.703	2
7. Project management takes into account the needs and desires of the consumer, on the basis that the customer is the foundation.	3.210	0.403	9
8. Project management maintains the positive mental image of the consumer.	3.145	0.600	11
9. Project management is committed to preparing and implementing accurate delivery schedules.	4.399	0.890	3
10. Project management uses effective control systems in managing its projects to reduce the costs of production operations.	4.184	0.510	5
11. The group is planning to find alternative energy for the purpose of reducing costs.	3.179	0.902	10
12. Projects use advanced technology to reduce costs.	3.138	0.670	12
13. Project management is concerned with finding resources that achieve a competitive advantage.	3.140	0.798	12
14. Project management is concerned with searching for appropriate resources to achieve goals.	2.713	0.370	14

15. Through its projects, the group is interested in preserving intangible resources (organizational culture, reputation, and brand).	3.10	0.784	13
Total	4.4	0.799	high

The results of sample answers “Operations strategy challenges” are clear from the previous table. In the second axis of the questionnaire, which is concerned with measuring “the challenges facing the implementation of the operations strategy within the project.” Where we found that clause (2) which stated “Project management is keen to use operations research methods (CPM, PERT) to reduce the time required in operations.” It obtained the highest mean value (4.420) and standard deviation (0.710), followed by item (6), which stated that the project management adheres to the quality standards followed by the Engineering Authority... with a mean value of (4.411) and standard deviation (0.703), followed by clause (9) which states “Project management is committed to preparing and implementing accurate delivery schedules” with an arithmetic mean value (4.399) and a standard deviation (0.890), followed by item No. (4) which stated, “4Work completion is matched and monitored so that it is consistent with the schedule for each activity in the project,” which obtained an arithmetic mean (4.303) and a standard deviation (0.590). Followed by Clause No. (10), which states: “Project management uses effective control systems in managing its projects to reduce the costs of production operations,” which obtained an arithmetic mean (4.184) and a standard deviation (0.510). Then the results of the challenges facing the implementation of the operations strategy within the project came to a high degree, and thus the challenges facing the implementation of operations within the project are improved through “ Project management is keen to use operations research methods (CPM, PERT) to reduce the time required in operations ,

The project management adheres to the quality standards followed by the Engineering Authority, and Project management is committed to preparing and implementing accurate delivery schedules, and Work completion is matched and monitored so that it is consistent with the schedule for each activity in the project, Project management uses effective control systems in managing its projects to reduce the costs of production operations.

5.4 Third: The results of the third axis: the impact of operations strategy on project management.

Arithmetic means and standard deviations were used to determine the impact of operations strategy on project management:

Table 7 shows the mean, standard deviation, and relative weight for the impact of operations strategy

Phrase	mean	Std.v	Ranking
1. The large number of procedures necessary to establish projects.	4.244	0.244	1
2. Lack of detailed treatment for small projects.	3.941	0.941	8
3. High prices of lands and buildings equipped with facilities.	3.933	0.933	9
4. Difficulty in marketing and high cost of promotion.	3.957	0.957	5
5. Lack of information service available for project management.	4.233	0.233	2
6. Lack of innovations in the field of project management.	4.233	0.233	3
7. Weak training programs for project workers.	3.946	0.946	6
8. Reluctance of skilled labor to work in project management.	3.223	0.223	10

9. There are high taxes, which affects the low profitability of project management.	3.221	3.221	11
10. Weak training programs for project management workers.	3.945	0.945	7
11. Lack of laws encouraging the establishment and management of projects.	4.168	0.168	4
12. Lack of marketing experience affects project management	3.220	0.220	12
13. Lack of creativity and innovation affects project management.	3.100	0.333	14
14. Project management is concerned with analyzing and managing potential future risks.	3.180	0.343	13
Total	4.2	0.933	High

The results of the sample answers to “The impact of operations strategy on project management” are clear from the previous table. In the second axis of the questionnaire, which is concerned with measuring “the impact of operations strategy on project management.” Where we found that clause (1), which stated that “The large number of procedures necessary to establish projects.” It obtained the highest average value (4.244) and standard deviation (0.244), followed by item (5), which stated “Lack of information service available for project management.” With an average value of (4.233) and standard deviation (0.233), followed by item (6) which states “Lack of innovations in the field of project management” with an arithmetic average of (4.233) and standard deviation (0.233), followed by item no. (4) which stated, “Lack of laws encouraging the establishment and management of projects,” which obtained an arithmetic mean (4.168) and a standard deviation (0.590). Followed by Item No. (4), which states: “Difficulty in marketing and high cost of

promotion.”, which obtained an arithmetic mean (3.957) and a standard deviation (0.957). Hence, the results of the challenges facing the implementation of the operations strategy within the project came to a high degree, and thus the impact of the operations strategy on project management is improved through “The large number of procedures necessary to establish projects”, the Lack of information service available for project management, and the Lack of innovations in the field of project management, Lack of laws encouraging the establishment and management of projects, Difficulty in marketing and high cost of promotion.

Chapter summary:

During this chapter, the statistical analysis of the data collected from the sample members was presented by relying on the statistical program (SPSS) and appropriate statistical methods to arrive at the results for the study in preparation for entering the fifth chapter, during which the final results of the study were presented and the proposed scenario was presented.

Chapter V I
Results and
recommendations

Chapter V

Results and recommendations

6.1 Results:

The study reached several results, which are as follows

- the results of the reality of the operations strategy within engineering projects came to a high degree, and therefore improving the reality of the operations strategy is achieved through “The group takes into account the integration between employing competencies and the technology used in it,” “The group is keen to use modern techniques.” technological methods. And The group quickly addresses interruptions in the course of production operations. The group uses automated control systems (computers) over the course of production operations. The group uses clear, written criteria to evaluate the performance of production operations.
- the results of the challenges facing the implementation of the operations strategy within the project came to a high degree, and thus the challenges facing the implementation of operations within the project are improved through “ Project management is keen to use operations research methods (CPM, PERT) to reduce the time required in operations , The project management adheres to the quality standards followed by the Engineering Authority, and Project management is committed to preparing and implementing accurate delivery schedules, and Work completion is matched and monitored so that it is consistent with the schedule for each activity in the project, Project management uses effective control systems in managing its projects to reduce the costs of production operations.
- the results of the challenges facing the implementation of the operations strategy within the project came to a high degree, thus the impact of the operations strategy on project management is improved through “The large number of procedures necessary to establish projects”, the

Lack of information service available for project management, and the Lack of innovations in the field of project management, Lack of laws encouraging the establishment and management of projects, Difficulty in marketing and high cost of promotion.

- Operations strategy is one of the basic tools that helps the company improve its marketing performance through low cost, distinctive quality, high flexibility, timely delivery, and creativity in products and processes. Therefore, it helps projects enhance their strengths, overcome difficulties, and support their overall strategy.
- Achieving the dimensions of the operations strategy represented by (cost, quality, flexibility, delivery and creativity) is the strongest guarantee for the survival of institutions and organizations in their growth and continuity in the world of business.

The results of the study agreed with the study of (Al-Tarawneh, 2011), where the results of the analysis revealed the strength of the influence of operations strategy on the management of strategic projects according to its fields represented in (operations technology, production planning and control, management and organization) and their interconnectedness, which contributes greatly to the management of strategic projects. The study showed that the interest Environmental factors are an advanced stage in the strategic awareness of the philosophy of developing the operations strategy with the organization's strategy together, as they affect the management of strategic projects.

Study by (Oliveira et al., 2018) agreed with the results of the study, The results showed that strategy is the most important predictor, and that its main critical success factors are project management methodology, organizational structure, alignment of intentions, and economic and financial feasibility. In operations, the key critical success factors are the stability of the project environment in terms of risk management, quality management system, performance metrics,

audits and verification of deliverables, and communication with stakeholders. For people, the key success factor is the acquisition of skills in project management and the training of human resources, with the aim of disseminating knowledge associated with good practices, methodologies, tools and techniques that support project implementation. Thus, operations strategy influences project management.

6.2 Recommendations:

The study recommended several recommendations, which are as follows

- The importance of adopting the model of operations strategy and strategic project management, which the study explained in the form of plans in the light of which operations strategy activities and strategic project management are evaluated according to their main and subsidiary variables.
- Strengthening the competition strategy and avoiding the principle of lowest cost.
- Establishing an independent unit responsible for obtaining information from the market for the purpose of developing creative ideas for product development.
- Study the principle of competition strategy based on excellence in providing quality products, which is one of the four important operational objectives.
- The management of the project under discussion should increase attention to the dimensions of the operations strategy in general and the dimension of flexibility in particular to better enhance its role in improving marketing performance.
- The need to pay attention to modernizing production lines and using more automated production techniques by increasing allocations related to research and development activity in order to achieve a real reduction in operational costs and keep pace with technical developments.

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Appendices

A questionnaire on

**The impact of operations strategy on project management: an applied study on engineers
working in engineering projects In the Kingdom of Saudi Arabia**

Title In Arabic:

"أثر استراتيجية العمليات على إدارة المشاريع: دراسة تطبيقية على المهندسين العاملين في المشاريع الهندسية في المملكة
العربية السعودية"

A questionnaire on the impact of operations strategy on project management

Dear/male and female respondents

After greeting:

Knowing that the researcher conducted a questionnaire to evaluate “the impact of operations strategy on project management” within the process of preparing Master’s degree project to meet the required requirements according to the framework. Given the importance of this topic, please answer the questionnaire questions. Therefore, it is preferable to provide specifically specialized and objective data, which will undoubtedly contribute to achieving better results, which helps to reach more specialized results and suggests greater importance. Note that data collected in this study will be used for scientific research only, and we will treat it with complete confidentiality, and we will provide you with the results upon completion if you wish to use them.

Thank you for your cooperation

Researcher:

Essential information (Demographic variables):

Please sign with (✓) at your selection.

– **Gender:**

Male: ☐

Female: ☐

– **Age:**

- Under 30 years old ☐
- 30 –40 years old ☐
- 40- 50 years old ☐
- 50 or more. ☐

– **Educational level:**

- Bachelor's degree ☐
- Master's degree ☐
- PHD degree ☐

– **Years of experience:**

- 1 – 5 years ☐
- 6- 10 years. ☐
- 11- 15 years ☐
- 16 or more years ☐

Please indicate how much you agree or disagree with the following statements about the impact of operations strategy on project management: (✓) in front of the statement as follows:

(1) Agree (2) Strongly Agree (3) Neutral (4) Disagree (5) Strongly Disagree.

1. The first axis: The reality of implementing the operations strategy (operations technology, production planning and control, management)	1	2	3	4	5
Technology Operations					
1. The group is keen to use modern techniques and technological methods.					
2. The group uses computers and ready-made programs.					
3. The group takes into account the integration between employing competencies and the technology used in it.					
4. The group takes into account the preservation of technical elements with technological expertise.					
5. The group has operational technology that provides it with a competitive advantage.					
6. The group is keen to use modern techniques and technological methods.					
Production planning and control					
1. The group's ration planning and control system is characterized by comprehensive and long-term planning of production capacity.					
2. The group quickly addresses interruptions in the course of production operations					
3. The group maintains adherence to the principles of control over the quality of outputs					
4. The group uses clear, written criteria to evaluate the performance of production operations.					
5. The group uses automated control systems (computers) over the course of production operations					
Management and Organization					
1. Project management focuses on the principle of participation in the decision-making process.					
2. Project management works to achieve vertical integration.					
3. Project management maintains integration between functional strategies (financial, marketing, operations).					
4. Project management is concerned with analyzing and managing potential future risks.					
2. The second axis: Challenges facing the implementation of the operations strategy within the					
1. Project management is keen to use operations research methods (CPM, PERT) to reduce the time required in operations.					

2. When developing the implementation plan for projects, the time frame necessary for implementation is taken into account and the start time and time are determined the end of the project.					
3. Work completion is matched and monitored so that it is consistent with the schedule for each activity in the project.					
4. Project management is committed to quality standards and considers them a priority.					
5. The project management adheres to the quality standards followed by the					
6. The quality should be determined at a level that is appropriate to the income of consumer segments					
7. Project management takes into account the needs and desires of the consumer, on the basis that the customer is the foundation.					
8. Project management maintains the positive mental image of the					
9. Project management is committed to preparing and implementing accurate delivery schedules.					
10. Project management uses effective control systems in managing its projects to reduce the costs of production operations.					
11. The group is planning to find alternative energy for the purpose of reducing					
12. Projects use advanced technology to reduce costs.					
13. Project management is concerned with finding resources that achieve a competitive advantage.					
14. Project management is concerned with searching for appropriate resources to achieve goals.					
15. Through its projects, the group is interested in preserving intangible resources (organizational culture, reputation, and brand).					
The third axis: the impact of operations strategy on project management.					
1. The large number of procedures necessary to establish projects					
3. Lack of detailed treatment for small projects.					
4. High prices of lands and buildings equipped with facilities.					
5. Difficulty in marketing and high cost of promotion.					
6. Lack of information service available for project management					

7. Lack of innovations in the field of project management					
8. Weak training programs for project workers.					
9. Reluctance of skilled labor to work in project management.					
10. There are high taxes, which affects the low profitability of project management.					
11. Weak training programs for project management workers.					
12. Lack of laws encouraging the establishment and management of projects					
13. Lack of marketing experience affects project management.					
14. Lack of creativity and innovation affects project management					