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THE ART OF UNDERSTANDING AND IMPLEMENTING STRATEGIC PROJECT MANAGEMENT & SERVANT LEADERSHIP IMPACTED BY ISO 9001:2015 IN INDIAN MANUFACTURING PUBLIC SECTORS

by

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DISSERTATION

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THE ART OF UNDERSTANDING AND IMPLEMENTING STRATEGIC PROJECT MANAGEMENT & SERVANT LEADERSHIP IMPACTED BY ISO 9001:2015 IN INDIAN MANUFACTURING PUBLIC SECTORS

A Case Study

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Dedication

I hereby affirm that the research work titled "The Art of Understanding and Implementing Strategic Project Management & Leadership Impacted by ISO 9001:2015 in Indian Manufacturing Public Sectors" submitted to "SSBM, Geneva for the degree of Doctor of Business Administration, is entirely my original work. This thesis, or any of its parts, has not been submitted for any other degree in any University or Institution, either partially or in full.

This thesis is to my lovely mother, whose love, support, and encouragement have forever shaped the person I have become. I greatly dedicate this thesis to you as a heartfelt tribute to the countless sacrifices you made for me. Your faith in my abilities and endless encouragement resonate deep within my soul. Thank you, my dear mother, for your immeasurable impact on my life. I dedicate this thesis to you as a symbol of my deep love, appreciation, and eternal gratitude.

(**Sri Lakshmi. Peyyala**)

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(Sri Lakshmi Peyyala)

ABSTRACT

THE ART OF UNDERSTANDING AND IMPLEMENTING STRATEGIC PROJECT MANAGEMENT & SERVANT LEADERSHIP IMPACTED BY ISO 9001:2015 IN INDIAN MANUFACTURING PUBLIC SECTORS

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2024

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Purpose: The purpose of this research study is to explores the understanding of the concepts and aims to experiment with the unique combination of Strategic Project Management and Servant Leadership to improve and implement the quality of strategic project management practices and a new skill set on servant leadership impacted by ISO 9001:2015 connected with ISO 21502:2020 for successful project execution in Indian manufacturing public sectors. These emerge by focusing on the necessary areas to improve planning and the existing master documents, such as principles, procedures, guidelines, checklists, work instructions, registers, and formats for organizational management, aiming to develop strategic project management internally and under continuous improvement.

Design/methodology/approach: The research goal is to collect data from different resources like International Standard ISO documents, literature reviews, feedback, discussions, interviews with senior experts, ISO 9001:2015 records and policies connected with ISO 21502:2020 analyze the data samples, and practice the positive influences on more structured entities in the project environment. This study uses a qualitative method to analyze the data regarding the unique combination of Strategic Project Management and Servant Leadership impacted by ISO 20502:2020 connected with ISO 9001:2015. The author proposed implementing ISO 21502: 2020 in Indian Public Sector Units (PSUs) for manufacturing. This study involved collecting data from 381 project managers across various PSUs in India. The researcher used statistical techniques such as descriptive statistics to analyze the data.

Finding: The exploratory investigation comprised an empirical phase and a theoretical phase. The results show that the implementation of Strategic Project Management and Servant Leadership, by adopting ISO 21502:2020, influences personnel and business growth in Indian Manufacturing Public Sector Units. Finally, the researcher found that 201 (48.6%) out of 412 participants positively supported the conceptual theory of Servant leadership of Project managers and recommended the implementation of ISO 21502:2020 as a part of continual improvement connected with ISO 9001:20215 in the project-oriented organization for benefits and profits.

Research Limitations: This study employs a non-probability sampling method, which restricts the generalizability of our findings to only a few manufacturing public sector undertakings (PSUs) in India. The researcher focused on a case study of one PSU and did not include all manufacturing PSUs across the country. Future research could explore various key sectors within Indian public services, such as construction, IT/software, agriculture, education, government, healthcare, mining and exploration, oil and gas, finance, and other services.

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CHAPTER I: INTRODUCTION

1.1 Introduction

In the contemporary era, where organizations face increasing competition and strive for excellence, both project management and leadership are integral to developing high-quality processes, products, and services. Leadership in project management, in particular, plays a pivotal role in ensuring project success. Although extensive literature exists on project management and various leadership styles across different organizational levels, there is a notable gap in research that examines the intersection of Project Management (PM) and Servant Leadership (SL). This study aims to explore the integration of PM and SL to enhance the quality and strategic implementation of project management practices within the Indian manufacturing public sector.

Specifically, the research investigates how SL, guided by ISO 9001:2015 and aligned with ISO 21502:2020 standards, can be utilized to improve project execution. The study emphasizes the need to enhance existing management documents—including principles, procedures, guidelines, checklists, work instructions, registers, and formats—within a continuous improvement framework. Data will be gathered from multiple sources, such as international standards, literature reviews, expert interviews, and ISO documentation, to analyze current practices and apply best practices for more structured project management.

This experimental study aims to identify gaps in the current project management environment and apply strategic project management frameworks, tools, and methodologies to improve project outcomes. Moreover, the research focuses on enhancing servant leadership skills to empower project managers, enabling them to lead more effectively and contribute to broader organizational success. The study is both exploratory and empirical, seeking to understand how strategic project management practices and servant leadership can be integrated to foster organizational growth.

In the Indian manufacturing public sector, achieving the mission, vision, goals, and objectives requires a combination of skilled technical and managerial personnel, strong leadership, well-defined processes, and the development of products and services that contribute to the country's economic and strategic objectives. Project management and leadership are essential in driving these organizational advancements. Project management, a structured process with defined start and end points, aims to deliver measurable results efficiently, while ensuring that scope, time, cost, and delivery objectives are met, along with improvements in quality, processes, and products. As noted by Rana (2018), manufacturing industries contribute significantly to national prosperity through the development of production techniques, processes, and new products.

Leadership is crucial in guiding personnel and organizations toward achieving their objectives. Various leadership styles, such as autocratic, democratic, delegative, affiliative, coaching, transformational, and pacesetting, each apply in different contexts. One leadership style that gained prominence in the late 1970s, particularly for middle-level management, is servant leadership. Greenleaf (1970) defined servant leadership as a model focused on serving others. In project management, servant leadership empowers team members while simultaneously contributing to the strategic framework of the organization, including communication strategies, roles and responsibilities, management commitments, and decision-making processes.

Empirically, the ISO 9001:2015 Quality Management System (QMS) guidelines encourage organizations to exceed standard requirements. Similarly, ISO 21502:2020 provides guidance on project management, advocating for high-level strategies, processes, and practices aimed at continuous improvement. These two standards are interrelated and offer organizational benefits, including improved internal communication, process control, and overall performance. The implementation of servant leadership aligns well with these frameworks, especially within Strategic Project Portfolio Management in India's manufacturing public sector.

The traditional project management lifecycle—comprising initiation, planning, execution, monitoring and controlling, and closing—provides a structure for managing projects. This paper explores how strategic methodologies, informed by ISO 9001:2015 and ISO 21502:2020, can be employed to achieve high project objectives, particularly in the manufacturing of Control and Instrumentation (C&I) Systems. These standards underscore the importance of strategic decision-making for organizational survival and success in the global market.

The primary objective of this research is to address gaps in existing literature regarding the role of servant leadership in project management. This study is pioneering in its exploration of how servant leadership can contribute to the development of new skills and capabilities within project management, enabling teams to manage multiple projects simultaneously and efficiently. While the roles of leadership and project management are complex, this research seeks to define the responsibilities of a strategic project manager practicing servant leadership. In the context of the Indian manufacturing public sector, this role presents particular challenges, requiring advanced skills to effectively manage teams and execute numerous projects concurrently.

1.2 Research Problem

Indian manufacturing in the public sector has historically served as a catalyst for stimulating economic growth, acting as an engine for national development. However, recent government reports have critiqued the sector for its underperformance in areas such as project execution, productivity, service and system quality, revenue generation, and turnover. Despite the abundant literature on project management and various leadership styles, there remains a lack of comprehensive research on the intersection of Project Management (PM) and Servant Leadership (SL).

According to Porter (1980, 1985), Hitt et al. (2011), and Robins and Coulter (2012), the core objective of organizations is to create and deliver greater value than their competitors. Zolfaghari et al. (2017) further assert that value creation within an organization is a function of both project and operational contributions: "value created by the organization = value created by projects + value created by operations."

Project Management (PM) has been identified by Shenhar and Dovdvir (2007) as one of the fastest-growing fields within modern industries. The success of any project hinges on team performance and sound decision-making. However, despite advancements, many projects fail to deliver the expected business results. Pinto and Mantel (1990) emphasize the need for project managers and researchers to gain a deeper understanding of the factors that contribute to project failure. Effective project organizational structures and project-based work techniques can significantly enhance an organization's ability to implement projects successfully.

Ochieng (2016) highlights several barriers that impede the application of strategic project management (SPM) in public research organizations, particularly at the operational and strategic project levels. These barriers include insufficient project team development, inadequate funding, lack of SPM knowledge, limited application of project management techniques, misalignment with

organizational culture, and unfavorable employee attitudes. These challenges underscore the need for a more integrated and strategic approach to project management in the public sector, particularly in the context of leadership styles like Servant Leadership (SL).

1.2.1 Problem Statement

Why projects are failing and why leadership is failing in projects?

n a perfectly competitive environment, every project faces inherent limitations in delivering results within the allocated budget and timeframe. However, discrepancies between budget, schedule, and actual outcomes are common. A critical question arises: even if a project meets its budget and schedule, "Did the project deliver the expected results and quality?" True project success should be evaluated across all four key components—scope, time, budget, and quality. Without considering these aspects, a project may still be deemed a "failure," despite appearing successful in terms of cost and scheduling.

Even with the best project plan in place, projects can veer off course if not managed effectively. It is the project manager's responsibility to identify early warning signs, take appropriate actions, distinguish between symptoms and root causes, and recognize the indicators of potential project failure. The project manager must actively monitor and control activities that present risks to the project's success, as risks can arise from multiple sources and directions. Additionally, while there are countless reasons for project failure, whether in simple or complex projects, a few key reasons are outlined in Table 1.

1. Poorly managed	2. Undefined objectives and goals	3. Lack of management commitment
4. Lack of solid project plans	5. Lack of user input	6. Lack of organizational support
7. Centralized proactive management initiatives to combat project risk	8. Enterprise management of budget resources	9. Provides universal templates and documentation

10. Poorly defined roles and responsibilities	11. Inadequate or vague requirements	12. Stakeholder conflict
13. Team weaknesses	14. Unrealistic timeframes and tasks	15. Competing priorities
16. Poor communication	17. Insufficient resources (funding and personnel)	18. Business politics
19. Overruns of schedule and cost	20. Estimates for cost and schedule are erroneous	21. Lacking of prioritization and project portfolio management
22. Scope creep	23. No change control process	24. Meeting end-user expectations
25. Ignoring project warning signs	26. Inadequate testing processes	27. Bad decisions

Table 1: Reasons for project failure

According to the Project Management Institute (PMI), 65 to 75% of projects in the manufacturing industry fail to meet at least one of their baseline objectives. This is primarily due to a lack of awareness of formal project management methodologies and strategic techniques, poor leadership, inadequate implementation of management processes, insufficient planning, monitoring, and control, as well as inadequate project documentation and tracking. Other contributing factors include inaccurate cost estimations, poor communication, and an inability to effectively manage risks. In addition, common causes of project failure—such as failure to meet the full scope of deliverables, failure to satisfy all quality requirements, failure to adhere to schedules, and failure to stay within budget—are often avoidable with proper management and planning.

Understanding the causes of project failure and addressing these issues through lessons learned is a significant area of research aimed at improving project success rates. Nevertheless, project management and leadership still struggle due to several factors, including a lack of alignment and commitment from top management, insufficient competitiveness, ineffective suppliers, and unclear project strategies, roles, and responsibilities. As noted by Shenhar and Dovdvir (2007), Project Management is one of the fastest-growing fields in modern industries. Despite this growth, the success of many projects continues to be hindered by poor team performance and inadequate

decision-making processes. According to Ochieng (2016), one of the primary reasons for project failure in public organizations is the inability to fully implement the project strategy.

Pinto and Mantel (1990) noted that the literature on project management presents various definitions and examples of project failure, suggesting a lack of consensus on the topic. The factors that contribute to project success or failure vary according to three key variables: the specific definition of failure, the type of project, and the stage of the project in its lifecycle. Early identification and assessment of failures during the project lifecycle can help reduce failure costs. Schoenhardt (2014) identifies seven common root causes for project failure: failure to complete front-end loading, escalation, regulatory challenges, plant complexity, new technology, solid feedstock, and complex ownership.

Zolfaghari (2017) argues that strategic alignment between project and organizational objectives is crucial to reducing project failure rates. The increasing dependence of organizations on projects, combined with a lack of effective project strategies, success criteria, and mechanisms to achieve success, further exacerbates the problem. Kozarkiewicz (2016) highlights the ongoing ambiguity surrounding project strategy and strategic project management, as well as the role of project managers in strategic processes. This lack of clarity stems from insufficient training and information, challenges in change management, inadequate strategic planning, poor risk management, failure to adopt new technological competencies, inefficiencies in material procurement, and challenges in resource management.

The need for a comprehensive set of concepts, methods, applications, and technologies to collect and analyze data is critical for project managers. This enables them to make timely, informed decisions that improve agility in project management and provide a competitive edge. As noted by Ali (2010), many projects are plagued by delays, cost overruns, scope creep, poor administration, and lack of oversight, underscoring the need for a more strategic approach to project management.

According to (Shenhar A.J, 2004), a project starts with a grand plan that includes business strategy at every level. But there is a need to see how this project strategy plan gets converted into the 'need of the business plan which is monitored all over the period. Still, projects fail, the reason behind this 10 is the lack of leadership and the missing link "Project Strategy" exists between project goals and organizational goals which require commitments from the top to the bottom level in the management, training to employees, and monitoring at macro and micro levels.

The project success rate of 100% is too much to expect but, researcher can achieve at least 75% to 80% by proper planning, monitoring, controlling, and the right decision-making in procurement management. The material procurement stage takes much time taking process in the manufacturing public sectors. The Projects are often failing due to a lack of awareness of the procurement process and decision-making skills. Project Procurement Management (PPM) is a big challenge for public sectors with a set of limitations and vigilance rules. PPM requires a framework that includes initiation, planning, contract writing, executing procurement, or purchase orders issued by authorized project team members, closing, and completing. PPM is a necessary process to procure products, services, or results needed from outside depending on the nature of the project for the project team to complete the project in time. PPM is under research to make organizational benefits. These are all common causes of project failure. Adequate employee training, project management strategies, solid project planning, and management transparency lead to a successful project.

Leadership is an important attribute required for an organization to drive the process, personnel, and technology by doing the right things effectively. Still, many projects, processes, products, and services fail due to a lack of understanding of the requirements, planning, estimations, organizational roles, responsibilities, authorities, set of strategic directions, leadership performance, communication, training, sharing project experiences, stakeholder's satisfaction, risk assessment, resource optimization, continual improvement, organizational knowledge, and quality.

Consequently, many research efforts are focused on improving leadership skills for project management's success.

Why is project management so important for the industry?

Project management enables organizations to take advantage of the opportunities and threats in an emerging work market. It helps organizations to develop strategies, objectives to gain benefits and create a brand image, and optimize the use of their resources and while maximizing value creation; thus, achieving their intended outcomes. It also encourages employee collaboration and enhances communication among personnel, suppliers, and customers relevant to the project, which results in stakeholder engagement and customer satisfaction. Additionally, project managers are required to focus on managing projects in specific industries like, manufacturing, construction, service and 11 information technology, education, management consulting, utilities, government, agriculture and mining, and oil and gas. Strategic project management can lead to better business outcomes through decision-making, including the prioritization of tasks for projects and the mitigation of risks.

According to (KRISTIN, 2014), project management means controlling several complex interactivities to meet several performance goals. However, project management covers a lot of ground because of numerous theories connected with the subject. The need to master various combinations of disciplines, such as leadership, time management, communication, documentation, and managing stakeholders, is a key part of managing projects. The manufacturing organizations get the business through multiple products, projects, and services in global market competency. These projects' execution involves a lot of processes and procedures. The organization has its departments/divisions and every division has its wings for performing processes. Every process has a lot of activities to perform. Communication is the key parameter to perform activities between wings/sections. Every organization has a unique culture and diverse challenges and needs to solve a

set of problems in different situations. The following are some of the reasons why project management helps an organization.

1. Interactions or interdependencies between various departments.

2. Sharing of common resources

3. The importance of the project to the organization

4. Size of the project

5. Changes in the market

6. The reputation of the organization in the business world

7. Degree of unfamiliarity with the work involved which has more complexity

Why leadership in project management is required for organizational success?

According to PMI, leaders are players as they turn vision into reality and strategy into results that's where project leadership comes to the big screen. Organizations will not succeed without engaged, motivated project teams and leaders who forge the living, breathing link between innovation and value, strategy, and execution. Smaller projects tend to be much more successful than larger projects.

To deal with larger projects needs strategies and tactics, motivation, commitment, emotional intelligence, enforcement, and a win-to-win attitude. Without a leader dealing with larger projects or programs is a highly tough task for an organization. Leadership is a critical factor in the implementation of strategic plans (O'Regan and Lehman, 2008). In organizations without leadership, project execution is tougher and delivery systems are more likely to miss deadlines and 12 spend more money.

Project management and leadership is a more powerful tool. Thus, organizations are not prioritizing project management and leadership, and some even admit to undervaluing it. That is why

understanding the scope requirements thoroughly and what exactly lay ahead and a detailed project assessment at the start is crucial. Thus, the leader's role and responsibility are crucial to ensure the project is successful by reviewing tasks by priority and assigning them to the most proficient project team members and successful track. Closely examine all roadblocks, hurdles, hills, detours, risks, and any proverbial bump in the road before starting a project. It is the main agenda point in far too many post-mortems: "Why did this project fail?" and all stakeholders can share their experiences to learn lessons from failures for the success of the next project life cycle. A project's success or failure is going to pivot largely on the abilities of the leader cum project manager and their team to manage the details of the project and its deliverables.

(ISO 21502, 2020) stated that to achieve success in projects, project management must perform the following tasks in the organizational environment. Those are establishing an approach, a timeline, a quality assurance function, and a project office for periodic evaluation activities, to facilitate the continuous development of processes, methods, and techniques of project management, and the evaluation of project management maturity and right communication in the right time. (Pinto and Mantel, 1990) stated that the project's success or failure depends on the lead in the project implementation process itself and is an internally oriented measure of the performance of the project team criterion, including on-schedule, on-budget, meeting the technical goals of the project, and maintaining harmony working relationships within the team and organization. The critical issue for the implementation process is efficiency.

The second aspect of the assessment of project success or failure is the perceived quality and value of the project and includes the project team's perceptions of the value and usefulness of the project's deliverables from the organization which creates an effective external image in the global market.

The third aspect of project performance is client satisfaction is an external measure of effectiveness, made by the client. The manufacturing public sectors face the problems of risk in rejection rate and customer satisfaction, and rework is more due to lack of proper guidance.

According to (M.Spangenburg, 2018) work is often a challenging environment and deals with conflict between employees and management let alone the stress of a manager who cannot seem to effectively lead the team in the right direction. Leaders and managers need to gain greater insight into the meaning of effective leadership in the absence of self-serving interests or negatively projecting frustrations onto employees.

1.3 Purpose of Research

The research study examines the importance of understanding and implementing the concepts of strategic project management and servant leadership skills impact ISO 9001:2015 which is related to other International Standards like ISO 10006:2017 and ISO 21502:2020 in Indian manufacturing public sectors. The development of a project's vision, mission, goals, and objectives and the strategic methods of achieving them add value to the business process. Critical needs to identify project strategic factors that help a project manager reframe the project goals vis-à-vis the organizational objectives.

To improve the performance of manufacturing activities is too effective; many manufacturing PSUs adopted and implemented ISO 9001:2015, an integrated system to ensure consistency and better performance of projects and leadership. An ISO 9001: 2015 certification is mandatory for improving the quality of projects and customer satisfaction. This can be achieved by creating a framework for continual improvement that provides the necessary guidance to personnel to lead quality projects successfully. In a similar way to improve project performance activities and processes effectively adapt and implement the ISO 21502:2020 (Guidance on project management)

that provides guidelines on procedures, controls, and review formats, and creates project management awareness to help organizations reduce project failures.

The objective of the empirical research is to practice Strategic Project Management methodologies, tools and techniques, and Servant Leadership skills to improve business performance, project performance, and personnel growth through the effective implementation of Internal Standards ISO 9001:2015 (Ahuja, 2015) and ISO 21502:2020 impact on manufacturing public sectors of India and measure project performance and leadership effectiveness in terms of goals and objectives.

Research Objective(s):

The objectives of this study are: -

1. To understand the relationship between ISO 9001:2015 and ISO 21502:2020 and how useful for Indian manufacturing organizations.

2. To continual improvement of ISO 9001:2015 by contributing towards projects through project goals, objectives, purpose, scope, and success criteria for organizational success.

3. To determine how the ISO 21502:2020 – "Guidance on project management" contributes to achieving project management success through cost, budget, quality, resources, and stakeholder satisfaction in the Indian manufacturing public sector;

4. To implement Strategic Project Management and Servant Leadership in the organization to maximize organizational benefits through ISO 21502:2020

5. Defining project success from the customer's perspective through cost, billing, profitability, schedule, quality, customer satisfaction, resources, risk, safety, and project environment are measurements of project management success.

6. To explore Project Management standards, formulation of strategies, tools, and techniques that are applied by project managers in achieving high project management success.

1.4 Significance of the study

How the role of a Servant Leader as a strategic project manager improves personnel growth and project performance in Indian manufacturing public sectors impacted by ISO 9001:2015 and ISO 21502:2015. This research study aims to experiment with the combination of Strategic Project Management and Servant Leadership to improve and implement the quality of project management strategies and leadership skills impacted by ISO 9001:2015 and ISO 21502:2020 for successful project execution in Indian manufacturing public sectors. Another main aim of this research study is in today's highly competitive environment, project management has become a critical activity for most modern organizations, which requires new and improved methods of management and

leadership skills, and the implementation of these improved skills in a current working environment is an experiment on strategic projects or programs as part of the research study.

1.5 Research Purpose and Questions

The novelty of this research study and literature review survey helps to understand and achieve these existing research gaps, which requires proposing Strategic Project Management and Servant Leadership methodologies by strategies and implementation in Indian manufacturing public sectors impacted by ISO 9001:2015[E] Quality Management System (QMS) – Requirements International Standards to achieve project on-time deliveries, cost optimization, reduce execution time, revenue, quality, and conformity of products and services efficiently and effectively for future business growth. Mainly this research focuses on addressing the implementation of project management and leadership concepts, formalizing project management, practices for project management, and managing projects directed by ISO 9001:2015, ISO 10006:2017, and ISO 21502:2020 International Standards in manufacturing public sectors in India.

The further literature review explores more data to build a suitable framework for C & I system project strategy by incorporating business strategy and by following ISO 9001:2015 QMS. ISO 21502:2020 International Standard practices in strategic project management methodologies deliberate strategic choices of organizational decision-making to survive in the modern global market. It can be implemented in the working environment effectively to achieve the project objective's strategy and business strategy. There is no single process or role that makes project management successful. It is the careful orchestration of several different key processes and roles that act parallel. Implementation of Servant Leadership is more suitable for lead personnel, especially in the field of Strategic Project Management in the Indian manufacturing public sector's benefits.

As empirical research, the International Standard ISO 9001 guides the organizations that choose to progress beyond their requirements. Its proper implementation can also be expected to bring other organizational benefits, such as improved internal communication, better understanding, and control of the organization's processes, and improve the organization's overall performance. This chapter is divided into four parts. The first part deals with the essence of strategic project management and the second part explains the theory of servant leadership. The third part of this chapter explains the roles and responsibilities of organizational management and the fourth part of this chapter is the most important and shows the differences and comparisons between the phases, areas of knowledge, and processes of the project management standards like PMBoK, PRINCE2 and ISO 21502:2020.

Research Question(s)

1. Is ISO 9001:2015 essential in terms of Project Performance in the Manufacturing Public Sector?

   <u>**Sub question:**</u>

   a. What is the relation between ISO 9001:2015, ISO 10006:2017, and ISO 21502:2020?

   b. What needs to be considered if implementation of ISO 21502:2020 is sought?

2. How is Servant Leadership in Strategic Project Management impacted by ISO 9001:2015 in Indian manufacturing public sectors?

   <u>**Sub questions:**</u>

   a. How is the Servant leadership style unique among all other leadership styles? How Servant leadership style is more suitable for Project Management?

   b. Does the Servant Leader as a project manager work for both personnel as well as operational growth?

3. Which of the ISO 21502:2020 clauses have the highest impact on project management success?

<u>Sub questions:</u>

a. What is a Servant Leader cum Project Manager's key roles and responsibilities as per ISO 21502:2020?

b. Which of the Project Management processes has the highest impact on project success?

CHAPTER II: REVIEW OF LITERATURE

2.1 Introduction

The goal of this chapter is to build theoretical framework upon research study and solutions. In the part of this chapter, covers a brief review of concepts of project management, servant leadership, ISO 9001:2015, and ISO 21502:2020 and its relevant theories for the study solutions.

According to (Shenhar and Dovdvir, 2007), Project Management is one of the fastest-growing fields among current industries. The success of any project depends on team performance and critical decision-making. However, most of the projects still fail and do not give the desired business result. The research study explains the role of a Servant Leader as a project manager to improve the quality of project, personnel, and organizational performance for ISO 9001:2015. Project objectives as per ISO 21502:2020 are accomplished by a project toward business goals and these objectives will be achieved by implementing thru ISO 9001:2015 international standard. Project objectives include scope, cost optimization, quality product or process or service, strategic schedules, wise decision-support, on-time deliverables, effective communication, efficient resource utilization, documentation of quality records, training, managing of procurement processes, controlling risk-related processes, and strategic direction to build and lead a team, measurement, analysis, and improvement in projects. Quality objectives in projects are aligned with ISO 9001:2015. This study improves Servant Leadership skills in project management with more quality leadership skills and focuses on SMART (Strategic, Mentor, Appreciative, Risk manager, and Teamwork).

According to ISO 10006:2017 and ISO 21502:2020, the project management life cycle consists of five major phases: Initiation, Planning, Implementation, Control, and Closure. As per ISO 10006:2017[E], project management includes the planning, organizing, monitoring, controlling, and reporting of all processes of a project, including taking the necessary corrective and improvement

actions, that are needed to achieve the project objectives, continually. This research study is an experimental study to analyze, develop, and implement project management strategic methodologies and servant leadership impacted by ISO 9001:2015, ISO 10006:2015[E], and ISO 21502:2020[E] in Indian public sectors to achieve high project objectives, especially in the manufacturing of Control & Instrumentation (C& I) Systems successfully and consistently.

Relationship between Strategic Project Management and Servant Leadership and commitment concerning the ISO 9001:2015 and ISO 21502:2020 in Indian Manufacturing Public Sectors (IMPS) ensures conformity of processes, products, and services to optimize time, cost, quality, and performance by establishing a set of strategic plans, processes, and procedures. Effective implementation of ISO 9001:2015 QMS principles are like engaging, directing, and supporting personnel, quality policy, quality objectives, promoting improvement, use of process approach and risk-based thinking, and ISO 21502:2020 functioning on resources availability, project management reviews & and progress, product/process/service realization, customer focus & satisfaction, communication, leadership, intended results, and other relevant roles, responsibilities, and changes are to be recorded.

2.2 Brief Overview of Project Terminology

2.2.1 Definition of Projects

According to (ISO 21502:2020), projects are unique and temporary endeavors undertaken to create products services, or results and have definite start and end dates. A project is completed when its goals and objectives are accomplished and meet stakeholders' expectations or it determines the project is no longer viable. The important point of the effort of a large project is dedicated to ensuring that the project is completed at the assigned delivery time through plans and schedules.

2.2.2 Characteristics of Projects

Projects are characterized by distinct, non-repetitive phases that involve specific processes and activities. They inherently carry risks and uncertainties. The purpose of a project is to deliver well-defined, measurable outcomes. Each project is meticulously planned with designated start and end dates, operating within predefined cost and resource constraints. The outputs of a project may encompass one or more units of products or services. Project teams are often composed of personnel who are temporarily assigned to the project. Additionally, projects may extend over long periods and be subject to both internal and external changes during their lifecycle.

According to the Project Management Institute (PMI) in the PMBOK Guide, the project lifecycle is divided into five phases: Initiation, Planning, Execution, Monitoring and Controlling, and Closing. These phases will be explored in detail in the following chapters.

2.2.3 Projects vs Processes

A process can be understood as the structured management of activities and resources aimed at achieving desired outcomes with greater efficiency. A project, on the other hand, is implemented through a sequence of planned, interconnected, and mutually dependent processes, which are managed and controlled by the project organization.

It is critical to precisely define the processes within a project and understand their interrelationships. Where necessary, the management and control of these processes should be supported by well-documented information to maintain clarity and ensure consistency. The effectiveness and efficiency of these processes can be evaluated through both internal and external reviews, offering valuable insights that can drive continuous improvement and enhance overall project performance.

2.2.4 Projects vs. Operations

In contrast to projects, operations consist of continuous, repetitive processes designed to produce consistent results without a defined endpoint. The primary purpose of operations is to maintain the ongoing functionality of an organization, ensuring that its day-to-day activities are executed efficiently and sustainably. In contrast, a project is characterized by its unique and temporary nature, with the objective of achieving specific goals and delivering defined outcomes within a set timeframe. Thus, while operations are ongoing and focused on stability, projects are finite, with a clear beginning and end, aimed at fulfilling distinct objectives.

2.2.5 Project vs. Program:

A project is a temporary and unique endeavor aimed at achieving one or more specific objectives. It comprises a set of tasks with clear deliverables and established deadlines. Each project operates within a pre-defined scope, typically targeting a specific output designed to improve quality, efficiency, cost management, and stakeholder satisfaction (Project Management Institute, 2021). Projects, therefore, are characterized by their finite timelines, singular focus, and limited scope, which collectively enable a structured approach to achieving discrete business goals (Kerzner, 2017).

In contrast, a program is generally defined as a coordinated group of related projects, program components, and supporting activities, all aligned to deliver broader organizational benefits (see Figure 1). Unlike projects, programs have a more fluid or indefinite timeline due to their larger scope and the need for ongoing management and adaptation over extended periods. Programs produce multiple deliverables that are often interdependent, evolving in response to changing business needs. By achieving a series of interconnected deliverables, programs enhance efficiency, accuracy, reliability, and other organizational objectives (PMI, 2021; Anum Safder, 2018).

According to Safder (2018), projects and programs are central to achieving strategic business objectives. To use an analogy, projects are like trains operated by project managers, who help guide

teams toward achieving specific goals, products, or services. Extending this analogy, a program is akin to a network of trains running on parallel tracks, each ultimately directed to the same destination or overarching goals. In this context, the program manager acts as the station master, overseeing and coordinating the various projects to ensure alignment and progress toward shared organizational outcomes.

A key distinction between projects and programs lies in their focus: while a project is oriented toward specific outputs, a program is concerned with broader outcomes. Project management is widely used across industries to improve quality and operational effectiveness, underscoring the interconnection between quality management and project management. Studies indicate a significant association between quality management practices and improved project performance, as project management supports the establishment of a Total Quality Management (TQM) culture within an organization (Stamatis, 1994).

Project management involves leading a team to execute a series of tasks designed to achieve well-defined goals, such as developing a new product or enhancing a service. Although projects may span several years, their scope and objectives remain consistent. The success of a project can be evaluated through the delivery of outputs and artifacts, which often contribute to the broader goals of a program. Thus, both project and program management serve critical roles in realizing organizational strategy, with project success often forming the building blocks for program achievement (Kerzner, 2017).
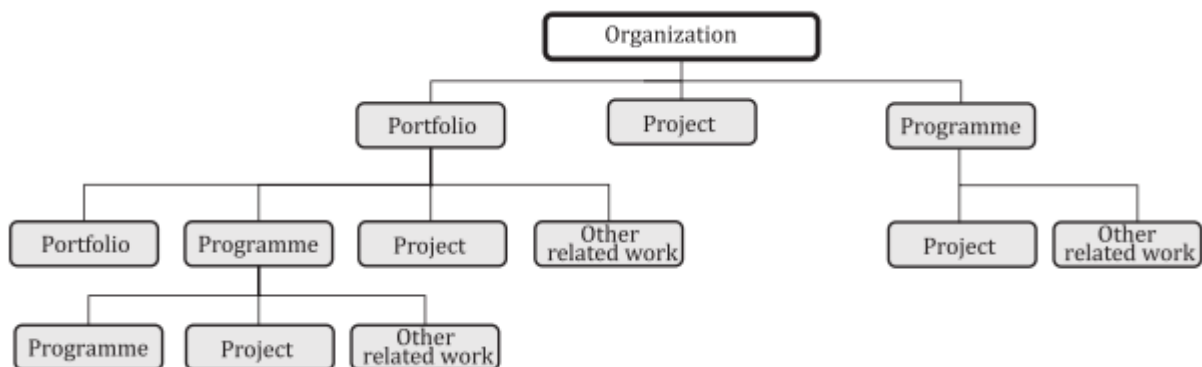
Figure 1: **Relationships among projects, programs, and project portfolios (ISO 21500:2012)**

2.2.6 Project Goal (PG) vs. Project Objective (PO)

The terms "project goal" and "project objective" are often used interchangeably, yet they represent distinct concepts, though closely related. Project goals and objectives serve different purposes within the context of project management. Project goals are typically long-term, intangible, and provide a broad direction for what the project aims to achieve. They reflect the overarching aspirations and vision for the project, often set at a high level by the business strategy. In contrast, project objectives are specific, measurable outcomes that support the achievement of these goals.

The project goal is generally aligned with the company's broader business strategy, which is shaped by the organization's mission and vision, as illustrated in Figure 2.

Figure 2: **Model of "VMSGOAL"**

The project objective is a specific, tangible, and clear statement that outlines actionable and measurable goals. During the project initiation phase or while developing the project plan, it is essential to define these goals and objectives. The project objective should be documented in the project management plan to ensure its achievement (refer to Figure 1). The "VMSGOAL" model is

employed to provide a structured approach, clearly defining the Vision, Mission, Strategy, Goal, Objective, and Action Plan, which are essential for both business and project success.

Project Management Goals: A goal is defined as a high-level target that sets the overall context for the project and ensures alignment with the strategic direction of the business. Examples of project goals are presented in Table 2 below.

Project Management Goals	
Develop effective project planning and methods;	Team building & and responsibilities;
Improve Customer satisfaction;	Leadership;
Sustainable organizational growth;	Create innovative technology;
Improve employee training methods;	Improve team collaboration and communication;
Finish projects on time;	Decrease delivery time;
Control budget;	Risk management;
Improve productivity;	Project performance measurement;
Review stakeholder's evaluation strategy;	Expand R & D products or services;
Management reviews and progress evaluations;	Improve quality products/services;
Continual improvement process, product, or service;	Mitigate the risks and convert risk into opportunity;
Product Cost optimization;	Improve procurement strategy;
Efficient resource utilization;	Ensure project review meetings daily/weekly;
Increase profit margin and sales;	Progress team performance and project performance;
Reduce company overheads and costs;	Improve employee satisfaction and motivational level etc.,
Improve project management strategy;	

Table 2: **Project Management Goals**

Project Management Objectives: The objective is the detailed outline of the big picture of the project. Project objectives are SMART, the concept first introduced by (George T. Doran, 1981) they are: S-Specific, M-Measurable, A-Achievable, R-Realistic, and T-Time-bound.

Specific: The objective should be defined clearly.

Measurable: The objective should be quantifiable, measurable, and accountable.

Achievable: The objective should be achievable considering the resources and constraints.

Realistic: Make sure that the objective is realistic and practical.

Time-bound: Make sure that the objective has a deadline or is defined.
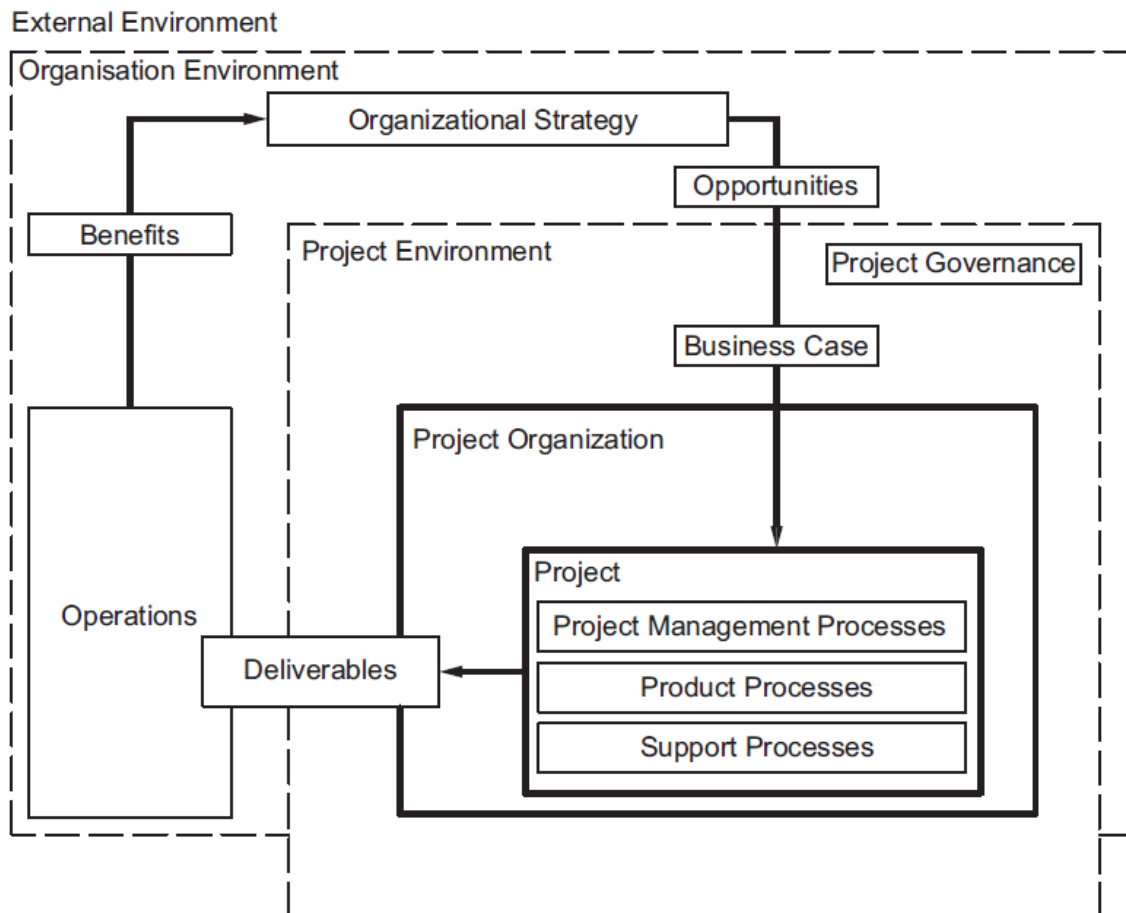
Figure 3: **Context and concepts of the governance and management of projects, programs, and portfolios (source: ISO 21500:2012)**

Figure 3 shows the overall context in which governance and management of projects, programs, and portfolios operate. The organizational strategy and objectives identify opportunities and threats. The opportunities and threats are evaluated and further developed into requirements and business cases and should be documented. Based on those business cases and using portfolio management or another management structure, the organization selects and authorizes projects and programs that provide deliverables, outputs, and outcomes to operations. Those deliverables, outputs, and outcomes can be used to realize benefits for internal and external stakeholders. The benefits can be an input to realizing and further developing the organizational strategies and objectives.

2.3 Project Management (PM), Program Management (PgM), and Project Portfolio Management (PfM)

Project Management (PM)

According to the Project Management Institute (PMI, 1987), "Project Management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participant satisfaction." Project management involves the application of methods, tools, techniques, and competencies to project activities to meet specific objectives and deliverables. Effective project management integrates various phases of the project life cycle and requires processes that are systematically aligned to ensure objectives are met and deliverables are achieved according to the requirements of stakeholders, including sponsors, customers, and other key participants.

The coordination of multiple projects is often referred to as program management, while aligning strategic objectives to projects or programs is termed strategic project or program management. These processes emphasize both strategy and planning, as the project manager must determine how best to achieve the project's goals, monitor progress, allocate resources, manage risks, and communicate effectively throughout the project lifecycle. As PMI (2017) notes, program and project management emphasize executing tasks in the "right" way, focusing on effectiveness and efficiency, while portfolio management involves selecting the "right" projects or programs to achieve organizational goals. A portfolio, therefore, is a collection of projects, programs, or operations managed as a group to fulfill strategic objectives. Portfolio management supports organizational strategy by coordinating portfolios to optimize costs, align resources, maintain quality standards, and schedule projects effectively.

Project management, thus, can be understood as both an art and a discipline that entails directing and coordinating resources—including human capital, materials, and financial assets—using structured methods to meet project requirements related to scope, cost, time, quality,

communication, risk, and stakeholder satisfaction. This application of knowledge, skills, and methodologies supports project phases from initiation to closing, with each phase producing specific deliverables that collectively achieve the intended outcomes.

In addition to facilitating the achievement of organizational objectives, project management is increasingly recognized as a strategic tool for organizational success, particularly as it helps organizations overcome traditional bureaucratic challenges and streamline operations through effective leadership. Quality management, often viewed as complementary to project management, plays a critical role in this context, as quality practices enhance project outcomes and ensure that deliverables meet specified standards. The integration of quality management into project management practices contributes positively to overall project performance, underscoring the relationship between quality-focused methodologies and successful project outcomes.

The widespread application of project management in modern business environments illustrates its value in delivering incremental benefits that align with organizational goals and strategic objectives. By integrating strategic, quality, and resource management, project management positions itself as a vital competency that drives organizational performance and value creation across industries.

Program Management (PgM)

Program management is a structured process of aligning and managing programs with organizational objectives to enhance overall performance. Program managers play a critical, adaptable role within companies, designed to address diverse challenges by overseeing and coordinating various projects, strategic initiatives, and risk mitigation efforts across programs. By fostering agility and facilitating development and operational (DevOps) best practices, program managers drive organizational transformation. This transformation includes implementing agile

methodologies and DevOps principles, which support continuous improvement and responsiveness to evolving business demands.

The role of the program manager spans across large programs, individual projects, and business opportunities, effectively integrating agile practices to improve collaboration and efficiency within teams. Program management involves overseeing a program composed of multiple interrelated projects. These programs are inherently linked to strategic initiatives, often long-running and, in some cases, permanent in nature. Programs are designed to sustain through periods of organizational change and contribute to multiple objectives by delivering specific components that align with broader strategic goals.

Due to the extensive scope and significance of their objectives, programs generally operate with flexible timelines, adapting to ongoing organizational needs. Programs are characterized by multiple deliverables with interdependent components, which may evolve in response to shifts in business priorities. A cohesive set of deliverables produced through program management serves to enhance organizational efficiency, accuracy, reliability, and other business-specific goals, ultimately driving sustained value for the organization.

Project Portfolio Management (PfM)

A portfolio typically comprises a collection of projects, programs, and related work grouped to facilitate effective management in alignment with strategic objectives. Portfolio management, therefore, involves the centralized oversight of one or more portfolios, encompassing the processes of identifying, prioritizing, authorizing, directing, and controlling projects, programs, and other related work to achieve the organization's strategic aims.

As outlined by the Project Management Institute (PMI, 2017), project or program management is primarily concerned with executing projects and programs in the "right" way—focusing on efficient

delivery and adherence to scope, schedule, and cost constraints. In contrast, project portfolio management emphasizes selecting and running the "right" projects and programs, thereby ensuring alignment with broader strategic goals. A portfolio, defined as a collection of programs, projects, or operational tasks managed collectively, aims to drive strategic objectives, as shown in Figure 1.

Portfolio management is understood as the coordinated administration of one or more portfolios to support organizational strategy and realize strategic objectives. An organization's strategic portfolio outlines how core strengths and competencies will be leveraged to manage resources, communicate effectively, provide leadership, assess risks, drive business development, expand strategic initiatives, and foster product innovation and improvement. Additionally, portfolio management encompasses collaboration, corporate social responsibility, and the continuous development of improvement techniques.

2.4 Strategic Project Management

2.4.1 Definition of Strategic Project Management

Strategic project management refers to the process by which organizations prioritize and allocate available resources across a portfolio of programs to achieve their strategic objectives. It is essential for both project and portfolio managers, as it creates a robust connection between the team's strategy and its operational activities. While portfolio management focuses on selecting the "right projects" to pursue, project management ensures these projects are executed "the right way." The integration of both approaches guarantees that organizations are undertaking the appropriate tasks in an effective manner. To implement effective strategic project management, project portfolio managers and senior management must promote interdepartmental cooperation, collaboration, information sharing, and the development of technological competencies. Regular surveys and design thinking workshops should be conducted to enhance the user-friendliness of the workplace.

Ochieng (2016) highlighted the importance of considering the project environment, defining roles and responsibilities within project teams, and assessing risks during both planning and

implementation phases to improve organizational performance. Heerkens (2007) defined strategic project management as a combination of practices, procedures, processes, tools, and behaviors that create strong linkages between excellent project management and broader business practices aligned with the organization's strategic goals. According to the Project Management Institute (PMI), strategic project management encompasses a portfolio of projects and programs, along with related work, structured to facilitate management that aligns with strategic objectives. Dyrayes (2008) described strategic project management as a process that bridges the gap between an organization's strategic goals and project management strategies. Shenhar et al. (2002) stated that project strategy lies between business strategy and the project plan, focusing on the specific strategy for individual projects, particularly their goals and plans.

Strategic project management generally involves the centralized management of one or more project portfolios, which includes identifying, prioritizing, authorizing, directing, and controlling projects and programs to meet strategic objectives. This process is complex, aiming to secure competitive advantages by taking a multidimensional approach that includes factors such as time, budget, technology, strategic goals, quality, stakeholder relationships, and overall organizational success. CADENAS (2020) emphasized that strategic project management is crucial for portfolios, programs, and projects within contemporary frameworks. It provides a methodology for creating and managing a portfolio of projects focused on achieving competitive advantages and aligning with organizational strategies, goals, and priorities, thereby enhancing business value. This methodology is supported by prominent organizations such as the Project Management Institute (PMI, PMBoK) and AXELOS (PRINCE2), which offer extensive knowledge on project management practices. ISO standards 21500:2012 and 21502:2020 provide high-level descriptions of the best practices in project management processes and concepts.

Desai and Koul (2013) observed that many projects are process-driven, with project teams often focusing on short-term daily targets while neglecting broader organizational goals. In such instances, organizations tend to prioritize output over the processes necessary to achieve those outcomes. Therefore, strategically translating the organization's vision and mission into concrete organizational goals is critical. Strategic project management involves comprehensive planning, resource allocation, execution, progress monitoring, and overall project oversight at both macro and micro levels. Strategy is derived from the organization's mission and vision, which guide the approval of procedures and mandates. Artto et al. (2008) defined project strategy as the direction that a project must take to achieve success within its specific environment. While earlier organizations utilized tools such as CPM, PERT, and WBS for project planning and control, the evolving complexity of projects, market competition, and globalization now demand continuous monitoring and strategic improvements through integrated ERP systems to align projects with organizational goals.

Nicoletti (2018) identified procurement process intelligence as a business intelligence approach aimed at optimizing procurement processes and improving agility. Desai et al. (2013) reiterated that many organizations focus on daily outputs without fully considering the processes required to achieve organizational goals. The strategic conversion of a company's vision and mission into actionable organizational goals is therefore essential. The integration of traditional project management tools such as CPM, PERT, and WBS must evolve to meet modern challenges, requiring the implementation of ERP systems to continuously guide and monitor projects in alignment with organizational objectives.

Desai et al. (2013) further emphasized that top management must address two strategic components: the project components and the organizational components, which include both internal and external or environmental factors, as outlined in Table 3.

| Sl. No. | Project Components | Organizational Components | |
		Internal (Business Domain)	External (Industry Domain)
1	Leadership	Vision	Political
2	Culture/spirit	Mission	Economical

3	Technology integration used:
	  i. Internal process
	  ii. Output to the customer/product
	  iii. Cross-functional activities (strategic partnership with an educational institution, business partners, suppliers/distributors)
		Culture	Social

4	Learning system	Human Resources	Competitive market

5	KPI and metrics (converted to business goals)
	  i. Organizational focus
	  ii. Project purpose
	  iii. Measurement type to ensure success
		Technology	Technological advancement

6	Performance evaluation	Performance measuring system (depends on KPI / metrics)
		  i. Process metrics
		  ii. Project metrics
		  iii. Product metrics
			-

Table 3: Comparison of Project components and Organizational components

David (2003) highlights the importance of understanding the factors that influence project management performance, including leadership, personnel, policies, strategies, strategic partnerships, project life cycle documentation, and key performance indicators (KPIs). Kozarkiewicz and Kabalska (2016) argue that strategic project management is a complex process

that emphasizes the efficient utilization of business opportunities. Heerkens (2007) defines strategic project management as a series of interrelated patterns, mechanisms, processes, tools, and behaviors that collectively form a framework for organizations to effectively link project management best practices with the execution of strategic goals.

Amram and Kulatilak (1999) propose that strategic project management involves a two-stage process: development and control. When both stages are effectively managed, the desired objectives can be attained. Jamieson and Morris (2004) assert that strategic project management must be grounded in a specific methodology that integrates strategic plans, goals, and tasks. This methodology entails evaluating the implementation of project strategy at the organizational level and incorporating leadership, organizational competencies, and knowledge into project management practices.

Patanakul and Shenhar (2012) define project strategy as a set of perspectives or directions that guide a project toward fulfilling the organization's primary objectives. Project strategy is viewed from three key perspectives: the "why" (business context, goals, and strategic vision), the "what" (product definition, value, competitive advantage, and criteria for success/failure), and the "how" (project definition and strategic focus).

Several authors, including Anderson and Merna (2003) and Artto et al. (2008), contend that project strategy is a sophisticated plan that facilitates the achievement of a project's goals. It can also be seen as the project's direction, shaped by its success. Morris (2004) underscores the significance of planning, integration processes, the effective execution of plans, and the strategic application of knowledge and expertise in the development of a project's strategy. Longman and Mullins (2004) argue that project strategy is often overlooked during project creation and implementation. Each project has a unique strategy, influenced by its perspective, position, and activities, which are essential for defining 'what' and 'how' a project should be executed to ensure its success.

Artto et al. (2008) and Patanakul and Shenhar (2012) describe project strategy as comprising several multidimensional elements: business perspective, assumptions, product value creation,

success and failure criteria, project definitions, competitive advantage, and strategic goals. Green (2005) suggests that the implementation of strategic project management requires an interdisciplinary approach to guarantee success. This includes providing clear and concise definitions, aligning project strategy with business strategy, managing project portfolios to maximize value, and ensuring leadership in project management. Shenhar (2004) asserts that applying strategic project leadership involves adhering to seven core principles: leadership, strategic portfolio management, strategic project definition, vision creation, integration, and knowledge. Ultimately, strategic project management ensures the alignment between projects and organizational objectives, enhancing the effectiveness of strategy-to-project implementation.

2.4.2 Types of Projects

According to Rehacek (2014), projects can generally be categorized into two types: investment projects, which drive changes in the way organizations operate, and commercial projects, which directly generate income for the performing organization. Additionally, projects can be classified based on the industry or sector in which the organization operates. These include sectors such as manufacturing, construction, services, information technology (IT), education, management consulting, utilities, government, agriculture and mining, and oil and gas.

2.4.3 Project Success or Failure

(Jeffrey K. Pinto and Samuel J. Mantel Jr., 1990) claimed that based on the literature, three diverse aspects of project performance (outcome) were identified as benchmarks against which to assess the success or failure of a project. The aspects of project performance are concerned with the first one is internal efficiency of the project implementation process itself; the second is perceived value of the project, and finally the client satisfaction with the delivered project. The second and third aspects of project performance are concerned with the project's external effectiveness. (Ochieng, 2016) stated that effective implementation of project management strategies impacts the project's success. These

strategies include strategy formation, the organization's environment, organizational culture, organizational structure, project planning, communication, project funding, and the people. The following strategies have been identified by a (Ochieng, 2016) research study to improve the effective application of strategic project management in public research organizations. The adopted strategies are as follows: The project plan that defines the projects; management involvement, project team approach, strategic project leadership, employee motivation, and the use of a problem-driven approach in the selection of projects. (Anum Safder, 2018) research study established that the ISO certification and performance of project management can be improved and will lead to the success of projects.

According to (David, 2003), there is a need to understand the parameters that lead to Project Management performance like leadership, staff, policy and strategies, strategic partnership with alliances, project life cycle documentation, and projects. According to (Shenhar A.J, 2004), A project starts with a grand plan that includes business strategy at every level. But there is a need to see how this project strategy plan gets converted into the 'need of the business plan which is monitored all over the period. Still, projects fail. The reason behind this is the lack of leadership and the missing link "Project Strategy" exists between project goals and organizational goals which require commitments from the top to the bottom level in the management, training to employees, and monitoring of macro and micro levels and raised a few questions to make decisions for organizational projects' success.

According to (Jeffrey K. Pinto and Samuel J. Mantel Jr., 1990), ten major critical success factors are project mission, top management, project schedule, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, communication, and troubleshooting. These factors are identified for the successful implementation of a project, depending on types and organizations, and serve as the base for measurement instruments. The Project Implementation

Profile (PIP) is a measurement instrument that allows an assessment of an organization's ability to carry a project through to full implementation. (Pier Luigi and Maurizio Monassi, 2021) claimed that, when aligning project management practices and systems, the following should also be considered.

- Functional and physical organization over other prevailing structures

- Conflicting procedures, processes, plans and systems

- Technology availability and access

- Communication methods and cycles

- Technology availability and access

- The context of operations of the organization

- Balancing and optimizing the social, economic, and environmental characteristics

- Administrative and authorization systems

- Sustainability and oversight requirements

The critical success factors play a significant role in the project management implementation process. This research study is predicated on determining the effect of the lack of strength or absence of these critical success factors on subsequent project failures. This organizational research is focused on critical success factors under the control of ISO International Standards (ISO 9001:2015 and ISO 21502:2020) by the organization implementing the strategic project management process and leadership. Strategy is related to up-front planning activities when a project is being developed. The project running with the concept of strategy in terms of leadership (identification of risk, planning project specification, developing budget and schedules, improving quality and personnel performance for organizational benefits) and tactics in terms of project management (project execution, performance check, and transfer of the project to its intended users) among the various stages from beginning to ending of project life cycle and each project having a unique style of strategy depends on the control of project objectives and deliverables.

2.4.4 Benefits of Project Management

Understanding of project management is required for any type of organization for their business success. Also, it manages the processes, tasks, and communication among the team members and produces the highest productivity. There are some additional benefits in implementing project management in an organization, such as implementing the right project management tools that keep work progress and goals oriented towards growing a successful business. And eliminates confusion, improves team effectiveness, increases efficiency, and aligns communication. Implementing the project management process and tools improves communication, increases productivity and revenue, and helps to easily meet schedules. (Petr REHACEK, 2014) stated that project managers and experienced managers can use the project management guidance in project management standards to improve project success and achieve business results. Different projects require different project management methodologies to use, depending on the application, project size, technology, and schedule.

2.4.5 Application of Project Management Tools and Techniques

There are a few tools listed here: Project charter, project management plan, risk register, stakeholder register, 10 project management subsidiary plan, RASCI chart, Gantt chart, PERT chart, CPM, EVM, COPQ, communication matrix, Six Sigma.

2.5 Servant Leadership

2.5.1 Theory of Servant Leadership

Leadership in civil services may have been misled by consultants and managing the public service is more complicated than business. But it can be understood, can be practical, and can be resolved. The reformation of the public service requires a layered approach to project management. You cannot have responsibility without empowerment, transparency without encouragement, authority without engagement, or accountability without enforcement. These are not isolated from each other. They are part of processes. If one part is broken or missing the problems will affect other parts. As human beings, we are all imperfect beings. When two imperfect beings interact or are between the workforce and an organization, it is quite natural for there to be friction. In such scenarios, leadership helps to understand, interact, and explain the facts to avoid friction.

Servant leadership is quite interesting and desirable leadership style and is suitable for contemporary organizations. Servant leadership is the only style that prescriptively calls for personal humility as one of the keys to successful implementation in any organization. According to (Smith, 2005), Servant Leadership is highly suitable in the manufacturing industry, but this requires formulation, verification, and further research. This style of leadership is more suitable for public sector units with strategic behavior and directions for the benefit of both followers and the organization.

The importance of servant leadership is recognizing teamwork and fulfilling team needs personnel growth, innovation technology, and stakeholder satisfaction. The servant leadership style is more likely to be a transformational leadership style but, with a unique skill set like "serve." For project management, servant leadership is most suitable for middle-level leadership. The combination of project management and servant leadership has become more powerful for project execution to balance and lead personnel as well as top management for better business growth. But, still, servant

leadership traits have their limitations. So, still, the servant leadership style requires improving skill sets to lead personnel efficiently, and effectively in overall organizations' performance and revenue in the Indian manufacturing public sectors. This research experiment is new for this combination of project management and servant leadership. It focuses on improving the quality skill set of servant leadership in project management following ISO 9001:2015, and ISO 21502:2020 to maintain quality in projects and fruitful results for personnel and organizational level.

In addition to the above, the leadership also should have some more characteristics like Resolution, Self-realization, Critical thinking, Inter-personnel relationships, and Wisdom to lead personnel more effectively and to support strategically between personnel, project (or) program objectives, and organizational objectives for future company's benefits. There are other relevant ISO standards to consider based on organizational needs. For this, initially get the ISO 9001 Quality Management System - Requirements, as this is the core standard and well-known standard based on company needs. Servant leadership fosters a culture of respect, fairness, trust, honesty, and appropriate transparency and openness and improves the organization's values and policies. Servant leaders should be realized of internal and external aspects, and carefully align optimizing social, political, economic, sustainability, and legal dynamic environmental characteristics and ability to integrate other related work and the capacity to absorb change should be considered.

2.5.2 Antecedents of Servant Leadership

The root of the servant leadership theory is based on the teachings of the various world religions. In servant leadership, leaders serve without seeking something in return and provide the best opportunities to their followers. Servant Leadership effectiveness arrives through five basic key elements. These are; to model the way, inspire a shared vision, challenge the process, enable others to act, and encourage the heart. Five thousand years ago, firstly "The Servant as Leader" concept was introduced and implemented by Lord Guru SRI KRISHNA by serving as a charioteer as well as

a teacher for ARJUNA during the crisis in the KURUKSHETRA war, teaching great BHAGVATGITA, and directed strategies to win the war successfully. Trust in leaders has contributed to organizational and personal performance since the 1980s. Personal trusting servant leaders may feel more determined, more satisfied, and more committed to organizational goals. The encouragement of followers' job satisfaction indicates a positive relationship between servant leadership and followers' behavior. According to (Franco Gandolfi and Seth Stone, 2018), one of the best-recorded examples of servant leadership is derived from the teachings of Jesus Christ in the Jewish culture nearly two thousand years ago.

In the 20th century, Mahatma Gandhi and Martin Luther King Jr. served as prominent examples of servant leadership. Although an ancient concept, servant leadership was not formally conceptualized until the 1970s by Robert Greenleaf (Sendjaya and Sarros, 2002). It is probably best summarized by Greenleaf who states:

"The servant-leader is servant first, it begins with the natural feeling that one wants to serve, to serve first, then conscious choice brings one to aspire to lead". (Greenleaf, 1998, p-4).

According to (Sendjaya and Sarros, 2002), Servant leaders see themselves as servants, prioritize the needs of others before themselves, and make deliberate choices to serve others first. According to (Harrison, 2018), Servant leadership is considered an important area of research because of the potential success it can have in organizations. (Amah, 2018) stated that Servant leadership requires self-efficacy and motivation are antecedents to serve followers.

Who is a leader and why leadership is so significant?

According to (Winston and Patterson, 2006), "A leader is one or more people who select, equips, trains, and influences one or more follower(s) who have diverse gifts, abilities, high potentiality, interactive skills and focuses the follower(s) to the organization's mission and objectives causing the follower(s) to willingly and enthusiastically expend spiritual, emotional, and physical energy in a concerted coordinated effort to achieve the organizational mission and objectives". The leadership attribute affects employees' organizational commitment and trust in leadership improves employee performance toward organizational growth. Leadership assumes that if the followers are maximizing their potential, it will directly translate to the potential of the organization and its overall performance.

According to (Rooke and Torbert, 2002), leaders require a high degree of self-awareness, emotional intelligence, and environmental context both inside and outside the organization. (Chaleff, 2009), posits that all-important social accomplishments require complex team efforts, and thus, leadership and followership are both necessary in the pursuit of a common purpose. This inherently forces leaders to emerge, but the type of leader that rises to the top will indeed make or break the organization.

Why do different styles of leadership emerge?

(Franco Gandolfi and Seth Stone, 2018), defined a leadership style as follows:

"An intentional means by which a leader influences a group of people in an organization to a widely understood future state that is different from the present one." Virtually, everyone has some capacity to form leadership relationships, and leaders are made and not born – (Gandolfi and Stone, 2016).

According to (Buchanan, 2013), the world has moved through different phases of leadership since the early part of the 20th century. Specifically, there was the first concept of "command-and-control" that prevailed in the 1980s, which was followed by "empower-and-track" through the mid-2000s, and finally, "connect-and-nurture", which is the current approach. Shazia, Anis-ul-Haq, and Niazi [2014], state that early theories of leadership had assumed that good leadership was based on traits. This led to the notion that leaders are born and not made. (Psychologist Kurt Lewin and team, 1939), introduced that leaders could be made and were not necessarily just born. The authors (Lewin, Lippit, and White, 1939) introduced and categorized three different leadership styles that set the framework for future styles to emerge – autocratic, democratic, and laissez-faire (Martin, 2015).

Why would an organization seek to embrace servant leadership?

Servant leadership contributes to the organization by setting the focus on the followers. Servant leadership is a great leadership philosophy that addresses ethical issues, customer experience, and employee engagement while creating a unique organization where both leaders and followers unite to achieve organizational goals, and employees are seen as one of the greatest assets for the organization (Carter, 2012). Servant leaders are a great asset to the organization. According to (Robert S. Dennis and Mihai Bocarnea, 2005), building upon Patterson's theory of servant leadership (2003) to measure the constructs of seven components are Love, Humanity, Altruism, Vision, Trust, Service, and Empowerment. According to Patterson, the definition of servant leadership is as follows:

"Servant leaders are those who serve with a focus on the followers, whereby the followers are the primary concern and the organizational concerns are peripheral. The servant-leader constructs are virtues, which are defined as the good moral quality in a person, or the general quality of goodness, or moral excellence."

(Laub, 2004), suggested that servant leadership requires a change of mindset, a paradigm shift that sees leaders and followers differently from another competing mindset of leadership. All authors (Northouse, 2007; Manby, 2012; Stone, 2015, and Gandolfi & Stone, 2017), state that Servant leadership incorporates a proven element of effective leadership. Still, Servant leadership is a highly increasing interactive style of leadership when it comes to leader or follower workforce engagement for improving organizational performance based on serving the followers. Servant leadership purely works on moral and ethical perspectives.

2.5.3 Characteristics of Servant Leadership:

Servant leadership is characterized by ten key traits: listening, empathy, healing, awareness, persuasion, conceptualization, foresight, stewardship, a commitment to the growth of individuals, and community building (Greenleaf, 1970). Among these, the development of people is considered the most crucial characteristic of servant leadership. Furthermore, it is widely acknowledged that servant leaders should demonstrate stewardship and promote empathy, acceptance, and guidance. However, it is important to note the scarcity of empirical evidence in existing literature regarding the specific characteristics of servant leadership. Ulrich (2002) emphasized that employee commitment is essential for organizational success, which is reflected in behaviors that align with the organization's values and objectives (Ambali et al., 2011).

Setyaningrum (2020) identifies additional qualities of effective servant leaders, including patience, obedience, peace, joy, mercy, forgiveness, humility, gratitude, caring, competence, appreciation, collaboration, and commitment. In the current era of dynamic globalization, leaders must be able to foster positive organizational change, generating commitment and trust among their followers. Servant leadership has been shown to influence employees' trust and commitment to organizational leadership. Burke et al. (2007) noted that trust in leadership facilitates communication, enhances

learning, improves performance quality and quantity, and reduces turnover. Conversely, unethical leadership behaviors contribute to business failures (Liden et al., 2008; Reet et al., 2011). Plessis (2015) and Chan (2014) asserted that servant leadership creates an environment conducive to emotional intelligence and trust in managers. According to Rezaeet Total (2012), a lack of trust in leadership leads to employee dissatisfaction. Tan and Tan (2000) provided empirical evidence supporting the notion that a leader's ability, benevolence, and integrity are essential precursors to trust in leadership.

Building trust is a key aspect of servant leadership and is beneficial for both followers and the organization (Gulay Murat Eminoglu & Meral Elci, 2019). Research by Brower et al. (2000) and Buk et al. (2017) suggests that trust is partially cultivated through leader behavior, with subordinates' trust in leadership being influenced by the actions of their leaders. Sendjaya (2010) argued that servant leadership fosters trust by setting personal examples, promoting shared values, encouraging openness, and demonstrating a commitment to the well-being of followers. Sendjaya, Sarros, and Santora (2008) outlined six dimensions of servant leadership: voluntary subordination, authentic self, covenantal relationships, responsible morality, transcendental spirituality, and transforming influence.

Henkin and Moye (2006), as quoted by Berries et al. (2014), found that employees feel trusted when they are engaged in their work and treated as colleagues within the organization. Dirks and Ferrin (2002) highlighted trust as a critical relational construct in the workplace, noting that organizational fairness enhances trust between management and employees, making them feel more involved in organizational tasks. Trust in leadership strengthens the relationship between superiors and subordinates, fostering a collaborative effort toward achieving organizational goals. These attributes are essential both theoretically and practically.

Various authors (Miao et al., 2013; Jacobs, 2006; Ulrich, 2000) have linked servant leadership with employee trust and commitment. Organizational commitment and leadership commitment contribute positively to organizational success. Lester and Browser (2003) found that trust in leadership leads to improved subordinate performance, organizational citizenship behavior, and job satisfaction. Their research concluded that when employees feel trusted, they are more likely to work harder, exceed expectations, and experience greater job satisfaction.

First (2013) described the servant leadership framework as one that emphasizes service to others, a holistic approach to work, fostering a sense of community, and sharing decision-making power. Similarly, Ingram (2016) highlighted that servant leadership embodies values such as acceptance, relationship, credibility, influence, vision, and encouragement. To achieve these values, servant leaders must demonstrate patience toward their followers.

Patterson (2003) developed a theoretical model of servant leadership, explaining that leaders must possess agape love for their followers. Winston (2003) defined agape love as a moral love that seeks to do the right thing at the right time for the right reasons. Mutia (2015) stated that servant leadership helps followers align their individual purposes with organizational goals, emphasizing that servant leaders must be wise and able to motivate followers toward these objectives. Stamm (2004) defined servant leadership as a relationship-based approach involving humanity, openness, courage, and rigorous thinking. Spears (2010) suggested that servant leadership engages others in decision-making, is grounded in ethical and caring behavior, and fosters employee growth. It also acknowledges leader awareness as a key mechanism for leadership development.

Research by Retno Purwani Setyaningrum et al. (2020) has contributed to understanding the impact of servant leadership on organizational commitment, followers' trust, employee performance, and organizational culture. Organizational commitment, defined as employees' attitudes and behaviors that actively support the organization's goals, is closely tied to improved performance. Iqbal et al.

(2015) found a positive and significant relationship between organizational commitment and employee loyalty, suggesting that committed employees are more likely to perform at higher levels. Servant leadership is particularly suited for today's turbulent business environment and has been extensively studied across various research domains, including personal behavior, organizational demands, and team performance within organizations.

2.5.4 Skills of Servant Leaders

According to (Katie Elizabeth Mcquade Christian Harrison, and Heather Tarbert, 2021), about the skills of servant leaders, research has been conducted on values, behavior, and characteristics. Yet, research concerning skills is not of prominence. According to (Barbuto and Wheeler, 2006), servant leaders should possess the skills of empathy which is still ambiguous whether it is a skill or a trait and skill of listening within servant leadership. (Page and Wong, 2000), stated that it is necessary for servant leaders should listen to their followers. (Russell and Stone, 2002), highlighted servant leaders should require communication skills. (Page and Wong, 2000) and (Russell and Stone, 2002), highlighted trust as a compulsory skill for servant leaders. Yet, a comprehensive examination of the skills of servant leaders is lacking in this field.

According to (Franco Gandolfi and Seth Stone, 2018), servant leadership holds a rightful place amongst other accepted leadership styles such as democratic, transactional, and transformational leadership. According to (Stone et al. 2004), the theory of Transformational leadership resembles Servant leadership which emphasizes the personal growth of followers, but the way they encourage the followers' personal growth differs between the two theories. Transformational leaders inspire followers toward the organizational goals and enable them to perform better through "individual considerations," "intellectual stimulation," and "supportive behavior". Servant leaders promote the realization of a shared vision by creating conditions that enhance followers' well-being, and functioning through "humility," "authenticity," and "interpersonal acceptance." Servant leaders focus on the psychological needs of followers as a goal and trust followers to do what is necessary

for organizational growth. (Yuka Kobayashi et al., 2020), introduced the content of eight dimensions of empowerment, humility, standing back, stewardship, authenticity, accountability, courage, and forgiveness.

2.5.6 Servant Leadership Behavior

(Liden et al, 2008) stated that seven servant-leader behaviors are the core of the servant-leadership process including conceptualizing, emotional healing, putting followers first, helping followers grow and succeed, behaving ethically, empowering, and creating value for the community. According to (Russell, 2001), Honesty, Integrity, Fairness, and Justice are internalized values such as honesty, integrity, fairness, and justice that significantly impact a leader's behavior. (Anderson, 2009) argued based on empirical evidence that leaders with high power are more effective. (Frieze & Boneva, 2001) dealt with people with the helping power motivation who want to use it to help and care for others. (Ulrich, 2002), stated that the commitment of competent employees is critical to organizational success. Organizational commitment consists of behavior that reflects the feelings, attitudes, values, practices, and brilliant ideas that employees voluntarily choose to support the organization's interests (Ambali et al, 2011). (Enrhart, 2004) identified major behaviors of servant leaders as forming relationships with subordinates, empowering subordinates, helping subordinates grow and succeed, behaving ethically, having conceptual skills, putting subordinates first, and creating value for those outside the organization.

According to (Sendjaya et al., 2008), Servant Leadership behavior can be categorized into six dimensions: Voluntary Subordination, Authentic Self, Covenantal Relationship, Responsible Morality, Transcendental Spirituality, and Transforming Influence. (Gulay Murat Eminoglu & Meral Elci, 2019), building trust is a key component of servant leadership achievement which is very beneficial for followers as well as the organization. (Brower et al, 2000; Buk et al., 2017), found that trust is partly built on the leader's behavior and that the subordinate's trust in leadership

is based on the leader's behavior. (Dierendonck, 2011) proposed the interrelatedness of the motivation for leadership with the effectiveness of servant-leader behavior. Outcomes of servant leadership expect a high-quality Leadership-member exchange (LMX) relationship, trust, and fairness to positively influence followers' personal growth, job attitude, integrity, and performance. (Peterson et al., 2012), Servant leadership found unique values of trust, integrity, and honesty that help to foster better performance. These values improve the interaction between subordinates, internal, external, and stakeholders. (Farling et al., 1999) stated that defining vision, influence, creditability, trust, and service attributes of servant leadership.

2.5.7 Attributes of Characteristics of Servant Leadership

(Russell & Stone, 2002) expressed 20 servant leadership attributes in two categories such as functional attributes and accompanying attributes. Functional attributes include vision, honesty, integrity, trustworthiness, service-oriented, role model, pioneering, demonstrating an appreciation of others' work, and empowerment. In terms of accompanying attributes good communication, listening, credibility, competence, stewardship, visibility, influence, persuasion, encouragement of others, teaching, and delegation of powers. Functional attributes are operative qualities, characteristics, and distinctive features that belong to leaders and are identified through leaders' behavior in the organization. The functional attributes are distinctive, yet they are all interrelated and these attributes are the effective characteristics and identifiable characteristics that actuate the responsibility of servant leadership. The accompanying attribute appears to supplement and augment the functional attributes. They are not secondary; rather, they are complementary and, in some cases, prerequisites to effective servant leadership. The values and core beliefs determine a leader's principles which are the interdependent variables incarnate through the functional attributes i.e., dependent variables of servant leaders. The accompanying attributes impact the translation of values into functional attributes. Therefore, the accompanying attributes are moderating variables, they affect the level and intensity of the functional attributes.

(Yuka Kobayashi et al., 2020), introduced the content of eight dimensions of empowerment, humility, standing back, stewardship, authenticity, accountability, courage, and forgiveness. From this research study, understand the aspects that need to be strengthened to enhance leadership abilities, create a healthy workplace, and finally, organizations should implement, deploy, and support appropriate training development programs for leaders to establish reciprocal relationships with their followers and increase their commitment to the organization. According to (Robert S. Dennis & Mihai Bocarnea, 2005), building upon Patterson's theory of servant leadership (2003) to measure the constructs of seven components are Love, Humanity, Altruism, Vision, Trust, Service, and Empowerment. (Bavik, 2020; Dawson et al., 2011 & 2018, Tepeci & Bartlett, 2022), focused on and discussed 18 attributes of servant leadership in the hospitality context namely altruism, behaving ethically, building community, growth of people, creating value, empathy, empowerment, honesty, humility, integrity, interpersonal support, listening, putting subordinates first, relationships, servanthood, service, stewardship, and trust.

According to (Barbuto & Wheeler, 2006), servant leaders should possess the skills of empathy which is still ambiguous whether it is a skill or a trait and skill of listening within servant leadership. (Page & Wong, 2000), stated that it is necessary for servant leaders should listen to their followers. (Page & Wong, 2000), and (Russell & Stone, 2002), highlighted trust as a compulsory skill for servant leaders. Yet, a comprehensive examination of the skills of servant leaders is lacking in this field. (Rezaei et al., 2012), if personnel do not trust the leader, they will be dissatisfied. (Russell & Stone, 2002), highlighted servant leaders should require communication skills. (Dirks & Ferrin, 2002) concluded that trust is one of the important relational constructs in the work environment. Organizational fairness encourages trust between management and employees in a way that makes them feel involved in organizational tasks. Trust in leaders will enhance the harmony of the relationship between superiors and subordinates and can bind subordinates to jointly

achieve organizational goals. Such attributes need to be implemented both in theory and practice. (Burke et al, 2007) says that trust in leadership facilitates communication, learning, performance quality, and quantity, and increases turnover. According to (Tan &Tan, 2000), empirical research approved the preceding result that a leader's ability, benevolence, and integrity are certain antecedents of trust in the leader. Existing literature defines leadership as important in terms of traits, characteristics, behavior, influence, patterns of interaction, the role of relationships, and holding an administrative position (Yukl, 2002).

2.6 Roles and Responsibilities of Organizational Management

Any manufacturing organization maintains a management hierarchy as shown in Figure 4 different management levels exist in the organization. They are top-level management, middle-level management, and low-level management. Each management level has unique roles, responsibilities, and targets. The manufacturing organizations and their business leaders execute their business-level strategic decisions and control so many departments covered under the organization. Each department and its strategic project leaders execute a quality group of projects/products, programs, and services. Every department owns many sections/wings thru work a breakdown structure (WBS) to execute its dedicated processes, resources, services, operations, and support.
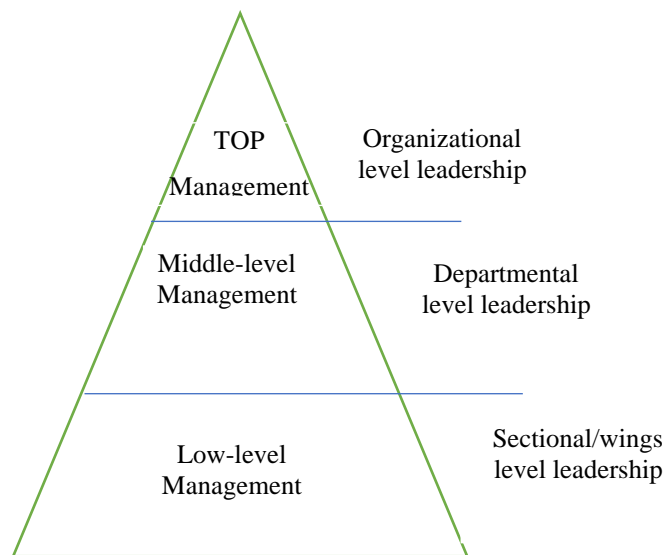

Figure 4: **Three-tier level management**

2.6.1 Management responsibility in projects

Top management is involved in the commitment to originating and project organization. Provide input into the strategic process and implement continual improvement actions in current and future projects. Facilitate a culture to learn lessons to lead to continuous improvement of current and future projects. Management does project reviews periodically and evaluates the progress against the project objectives.

Project management is part of middle-level management and requires the development of a special leadership quality to manage both personnel and top management. So SMART-servant leadership is also middle-level management and the most suitable style of leadership in project management to influence, empower, and motivate personnel growth as well as lead them toward organizational target achievements. Management is responsible for implementing facilities, leadership is responsible for setting the goals, and the organization is responsible to be move on business toward its goals.

2.6.2 Management responsibility in the implementation of ISO standards

ISO 9001:2015 states that top management's responsibility is to identify the training needs, endeavor to develop employee's competencies by updating their skills, knowledge, and attitude to enable higher productivity, eliminate product defects, equipment failures, and accidents, develop a multi-skilled workforce and create a sense of pride and belonging among all the employees (Ahuja, 2015). Portfolio Project managers and top management should ensure proper inter-departmental cooperation, collaboration, information sharing, and technology competency development. Surveys and design thinking workshops should be conducted to know how the workplaces can be more user-friendly. implementation of International Standards is like ISO 9001:2015 aligned with related standards such as ISO 10006:2017 and ISO 21502:2020 Guidance on project management for projects' success and maximize the business benefits in the manufacturing PSUs. (Moller, 2014) stated that the responsibility of implementation and incorporation of these standards is mainly concerned with the top management commitment and decision-making must be made on important documentation and communication and proper training must be given to their employees. So, they can incorporate all the standards into their daily work to meet project objectives and goals.

The implementation of the ISO 21502:2020 project management standard and improvement of the ISO 9001:2015 is a big decision by top organizational management to change certain processes,

incorporate new working styles, and/or change the entire organization structure. The adoption of ISO is more symbolic than substantial. Top management and employees must be aware that the implementation of ISO standards is completely focused on the internal management environment, procedures, and processes of the organization and is not designed to deal with the external environment of the organization (Din, Abd-Hamid, & Bryde, 2011). (Moller, 2014; Cabarkapa, 2019) the ability to make and implement change in an organization is a key factor for success. The implementation success is in the hands of the top management since it will only be successful if all the employees agree to the changes and become active participants in the process. Top management would provide guidance and training to their employees in regards to the significance of ISO and reasons for the successful implementation, and use the processes in their daily work.

2.7 International Standards for Project Management Practices

Many organizations are working to show the importance of Project management and are involved in competition to make one universal effective standard in project management. There are several organizations such as the International Organization for Standardization (ISO), the Project Management Institute (PMI), the Projects in Controlled Environment (PRINCE2), the International Project Management Association (IPMA), the Global Project Management Forum (GPMF), the Global Working Groups (GWG) and the Operational Level Coordination Initiative (OLCI)

(Cabarkapa, 2019) stated that project management is a very important tool in many business organizations, and together with the development of project management, many standards, guides, and different methodologies are also developed. (Moller, 2014) people working with complex processes and with concepts that are often hard to understand are involved in the projects. With the increased demand and pressure, a few of the international standards decided to publish project management standards like ISO 21500, PMBoK, and PRINCE2, to make the processes and concepts more comprehensively and more widely available for organizations to cooperate more

efficiently. The reason for developing international standards of project management is that organizations are constantly seeking answers to why some projects are successful while others are not.

2.7.1 Project Management Body of Knowledge (PMBoK)

The PMI was founded in 1969 by the American National Standards Institute (ANSI) using a process-based approach and PMBoK was first published in 1987 as a whitepaper. The first edition was a book released in 1996, and 4th edition in 2008 by Project Management Institute (PMI), USA. PMBoK is a set of standards and solutions concerning project management, collected, and published by members of PMI. PMBoK standard is a set of well-known and accepted procedures applied in project management. PMBoK Guide is essentially a collection of good Project Management principles, tools, techniques, and guidelines for best practices that help you manage projects. The Project Management Professional (PMP) is based on PMBoK, a collection of best practices and it is not a project methodology by itself. It also helps project managers work with a standardized system across the organization. A Project Management Office (PMO) of PMI (2017) is the organizational body or entity that is assigned responsibilities related to the coordinated and centralized management of projects under its control. PMBoK has been approved by the American National Standards Institute (ANSI) as a national standard of project management. The PMI issued the first certification for Project Management Professionals in 1984 (Macek, 2010) & (CADENAS, 2020). (Cabarkapa, 2019), through a project, many processes overlap and interact, and every process is defined as Inputs (plans, documentation, designs, etc.), Tools and Techniques, and Outputs (products, documents, etc.)

12 principles of project management (PMBoK 7th edition)

1. Be a diligent, respectful, and caring steward
2. Create a collaborative project team environment

3. Effective engagement with stakeholders

4. Focus on value

5. Recognize, evaluate, and respond to system interactions

6. Demonstrate leadership behaviors

7. Tailor based on context

8. Build quality into processes and deliverables

9. Navigate complexity

10. Optimize risk responses

11. Embrace, adaptability and resilience

12. Enable changes to achieve the envisioned future state

2.7.2 Projects in a Controlled Environment (PRINCE2)

In 1996, PRINCE2 was published by the Central Computer and Telecommunication Agency (CCTA) now it is the Office of Government Commerce (OGC) as a generic product management methodology for all UK government projects. The 6th edition is the latest version released in 2017 by AXELOS Manage of Portfolios (MoP), UK. PRINCE2 includes a method of project management based on the experience of project managers from Anglo-Saxon countries. PRINCE2 can be applied to manage and control any kind of project. PRINCE2 is defined as a methodology with roles responsibilities and deliverables. PRINCE2 is a methodology framework that can be applied in several contexts and environments (Macek, 2010), (CADENAS, 2020).

PRINCE2 is based on seven principles continued business justification, learning from experience, defined roles and responsibilities, managed by stages, managed by exception, focus on products, and tailored to suit the project environment. Seven themes are the business case, organization, quality, plans, risks, change, and progress. The principles and themes come into play in the seven processes: directing a project (DP), starting up a project (SU), initiating a project (IP), controlling a

stage (CS), managing product delivery (MP), managing stage boundaries (SB) and closing a project (CP).

2.7.3 International Organization for Standardization (ISO)

The ISO was established in London in 1946 and is a non-governmental, independent organization made up of members from the national standards bodies of 164 countries. According to (Harjung, Lukorito, & and Seitz, 2012), currently, the ISO has over 19,500 international standards covering almost all aspects of technology and business. International Standards for QMS are ISO 9001:2015, and other related project management standards are ISO 21500:2012, ISO 10006:2017, and ISO 21502:2020 will be discussed in this chapter further.

2.7.3.1 ISO 21500:2012 – Guidance on project management

ISO 21500:2012, states the overall context in which governance and management of projects, programs, and portfolios operate. The organizational strategy and objectives identify opportunities and threats. The opportunities and threats are evaluated and further developed into requirements and business cases and should be documented. Based on those business cases and using portfolio management or another management structure, the organization selects and authorizes projects and programs that provide deliverables, outputs, and outcomes to operations. Those deliverables, outputs, and outcomes can be used to realize benefits for internal and external stakeholders. The benefits can be an input to realizing and further developing the organizational strategies and objectives based on their mission, vision, principles, policies, framework, and factors outside. (A. Zandhuis and R. Stellingwerf, 2013) stated that this standard was created to help organizations achieve professional excellence. According to (Mihail Sadeanu, and Silvia Candea, 2017), as project management deliverables resulting from the ISO 21500:2012 project management processes appliance, the specific list of the output main documents should include as a minimum, among others:

1. Project charter, Requirements

2. Role descriptions, Project organization chart, Work Breakdown Structure

3. Project Plan, Project management plan, resource plan, Schedule (plan), Quality Plan, Procurement plan, and Communication plan.

4. Issues log, Change register, Stakeholder register, Risk register

5. Change requests, Progress reports, and Project completion reports

6. Project or phase closure report, Lesson learned (document)

An organization might provide support for adopting the ISO 21500 standard and internally implementing:

1. Project-related governance processes,

2. Specific QMS system and operational, procedures dedicated to project management processes,

3. Internally standardized templates and forms as project management deliverables,

4. Specifically defined tools and techniques for managing projects,

According to (Moller, 2014), the ISO 21500 standard aims to develop a best practice for organizations to handle their projects so they can establish a better structure around their projects, and to make organizations more in control of their processes.

2.7.3.2 ISO 10006:2017 Quality management – Guidelines for quality management in projects

This ISO standard gives guidelines for the application of quality management in projects. It applies to all organizations working on projects of varying complexity, small or large, of short or long duration, being an individual project to being part of a program or portfolio of projects, in different environments, and irrespective of the kind of product/service or process involved, with the intention of satisfying project interested parties by introducing quality management in projects. This standard

is not a guide to project management. It is meant for guidance on quality in project management processes.

(REHACEK, 2014), mentioned that ISO 10006 was originally published in 1997 and after that has been updated in 2003. Recently in 2017 this standard again. But it has not gained popularity equal to ISO's norm of quality of the series 9000 nor as the World leading project management standards like PMBoK guide or PRINCE2.

This ISO standard addresses the concepts of both "quality management in projects" and "quality management systems in projects." Quality management in projects includes quality management systems in projects; management responsibility in projects; resources management in projects' products/service realization in projects; and measurement, analysis, and improvement in projects. Quality management systems in projects include project characteristics; quality management principles in projects; project quality management processes and a quality plan for the project.

Project initiation and development of project management plan

The project management plan should:

- Refer to the customer's and other interested parties' documented requirements and the project objectives; the input source for each requirement should also be documented to allow traceability;

- Identify and document the project processes and their purposes;

- Identify organizational interfaces, giving particular attention to:

   o The project organization's connection and reporting lines with the various functions of the originating organizations;

   o Interfaces between functions within the project organizations;

- Integrate plans resulting from the planning carried out in other project processes, review these plans for consistency, and resolve any discrepancies, these plans include:

  o Quality plan;

  o Work breakdown structure;

  o Project schedule;

  o Project budget;

  o Communication plan;

  o Risk management plan;

  o Procurement plan.

- Identify, include, or reference the product/service characteristics and how they should be measured and assessed;

- Provide a baseline for progress measurement and control, to provide for planning the remaining work; plans for reviews and progress evaluations should be prepared and scheduled;

- Define performance indicators and how to measure them, and make provision for regular assessment to monitor progress; these assessments should:

  o Facilitate preventive and corrective actions;

  o Confirm that the project objectives remain valid in the changing project environment;

- Provide for reviews of the project required by the contract to ensure the fulfillment of the requirements of the contract;

- Be reviewed regularly and when significant changes occur.

2.7.3.3 ISO 21502:2020 – Guidance on project management

ISO 21502 is a new standard for project management methodology revised in 2020, another standard by the ISO quality management, the less popular ISO 10006:2017 QMS-guidelines for

quality management in projects, which provides a mapping between its contents and the original ISO 21500:2012. According to ISO 21502:2020 stated that "Project objectives can be fulfilled by a combination of deliverables, outputs, outcomes, and benefits, depending on the project's context and direction provided through governance."

According to ISO 21502:2020, the definition of project management integrates the practices, of directing, initiating, planning, implementing, monitoring, controlling, and closing the project, managing the resources assigned to the project, and motivating those individuals involved in the project to achieve the project's objectives. Project management should be performed through a set of processes and methods that should be designed as a system and should include practices necessary for a specific project. (Cabarkapa, 2019) stated that the PMBoK guide and ISO 21500 standards are very close.

(ISO 21502:2020), The projects are temporary and focus on retaining or adding value or capability, for a sponsoring organization, stakeholder, or customer; the operations are performed through ongoing activities and can be focused on sustaining the organization, such as through the delivery of repeatable products and services. Organizations undertake project work to achieve specific objectives.

A project's objective can be fulfilled by a combination of deliverables, outputs, outcomes, and benefits, depending on the project's context and direction provided through governance. A project's objective should contribute to outcomes and realization of benefits for stakeholders, including the sponsoring organization, other internal and external organization stakeholders, customers, and their stakeholders. Although many projects have similar features, each project is unique. Differences among projects can occur in factors such as, but not limited to objectives, context, outcomes

desired, outputs provided, stakeholder impacted, resources used, complexity, constraints, processes, or methods used.

(Monassi, 2021), stated that "Project management integrates the *practices*, included in this document, to direct, initiate, plan, monitor, control, and close the project, manage the resources assigned to the project and motivate those individuals involved in the project to achieve the project's objectives. Project management should be performed through a set of *processes* and methods that should be designed as a system and should include *practices* necessary for a specific project." ISO 21502:2020, the new standard addressing the four main clauses, those are: Project management concepts; Requirements for formalizing project management; Integrated project management practices; and Practices for managing a project.

2.7.4 Cross-reference matrix between ISO 9001:2015, ISO 10006:2017, ISO 21500:2012 and ISO 21502:2020 International Standards

ISO 9001:2015 Quality management systems - Requirements	ISO 10006:2017 [E] Quality management – Guidelines for quality management in projects)	ISO 21500:2012 Guidance on Project Management	ISO 21502:2020 Project, program, and portfolio management – Guidance on project management)
1 Scope	1 Scope	1 Scope	1 Scope
2 Normative references	2 Normative references	-	2 Normative references
3 Terms and definitions	3 Terms and definitions	2 Terms and definitions	3 Terms and definitions
4 Context of the organization	4 Quality Management Systems in Projects	3 Project management concepts	4 Project management concepts
4.1 Understanding the organization and its context	4.1 Context and characteristics of the project	3.1 General 3.2 Project	
4.2 Understanding the needs and expectations of interested parties	4.1.1 General 4.1.2 Organizations	3.4 Organizational strategy and projects 3.4.1 Organization strategy	
4.3 Determining the scope of the quality management systems	4.1.3 Phases and processes in projects 4.1.4 Project Management Processes	3.4.2 Opportunity evaluation and project initiation	
		3.4.3 Benefits realization	7.3 Benefit management 7.3.2 Identifying and Analyzing Benefits 7.3.3 Monitoring benefits 7.3.4 Maintaining benefits
		3.5 Project environment 3.5.1 General 3.5.2 Factors outside the organizational boundary	

		3.5.3 Factors inside the Organizational Boundary	
		3.5.3.1 General	6.2 Pre-project activities 6.9 Post-project activities
		3.5.3.2 Project portfolio management 3.5.3.3 Programme management 3.11 Project constraints 3.12 Relationship between project management concepts and processes 4. Project management processes 4.1 Project management Processes application 4.2 Process groups and subject groups 4.2.1 General 4.2.2 Processes groups 4.2.2.1 General 4.2.2.2 Initiating process group 4.2.2.3 Planning Process Group 4.2.2.4 Implementing Process Group 4.2.2.5 Controlling process group 4.2.2.6 Closing Process Group 4.2.2.7 Project management process group interrelationships and interactions	

		4.2.3 Subject groups 4.2.3.1 General 4.2.3.2 to 4.2.3.11 – subject groups list (10) 4.3 processes	
		4.3.2 Develop project charter	6.5.3 Project governance and management approach 6.5.4 Initial Project Justification 6.5.5 Initial Project Planning
		4.3.4 Direct Project Work 4.3.5 Controlling Project Work	6.7 Managing delivery 6.6.2 Progressive justification 6.6.3 Managing Project Performance 6.6.4 Managing the start and Close of each project phase 6.6.5 Managing the start, progress, and close of each work package
		4.3.3 Develop project plans 4.3.5 Controlling Project Work	7.2 Planning 7.2.2 Developing the plan 7.2.3 Monitoring the Plan
		4.3.6 Control changes	7.10 Change control 7.10.2 Establishing a Change Control Framework 7.10.3 Identifying and Assessing Change Requests 7.10.4 Planning the implementation of change requests 7.10.5 Implementing and closing change requests
		4.3.7 Close project phase or project	6.8 Closing or terminating a project
-	4.2 Quality Management Principles	-	

4.4 Quality management system and its processes	4.3 Project Quality Management Processes	-	
-	4.4 Quality plan for the project	QUALITY 4.3.32 Plan Quality 4.3.33 Perform quality assurance 4.3.34 Perform quality control	7.11 Quality management 7.11.2 Planning quality 7.11.3 Assuring quality 7.11.14 Controlling quality
5 Leadership	5 Management responsibility in projects	3.3 Project management 3.6 Project governance	
		3.8 Stakeholders and Project Organization	6.3 Overseeing a project 6.4 Directing a project
5.1 Leadership and Commitment 5.1.1 General 5.1.2 Customer focus 5.2 Policy 5.2.1 Establishing the Quality Policy 5.2.2 Communicating the Quality Policy	5.1 Top management commitment		
-	5.2 Strategic process 5.2.1 Application of quality management principles through the strategic process 5.2.2 Customer focus 5.2.3 Leadership 5.2.4 Engagement of people		

	5.2.5 Process approach		
	5.2.6 Improvement		
	5.2.7 Evidence-based Decision-making		
	5.2.8 Relationship management		
5.3 Organizational roles, responsibilities, and authorities	5.3 Management reviews and progress evaluations		
9 Performance evaluation	5.3.1 Management reviews		
9.2 Internal audit	5.3.2 Progress evaluations		
9.3 Management review 9.3.1 General 9.3.2 Management review inputs 9.3.3 Management Review Outputs			
6. Planning 6.3 Planning of changes	7.4 Time-related processes 7.4.1 General 7.4.2 Planning of Activity Dependencies 7.4.3 Estimation of duration	TIME 4.3.21 Sequence activities 4.3.22 Estimate activity duration 4.3.23 Develop Schedule 4.3.24 Control Schedule	7.6 Schedule management - 7.6.2 Estimating Activity Duration 7.6.3 Developing the schedule 7.6.4 Controlling the schedule
6.2 Quality objectives and planning to achieve them	7.4.4 Schedule development 7.4.5 Schedule control	4.3.9 Identify stakeholders	7.12.2 Identifying stakeholders
-	-	4.3.10 Manage stakeholders	7.12.3 Engaging stakeholders
6.1 Actions to address risks and opportunities	7.7 Risk-related processes 7.7.1 General 7.7.2 Risk identification	RISK - 4.3.28 Identify risks	7.8 Risk management - 7.8.2 Identifying risk

	7.7.3 Risk assessment	4.3.29 Assess risks	7.8.3 Assessing risk
	7.7.4 Risk treatment	4.3.30 Treat risks	7.8.4 Treating risk
	7.7.5 Risk Control	4.3.31 Control risks	7.8.5 Controlling risk
7. Support 7.2 Compliance 7.3 Awareness 7.4 Communication 7.5 Documented information 7.5.1 General 7.5.2 Creating and updating 7.5.3 Control of Documented Information	6 Resource management in projects	RESOURCES 4.3.17 Define project organization - 4.3.15 Establishing project team 4.3.18 Develop project team 4.3.20 Manage project team	7.5 Resource management 7.5.2 Planning the project organization 6.5.2 Project team mobilization 7.5.3 Establishing the Team 7.5.4 Developing the team 7.5.5 Managing the team
		4.3.16 Estimate resources 4.3.19 Control resources	7.5.6 Planning, managing, and controlling physical and material resources
7.1 Resources 7.1.1 General 7.1.2 People 7.1.3 Infrastructure 7.1.4 Environment for the operation of processes 7.1.5 Monitoring and Measuring Resources 7.1.6 Organizational knowledge	6.1 Resource-related processes 6.1.1 General 6.1.2 Resource planning 6.1.3 Resource control	4.3.6 to 4.3.31	
	6.2 Personnel-related processes 6.2.1 General 6.2.2 Establishment of the project	3.9 Competencies of project personnel	

	organizational structure		
	6.2.3 Allocation of Personnel		
	6.2.4 Team development		
8 Operation	7 Product/service realization in projects	3.7 Projects and Operations	
8.1 Operational planning and control			
8.2 Requirements for products and services 8.2.1 Customer communication 8.2.2 Determining the requirements for products and services 8.2.3 Review of the requirements for products and services 8.2.4 Changes to requirements for products and services			
8.3 Design and development of products and services 8.3.1 General 8.3.2 Design and development planning 8.3.3 Design and Development Inputs 8.3.4 Design and development controls 8.3.5 Design and Development Outputs 8.3.6 Design and development changes			
8.4 Control of externally provided processes, products and services			

8.4.1 General			
8.4.2 Type and extent of control			
8.4.3 Information for external providers			
8.5 Production and service provision 8.5.1 Control of production and service provision 8.5.2 Identification and traceability 8.5.3 Property belonging to customers or external providers 8.5.4 Preservation 8.5.5 Post-delivery activities 8.5.6 Control of changes			
8.6 Release of products and services			
8.7 Control of Nonconforming Outputs			
	7.1 General		
	7.2 Interdependent processes 7.2.1 General 7.2.2 Project initiation and project management plan development 7.2.3 Interaction management 7.2.4 Change management 7.2.5 Process and Project Closure		
	7.3 Scope-related processes	SCOPE	7.4 Scope management

	7.3.1 General	4.3.11 Define scope	7.4.2 Defining scope	
	7.3.2 Concept development	4.3.13 Define activities	-	
	7.3.3 Scope development and control	4.3.12 Create a work breakdown structure	-	
	7.3.4 Definition of activities	4.3.14 Control scope	7.4.3 Controlling scope	
	7.3.5 Control of Activities	-	7.4.4 Confirming the scope delivery	
	7.5 Cost-related processes	COST	7.7 Cost management	
	7.5.1 General	4.3.25 Estimate costs	7.7.2 Estimating cost	
	7.5.2 Cost estimation	4.3.26 Develop budget	7.7.3 Developing the budget	
	7.5.3 budgeting	4.3.27 Control costs	7.7.4 Controlling costs	
	7.5.4 cost control			
	7.6 Communication-related processes	COMMUNICATION	7.13 Communication management	7.15 Reporting
	7.6.1 General	-		
	7.6.2 Communication planning	4.3.38 Plan communication		7.15.2 Plng. reporting
	7.6.3 Information management	4.3.39 Distribute information	7.13.2 Planning communication	7.15.4 Delivering reports
	7.6.4 Communication control	4.3.40 Manage communication	7.13.3 Distributing information	7.15.3 Managing reporting
			7.13.3 Monitoring the impact of comm.	
	7.8 Procurement processes	PROCUREMENT	7.17 Procurement	
	7.8.1 General	4.3.35 Plan procurement	7.17.2 Planning procurement	
	7.8.2 Procurement planning and control	4.3.36 Select suppliers	7.17.3 Evaluating and Selecting Suppliers	
	7.8.3 Documentation of Procurement Requirements	4.3.37 Administer procurements	7.17.4 Administering contracts	
	7.8.4 External provider management		7.17.5 Closing contracts	

	and development		
	7.8.5 Contracting		
	7.8.6 Contract control		
9.1 Monitoring, Measurement, analysis, and evaluation	8.2 Measurement and Analysis		
10. Improvement	8 Measurement, analysis, and improvement in projects		
10.1 General	8.1 General		
10.2 Nonconformity and corrective action	8.3 Improvement 8.3.1 Improvement by the originating organization	4.3.8 Collect lessons learned	7.18 Lessons learned 7.18.2 Identifying lessons 7.18.3 Disseminating lessons
10.3 Continual Improvement	8.3.2 Improvement by the Project Organizations		
			7.9 Issues management 7.9.2 Identifying issues 7.9.3 Resolving issues
			7.16 Information and Documentation Management 7.16.2 Identifying which information should be managed 7.16.3 Storing and retrieving information and documentation
			7.14 Managing organizational and societal change 7.14.2 Identifying the need for change 7.14.3 Implementing the organizational and societal change

2.7.5 Analysis and comparison of PMBoK, PRINCE2, and ISO 21500 – PM Standards

Author(s)	PMBoK Guide (USA)	PRINCE2 (UK)	ISO 21500:2012 (Switzerland)
(REHACEK, 2014; Cabarkapa, 2019);	**Published year and history of standards'**		
	PMI came first and was originally published in 1987.	AXELOS was in second place and published in 1990 with a focus on IT projects.	ISO 21500 is an International Standard and was released in 2012
(Cabarkapa, 2019);	**Project definition**		
	"The project is a temporary endeavor undertaken to create a unique product, service, or result."	A temporary Organization that is created to deliver one or more business products according to an agreed business case	"A project is a unique set of processes consisting of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective."
	The definition of PMBoK does not mention the resources required for project implementation.		The definition of ISO 21500 does not have the word "product" in the definition, so that can be may be unclear.
(Cabarkapa, 2019);	**Project Management (PM) definition**		
	"Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.		"Project management is the application of methods, tools, techniques, and competencies to a project.
(REHACEK, 2014; Cabarkapa, 2019; (Monassi, 2021))	**Approach**		
	Agile approach. These processes are like an iterative approach.		Cascade approach. From a process-based approach to a practice-based approach.
(Mihail Sadeanu, Silvia Candea, 2017)	**Project management deliverables**		
	The project manager is free to select the appropriate project management deliverable, however, the content chapters and specific paragraphs of information to be filled up are clearly defined	The following templates are defined: • Baseline management products (12 templates) • Records (6 templates) Reports (8 templates)	the project manager should define and manage the list of the specific project management deliverables, from the primary output documents of the 39 project management processes.
(Monassi, 2021)	**Benefits**		
	Project management enables organizations to execute projects effectively and efficiently.		The result was a general satisfaction with the deliverables.

Basic Process Groups (5)		
Project management is accomplished through the appropriate application and integration of the project management processes identified for the project: Initiation (I), Planning (P), Execution (E), Monitoring and controlling (M), Closing (C)	7 principles; 7 Themes; 7 Processes; Tailoring PRINCE2 to the project environment	Project management is accomplished through processes: Initiating (IN), Planning (PL), Implementing (IM), Controlling (CO), Closing (CL)
Knowledge areas (10)		**Subject groups (10)**
Integration X Scope Human Resources Time Cost Risk Quality Procurement Communication		Integration Stakeholder Scope Resource Time Cost Risk Quality Procurement Communication
Set of PM processes		
49 processes		39 processes
Tools and Techniques		
Provided. It presents in an extensive, detailed way different sets of specified tools and techniques for each of the 47 project management processes.	It provides to the project manager the 7 principles as guiding obligations and good practices, the 7 themes defined as tools applied within the 7 processes and supporting the 7 principles, as well as the 2 characteristics detailed techniques: • Product-based planning technique • Quality review technique	Not provided. The tools and techniques to be applied are not explained for the 39 project management processes appliance. The project manager should select the most appropriate tools and techniques when a project management process should be applied, as it is recommended by example in the case of the "Plan quality" process, which includes among others: "establishing the tools, procedures, techniques, and resources necessary to achieve the relevant standards, determining

			methodologies, techniques, and resources to implement the planned systematic quality activities".
	Develop plans		
	Only one plan i.e., the Project management plan (11 subsidiary plans and 3 baselines)	Project plan, Stage plans Exception plans	Three types of plans: (1) The "project plan" describes project 'baselines' (2) The "Project management plan" describes project management processes. (3) "Subsidiary plans"
	The project manager is free to select the appropriate project management deliverable, however, the content chapters and specific paragraphs of information to be filled up are clearly defined	The following templates are defined: • Baseline management products (12 templates) • Records (6 templates) • Reports (8 templates)	the project manager should define and manage the list of the specific project management deliverables, from the primary output documents of the 39 project management processes.
(Cabarkapa, 2019);	**New change**		
	-		Stakeholder management is introduced
	-		It eliminates the process tools and techniques b/c it leaves space for experts to choose and combine them to get the best combination for the project.

2.7.6 Comparison of Sub-processes among PMBoK, PRINCE2, and ISO 21502

Knowledge Area or Subject group	PMBoK Guide (USA)	PRINCE2 (UK)	ISO 21500:2012 (SWITZERLAND)
Integration	4.1 Develop Project Charter	**Principles:**	4.3.2 Develop Project Charter
	4.2 Develop Project Management Plan	1. Continued business justification	4.3.3 Develop Project Plans
	4.3 Direct and Manage Project Execution	2. Learn from experience	4.3.2 Direct Project Work
	4.4 Monitor and Control Project Work	3. Defined roles and responsibilities	4.3.5 Control Project Work
	4.5 Perform Integrated Change Control	4. Manage by stages 5. Manage by exception	4.3.6 Control Changes
	4.6 Close Project or Phase	6. Focus on products	4.3.7 Close Project Phase or project
	-	7. Tailor to suit the project environment	4.3.8 Collect Lessons Learned
Stakeholder	10.1 Identify Stakeholder (taken from Communication Knowledge Area)		4.3.9 Identify Stakeholders
	10.4 Manage Stakeholder Expectations (taken from Communication Knowledge Area)		4.3.10 Manage Stakeholders
Scope	5.1 Collect Requirements		4.3.11 Define Scope
	5.2 Define Scope		
	5.3 Create WBS		4.3.12 Create WBS
	6.1 Define Activities (taken from the Time management knowledge area)		4.3.13 Define Activities
	5.4 Verify Scope		-
	5.5 Control Scope		4.3.14 Control Scope
Resource	9.1 Develop a Human Resource Plan		-
	9.2 Acquire Project Team		4.3.15 Establish Project Team
	6.3 Estimate Activity Resources (taken from the Time management knowledge area)		4.3.16 Estimate Resources
	-		4.3.17 Define Project Organization
	9.3 Develop Project Team		4.3.18 Develop Project Team
	-		4.3.19 Control Resources
	9.4 Manage Project Team		4.3.20 Manage Project Team
Time	6.1 Define Activities		Moved to Scope subject
	6.2 Sequence Activities		4.3.21 Sequence Activities
	6.3 Estimate Activity		Moved to Scope subject

	Resources		
	6.4 Estimate Activity Durations		4.3.22 Estimate Activity Durations
	6.5 Develop Schedule		4.3.23 Develop Schedule
	6.6 Control Schedule		4.3.24 Control Schedule
Cost	7.1 Estimate Costs		4.3.25 Estimate Costs
	7.2 Determine Budget		4.3.26 Develop Budget
	7.3 Control Costs		1.3.27 Control Costs
Risk	11.1 Plan Risk Management		-
	11.2 Identify Risks		4.3.28 Identify Risks
	11.3 Perform Qualitative Risk Analysis		4.3.29 Assess Risks
	11.4 Perform Quantitative Risk Analysis		
	11.5 Plan Risk Responses		4.3.30 Treat Risks
	11.6 Monitor and Control Risks		4.3.31 Control Risks
Quality	8.1 Plan Quality		4.3.32 Plan Quality
	8.2 Perform Quality Assurance		4.3.33 Perform Quality Assurance
	8.3 Perform Quality Control		4.3.34 Perform Quality Control
Procureme nt	12.1 Plan Procurements		4.3.35 Plan Procurement
	12.2 Conduct Procurements		4.3.36 Select Suppliers
	12.3 Administer Procurements		4.3.37 Administer Contracts
	12.4 Close Procurements		
Communic ation	10.1 Identify Stakeholders		Moved to stakeholder subject
	10.2 Plan Communications		4.3.38 Plan Communication
	4.3.39 Distribute Information		10.3 Distribute Information
			10.5 Report Performance
	Moved to Stakeholder subject		10.4 Manage Stakeholder Expectations
	4.3.40 Manage Communication (external and project team)		-

2.8 Implementation of ISO Standards in Indian Manufacturing PSUs

2.8.1 The reasons for seeking implementation of ISO Standards in Indian Manufacturing PSUs

According to (Moller, 2014) there are several reasons why organizations seek out ISO implementation, depending on the sector as well as the motivations and expectations of the organization. In 2008, over a million companies implemented ISO 9001:2008 and subsequently ISO 14001. Between 2000 and 2012, a greater number of ISO certificates were issued drastically increasing the demand for high-quality systems. There are three types of motives such as ethical (connected to feelings related to environmental responsibility), competitive (search for an advantage in the market), and relational (to become legitimized and improve relationships) that lead companies to implement ISO (Bansal & Roth, 2000). Various authors (Corbett & Kirsch, 2001; Schylander & Martinuzzi, 2007) explained that motives are either external (customer demands, pressure from interest groups, or governmental restrictions) or internal (concerns of top management, improvement of performance and minimization of risk) leads concerning the external image of the organization. (Zaramdini, 2007), researched implementation of the ISO standards in organizations and the results showed a positive impact.

There are four motivating factors: operational improvement, following competitors, human resources improvement, and supplier relationship. It is suggested from previous literature that the right organizations should adopt the right approaches when seeking ISO certification and seek it for internal rather than external reasons. (Heras-Saizarbitoria, Landin, & Molina-Azorin, 2011a) suggested that the organization pursue ISO 9001 for internal reasons to obtain greater benefits than those who pursue it only for external reasons. The organization should maintain all necessary project documentation that is related to project goals and objectives. It is part the of ISO 9001 audit.

The project management establishes project objectives relevant to organizational strategy and the quality objectives (ISO 9001:2015, page 5) shall be:

- Be consistent with the organizational quality policy

- Be measurable;

- Consider applicable requirements;

- Be relevant to the conformity of products and services and the enhancement of customer satisfaction

- Be monitored;

- Be communicated;

- Be updated as appropriate

When planning the project management how to achieve the project objectives and quality policy, the organization shall determine (ISO 9001:2015, page 5):

- What will be done;

- What resources will be required;

- Who will be responsible;

- When it will be completed; and

- How the results will be evaluated.

2.8.2 The Benefits of ISO Implementation

According to (Moller, 2014), there are various benefits to implementing ISO standards in organizations and the right motives in the right place. ISO standards give a consistent set of procedures and requirements that are universally applied. Finally, organizations decide how they are going to be executed. (Douglas, 2011) stated that the standard does not ensure high-quality goods or services, but having the quality system in place ensures that organizations can provide high-quality

goods and services. (Din et al., 2011) proved that organizations' having the ISO 9000 certification enhances project success in the areas of adherence to budget, schedule, and quality specifications; efficiency of management effort; fitness for purpose; usability; and delivering user and client benefits. Therefore, all executives and personnel in the organization feel that adopting the change, behavior, and decision-making for implementation of ISO standards are to be more effective. The success of the implementation of ISO depends greatly on commitment and support from top management and cooperation of all levels and functions within an organization. The main importance is to make changes by providing training, creating awareness, and improving communication, documentation, and control in the organization for the successful implementation of ISO. ISO implementation within organizations improves projects, processes, teamwork, quality, and communication and finally focuses on organizational strategy. This ISO 21500 standard is very useful for an organization that wants to maintain good communication throughout the project (Cabarkapa, 2019).

ISO 21500:2012 already stated that "benefits realization is generally the responsibility of organizational management, which may use the deliverable of the project to realize benefits in alignment with organizational strategy. The project manager should consider the benefits and their realization as they influence decision-making throughout the project life cycle." Top management should always ensure strategic alignments of project objectives, divisional objectives, and organizational objectives for implementing and improving agility to obtain necessary business results. It should also conduct weekly, fortnightly rigorous meetings to address the problems faced, listen to suggestions from employees, understand on-ground challenges, develop strategies, provide them with confidence, and arrange for all the appropriate resources as and when required. Top management should ensure adequate financial support for installing the latest information systems, training employees to upgrade their knowledge and skills, availing resources, etc, Employees at

every level should be encouraged by the top management to generate revenue/savings per year. Top management should motivate and involve the employees in revenue generation by using value engineering, design thinking, kaizen, brainstorming, etc., for the creation of wealth and to attain a paradigm shift.

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2.8.3 ISO 9001:2015 International Standard

In early 1987, the International Organization for Standardization (ISO) issued the ISO 9000 series of standards for quality management, the origin of the military standards, and British standards (Zeng et al., 2005). According to ISO 9001:2015, documented information needed and produced by the project organization to ensure the establishment of effective planning, implementation, and control of the project should be defined and controlled. An ISO certification helps motivate companies with both internal and external benefits. ISO 9001 offered a set of standards that provided a framework based on the "PDCA cycle" (Plan-Do-Check-Act cycle) for quality

management from design & and manufacturing to delivery of products/services to customers with a quality time plan that causes this standard improves organizations' performance. The quality management principles are customer focus, leadership, engagement of people, process approach, improvement, evidence-based decision-making, and relationship management. ISO first introduced the Quality Management standard in 1978 to improve continuous performance within organizations to satisfy customers' needs and promote competitiveness in the market (Neyestani, 2017).

Quality management principles of ISO 9001:2015

The guidelines for quality management of projects are based on the seven quality management principles (ISO 9000:2015, 2.3), those are: customer focus; leadership; engagement of people; process approach; improvement; evidence-based decision making; and relationship management. It is necessary to manage project processes within a quality management system to achieve project objectives. Documented information needed and produced by the project organization to ensure the effective planning, implementation, and control of the project should be defined and controlled (ISO 9001:2015, 7.5).

Top management commitment

The commitment and active involvement of the top management of both the originating and project organizations are essential for developing and maintaining an effective and efficient quality management system for the project. Top management should create a culture of quality, which is an important factor in ensuring the success of the project. Top management should provide input into the strategic process and ensure that continual improvement actions are implemented for current and future projects. Top management should facilitate a culture in which lessons learned lead to continuous improvement of current and future projects.

Application of quality management principle through the strategic process which covers the direction of the project. Planning for the establishment, implementation, and maintenance of a quality management system based on the application of quality management principles is a strategic process. In this planning, it is necessary to focus on the quality of both processes and products/services to meet the project objectives. This planning should be performed by the project organization.

According to (Naveh and Marcus, 2005), find that the use of ISO 9001 reduces quality costs and increases annual sales and profit margins. However, a few studies find ISO certificate has a significant negative impact on return on assets, especially in the first two years after implementation. Although acquiring ISO 9001:2015 certification is quite expensive, many organizations are implementing it worldwide. (Zaramdini, 2007), internal benefits focus on organizational improvements and external benefits focus on marketing and promotional matters. (Serpell, 1999), The role of ISO certification – a well-managed project in regards to quality, control, governance, and best audit can only be exercised by ensuring the ISO certification parameters, given the perception that things are going very well and therefore increase the project success. Project success was defined from the contractor's perspective through cost; billing, profitability, schedule, quality, safety, and environmental performance are measures of project management success (David Toluwani Akinnusi et al., 2020). (Neyestani, 2017), Several studies examined and determined the advantages and effects of ISO 9001:2015 on specific performance in organizations. The literature review of 18 research papers concerning the impact of ISO 9001:2015 on companies found that the organizations achieved few benefits from the standard implementation such as: "Exports", "Efficiency", "Improvement in a competitive position, and competitive advantage", "Improvement in systematization", "Improvement of quality in products and services", "Improvement in the brand image", "Improvements in employee results", "Improvement in

customer satisfaction", "Improvement in relationships with suppliers", "Improvement in relationships with authorities and other stakeholders", "Market share", "Profitability", and "Sales growth". In addition to these, the implementation of ISO 9001:2015 can be a "Proactive strategy" to improve performance in different organizations.

2.8.4 ISO 21500:2012 – Guidance on Project Management

ISO 21500:2012, states the overall context in which governance and management of projects, programs, and portfolios operate. The organizational strategy and objectives identify opportunities and threats. The opportunities and threats are evaluated and further developed into requirements and business cases and should be documented. Based on those business cases and using portfolio management or another management structure, the organization selects and authorizes projects and programs that provide deliverables, outputs, and outcomes to operations. Those deliverables, outputs, and outcomes can be used to realize benefits for internal and external stakeholders. The benefits can be an input to realizing and further developing the organizational strategies and objectives based on their mission, vision, principles, policies, framework, and factors outside.

Organizational Strategies and Objectives

Organizations generally establish strategies and objectives based on their mission, vision, principles, policies, framework, and factors outside the organizational boundary. Projects, programs, and portfolios are often the means to accomplish strategic objectives. Strategic objectives may guide the identification and development of opportunities and threats. Opportunities and threats include consideration of various factors, such as how benefits can be realized and risks can be managed. The project, program, or portfolio objectives are achieved when the benefits are realized through the selected opportunities and threats for the responsibility of organizational management is directed and controlled, which may use the deliverables of the project to realize

benefits in alignment with the organizational strategy. The project manager is responsible for decision-making throughout the project life cycle.

External environment

The external environment of the organization using the project, program, and portfolio management affects the organization's ability to realize benefits. Factors to be considered in the external environment include, but are not limited to Opportunities and threats arising from economic, political, social, technological, legal, and environmental constraints; Expectations and requirements from government or public authorities, clients, suppliers, contractors, other business partners, and the public; Benefits realization from deliverables, outputs, and outcomes produced by the projects and programs for external stakeholders; Project involving multiple organizations as a means to collaborate with parts of the external environment.

Organizational environment

The organizational environment is affected by both internal and external factors influencing organizational activities and decision-making. An organization should consider internal influences regarding the governance and management of projects, programs, and portfolios. The internal environment consists of internal stakeholders and is influenced by the structure, culture, and processes of the organization. Internal stakeholders include, but are not limited to Members of the governing body; Managers in their role as resource owners or other operational or functional roles; Sponsor, Project, program, and portfolio managers; and Employees of the organization impacted by the project, program, or portfolio.

The structure and culture of the organization will affect the way it makes decisions, communicates, and empowers internal stakeholders and others involved in the project, program, and portfolio management. The project, program, and portfolio governance reflects the structure and culture of

the organizational governance and should empower internal stakeholders and provide support to manage the engagement and expectations of internal stakeholders.

Project environment

The project environment may impact project performance and success. The project team should consider factors outside the organizational boundary, such as socio-economic, geographical, political, regulatory, technological, and ecological; factors inside the organizational boundary, such as strategy, technology, project management maturity, resource availability, organizational culture, and structure.

Project governance

Governance is the framework by which an organization is directed and controlled. Project governance includes, but is not limited to, those areas of organizational governance that are specifically related to project activities. Project governance includes defining the management structure; the policies, processes, and methodologies to be used; limits of authority for decision-making; stakeholder responsibilities and accountabilities; interactions such as reporting, and the escalation of issues or risks. The responsibility for maintaining the appropriate governance of a project is usually assigned either to the project sponsor or to a project steering committee.

Project Stakeholders and Project Organization

The Project stakeholders, including the project organization, the roles, and responsibilities of stakeholders should be defined and communicated based on the organization and project goals. The project organization is the temporary structure that includes project roles, responsibilities levels of authority, and boundaries that need to be defined and communicated to all stakeholders of the

project. The project organization may be dependent on legal, commercial, interdepartmental, or other arrangements that exist among project stakeholders as per Figure 5.

Project constraints

There are several types of constraints and, as constraints are often interdependent, a project manager needs to balance a particular constraint against the others. The project deliverables should fulfill the requirements for the project and relate to any given constraints such as scope, quality, schedule, resources, and cost. Constraints are generally interrelated such that a change in one may affect one or more of the other constraints. Hence, the constraints may have an impact on the decisions made within the project management processes. Some constraints are The duration or target date for the project; The availability of the project budget; and The availability of project resources, such as people, facilities, equipment, materials, infrastructure, tools, and other resources required to carry out the project activities relating to the requirements of the project; Factors related to health and safety of personnel; The level of acceptable risk exposure; The potential social or ecological impact of the project; Laws, rules, and other legislative requirements;
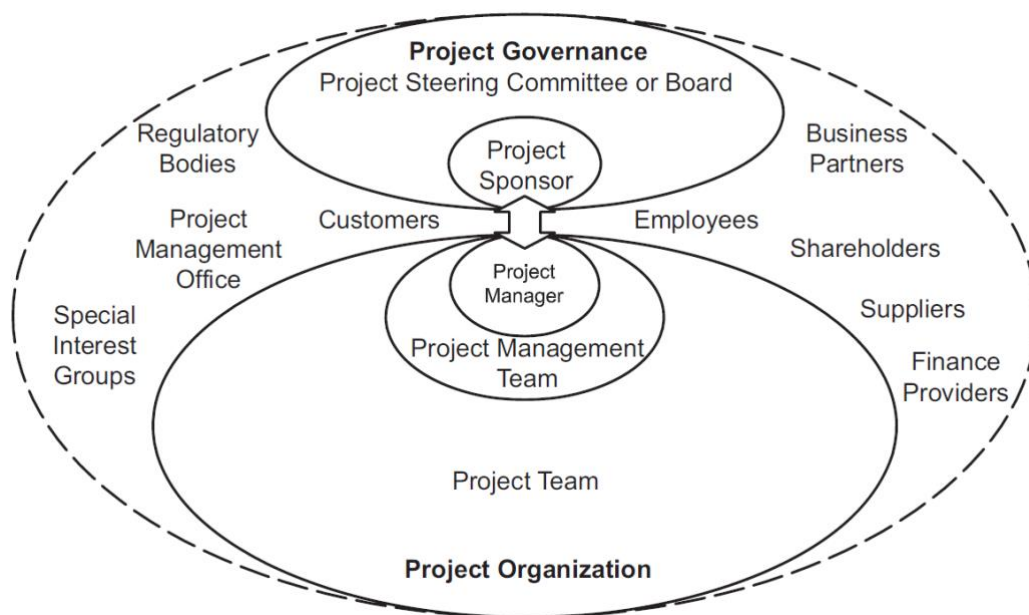
Figure 5: Project stakeholders (Source: ISO 21500)

Project Management Processes

The project management processes may be viewed from two different perspectives:

- As process groups for the management of the project

    o Initiating, Planning, Implementing, Controlling, and Closing (refer to Table 4).

- As subject groups for collecting the processes by subject

    o Integration, Stakeholder, Scope, Resource, Time, Cost, Risk, Quality, Procurement,

    and Communication (refer to Table 4).

Subject groups	Process groups				
	Initiating	**Planning**	**Implementing**	**Controlling**	**Closing**
Integration	Develop project charter	Develop project plans	Direct project work	(a)Control project work (b) Control changes	(a) Close project phase or project (b) Collect lessons learned
Stakeholder	Identify stakeholders		Manage stakeholders		
Scope		(a) Define the scope (b) Create a work breakdown structure (c) Define activities		Control scope	
Resource	Establish project team	(a) Estimate resources (b) Define project organization	Develop project team	(a) Control resources (b) Manage project team	
Time		(a) Sequence activities (b) Estimate activity durations (c) Develop a schedule		Control schedule	
Cost		(a) Estimate costs (b) Develop a budget		Control costs	
Risk		(a) Identify risks (b) Assess risks	Treat risks	Control risks	
Quality		Plan quality	Perform quality assurance	Perform quality control	
Procurement		Plan procurements	Select suppliers	Administer procurements	
Communication		Plan communications	Distribute information	Manage communications	

Table 4: **Project management processes cross-referenced to process and subject groups**

2.8.5 ISO 21502:2020 – Guidance on Project Management

This ISO standard guides project management. It applies to any type of project to initiate, plan, implement, monitor & control, and close regardless of purpose, delivery approaches, life cycle model used, complexity, size, cost, or duration of current and future projects. The delivery approach can be any method or process suited to the type of outputs, such as predictive, incremental, iterative, adaptable, or hybrid, including agile approaches.

This ISO standard provides a high-level description of practices that are considered to work well and produce good results within the context of project management. The organizational strategy should be used to identify, document, and evaluate opportunities threats, weaknesses, and strengths, which can help inform future actions. Selected opportunities and threats can be further examined and justified in a business case. A business case can result in one or more projects being initiated. The outputs from projects are expected to deliver outcomes, that should realize benefits for the sponsoring organizations, as well as for internal stakeholders.

2.8.6 The Role of Project Manager

(ISO 21502:2020) defined the role of project manager as "The project manager is accountable to the project sponsor or project board for completing the project's defined scope, and for leading and managing the project team. The project manager's other activities may include, but are not limited to:

1. Establishing the management approach in alignment with the agreed governance approach;

2. Motivating the project team;

3. Providing day-to-day supervision and leadership;

4. Defining the approach, responsibilities, scope of work, and targets for the team;

5. Monitoring, forecasting, and reporting overall progress against the project plan;

6. Managing risks and issues;

7. Controlling and managing project changes;

8. Managing supplier performance as defined in relevant contracts;

9. Ensuring stakeholder engagement and communication take place as planned;

10. Validating the deliverables and outcomes provided by the project.

2.8.7 Considerations for Implementing Project Management

(ISO 21502:2020), The implementation of formal project management in an organization should be managed as a project, program, or part of the portfolio. It depends on the scale and complexity of the organizational or societal changes being made. When considering the implementation of a formal project management approach, an organization should consider, but not be limited to, the following factors:

- Identified needs for and benefits of formal project management;

- Ability to integrate and align other related work with strategic and business objectives;

- Capacity to absorb necessary changes within the organizational governance, structure, and culture;

- Resource capacity of the organization to incorporate the change, including, but not limited to, human resources and budget;

- Potential impacts on both internal and external stakeholders;

- Ability to work across organizational boundaries;

- Availability of required competencies to implement the approach for future projects;

- Impacts on budgets identified risks, schedules, and requirements of ongoing and planned activities of the organization.

2.8.8 Integrated project management practices and Management practices for a project

(ISO 21502:2020), Integrated project management practices cover the practices of the project from pre-project activities, which are accomplished leading up to the decision to initiate the project, through the planning and controlling activities to the post-project activities. Integration and tailoring of selected project management practices, identified into a cohesive approach for managing project work can be a key to project success. The purpose of these integrated project management practices is to enable the project organization to *achieve the project's objectives*; *define and manage the scope of the project within the constraints, while considering the risks and resource needs*; *obtain support from each participating and performing organization, including commitment from resource owners, funders, suppliers, customers, users, and other stakeholders*. (Monassi, 2021) highlighted that the management practices are 17 reported instead of 10 for the project (ISO 21502:2020) and it is called a "group of practices." They are planning, benefits, scope, resources, schedule, cost, risk, issues, change control, quality, stakeholders, communication, organizational & societal change, reporting, information, procurement, and lessons learned.

2.9 Implications of ISO implementation in Indian manufacturing PSU

According to various authors (Douglas, Kirk, Brennan, & Ingram, 1999; Heras-Saizarbitoria, Molina-Azorin, et al., 2011b), one of the implications for an organization is the cost of implementing a high-quality system like ISO 9001, ISO 14001, and ISO 21500. Most organizations feel that the implementation of ISO standards gains positive benefits comparatively. Another implication of ISO is the certification audit and its significance and reliability. And one more challenge is to change the organization (Moller, 2014).

2.10 Theoretical Framework for the Research

This research study is meant for implementation and improvements in Strategic Project Management methods and practices and Servant Leadership skills through ISO 9001:2015 and ISO 21500:2020 International standards in manufacturing Indian PSUs:

- Study the existing standards and processes

- Define and understand the required processes

- Develop and implement processes in the area of work

- As a spokesperson for process implementation and improvement

- Promote the process culture across the teams and organization

- Formulating the templates for strategic project management

- Lead the programs and teams

- Ensure its objectives align with organizational strategic goals.

- Participate in the reviews and audits

- Provide data on process performance

- Barriers expected, that need to be overcome

- No resistance to change

- Continually improve

The Indian Public Sector Units:

The Indian Public Sector is essential for the country's economy, driving industrial growth and social responsibilities. It creates jobs and executes important projects. In FY 2022-23, India has 254 Central Public Sector Enterprises (CPSEs) categorized into four key sectors. They are:

- Agriculture sector

- Mining and Exploration Sector

- Manufacturing, Processing, and Generation Sector

- Service Sector

This research study focuses on the Manufacturing, Processing, and Generation sectors. There are nine cognates within this sector, which includes a total of 85 operating public sector units (PSUs). The researcher distributed a questionnaire to collect data from these PSUs by contacting project managers and executives through confidential emails and WhatsApp.

Sl. No.	Cognates	No. of PSUs
1.	Chemical & Pharmaceuticals	9
2.	Defence Production	19
3.	Fertilizers	5
4.	Heavy & Medium Engineering	16
5.	Industrial and Consumer Goods	8
6.	Petroleum (Refinery & Marketing)	6
7.	Power Generation	14
8.	Steel	3
9.	Textiles	5
	Total Operating PSUs	**85**

Table 5: List of Manufacturing, Processing, and Generation Sectors

How do avoid project failures in the Indian manufacturing PSUs?

To mitigate project failures, simply understand the right project requirements early in the process instead of directly jumping into the development of products or services. A clear understanding of the project's scope is essential to commit and execute successfully. Ensure to application and follow good project management techniques, and the project activities are to be monitored continuously. Best practice to manage a project includes identifying project requirements and collecting stakeholders' needs, a clear set of defined goals and objectives, project vision for developing the project. When all stakeholders Identify and understand project objectives and goals, it is easier to engage all team members on the right path without conflicts toward project success. The most

challenging assignment of a project manager is to balance many competing project constraints. In any project, there are several project constraints that all interlinked with each other; those are cost, scope, time, quality, risk, and resources.

Strategic project managers spend 90% of their time communicating with stakeholders. Servant leaders and strategic project managers accomplish work through the effective project team and other stakeholders. Effective servant leadership in strategic project managers acquire a balance of technical, interpersonal, and conceptual skills that help them to analyze situations and interact appropriately. To prevent project failures, integrate identified risks to scope, schedule, quality, and cost. Develop and practice the proactive risk management approach for best project efforts. Regardless of industry, the following practices help to avoid project failures:

1. Making a concrete project plan

2. Establishing clear and realistic goals using methods like SMART goals

3. Conducting smart risk management

4. Determining resources and making a budget for the project

5. Using technology for seamless project management tools like WBS, resource allocation, Gantt charts, mathematical project scheduling models, project cost estimating, cost management, and engineering economics

6. Monitoring progress and communicating effectively

7. Automating tasks to boost productivity and service quality

8. Train personnel to meet project requirements

2.10.1 Continual improvement of ISO 9001:2015 in Indian Manufacturing PSUs

Relationship between Strategic Project Management, Servant Leadership, organizational management, and commitment concerning the ISO 9001:2015 ensures conformity of processes,

products, and services to optimize time, cost, quality, and performance by establishing a set of strategic plans, processes, and procedures. Effective implementation of QMS, engaging, directing, and supporting personnel, promoting organizational change, quality policy, quality objectives, promoting improvement, use of process approach and risk-based thinking, resources availability, customer focus & and satisfaction, communication, intended results, and other relevant roles, responsibilities, and changes are to be recorded.

2.10.2 Selection of Project Management Standard

According to (Cabarkapa, 2019), selecting the appropriate project management standards is a big problem that organizations are facing now. The difference between various project management standards covered in previous chapters. Is there any guide on which is the best standard for the organization and its personnel? Choosing the right standard is purely depending on the application of the project and organizational structure. (Labriet, 2012) highlighted that the standards help organizations to manage their projects.

This structural model practices the ISO 9001:2015 and ISO 21502:2020 standards implementation in the manufacturing PSUs and improves measurement of project performance through servant leadership and strategic project management shown in Figure 6.
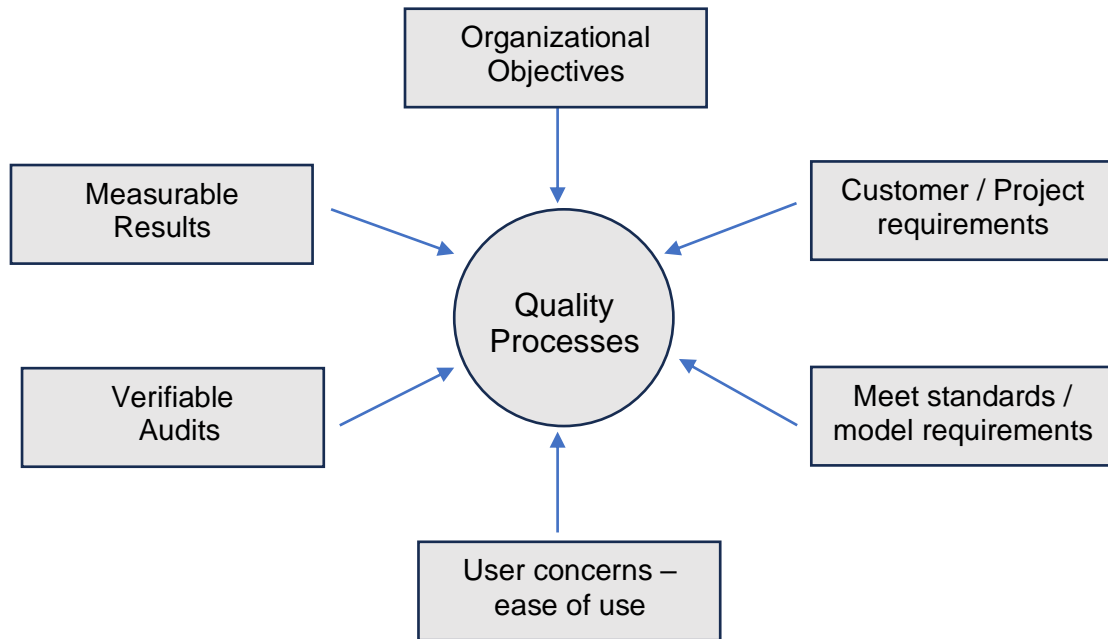
Figure 6: **Model for selecting Project Management Standards and methodology**

The project manager coordinates all activities to direct and control processes about quality as per Figure 6. The selection of project management and methodology is a key activity for a project manager and depends on the type of organization, size, customer focus, return on investment, profitability, market share, and growth to continual improvement and meet stakeholders' satisfaction.

Processes:

(ISO 21500:2012), Project management is accomplished through processes utilizing the concepts and competencies. A process is a set of interrelated activities and required resources and it has inputs, outputs, and controls shown as in Figure 7. Project processes are generally categorized into three main types: project management processes, delivery processes, and support processes. Each process can be repeated to update the output of that process.

Controls

INPUTS → Process = Activities + Resources → OUTPUTS
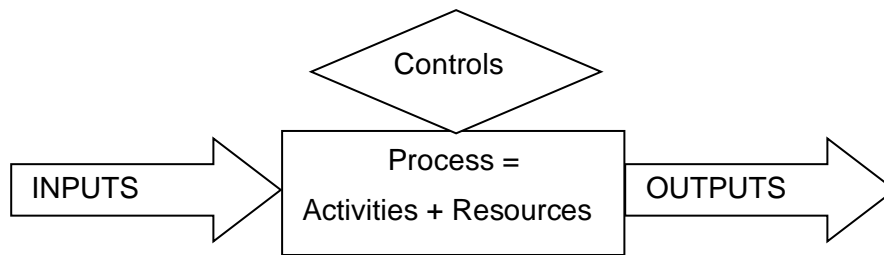
Figure 7: Process

- Project management processes, which are specific to project management and determine how the activities selected for the project, are managed.

- Delivery processes, which are not unique to the project manager, which result in the specification and provision of a particular product, service, or result, and which vary depending on the project deliverables.

- Support processes, which are not unique to project management and which provide relevant and valuable support to product and project management processes in such disciplines as logistics, finance, accounting, and safety.

2.10.3 Structural Model for Servant Leadership & Strategic Project Management impacted by ISO 9001:2015 aligns with ISO 21502:2020

Relationship between Strategic Project Management, Servant Leadership, organizational management, and commitment concerning the ISO 9001:2015 aligns with ISO 21502:2020 ensures conformity of processes, products, and services to optimize time, cost, quality, and performance by establishing a set of strategic plans, processes, and procedures. Effective implementation of QMS, engaging, directing, and supporting personnel, promoting organizational change, quality policy, quality objectives, promoting improvement, use of process approach and risk-based thinking, resources availability, customer focus & and satisfaction, communication, intended results, and other relevant roles, responsibilities, and changes are to be recorded.

ISO 9001:2015
STANDARD

ISO 21502:2020

PROJECTS   PERSONNEL   PUBLIC
                                       SECTOR
                                       MANAGE-
                                       MENT

PROJECT   SERVANT
MANAGMENT   LEADERSHIP

STRATEGIC   SERVE
PRIORITIES   PROFITS

SUCCESS

SERVANT LEADERSHIP
IN STRATEGIC
PROJECT MANAGMENT
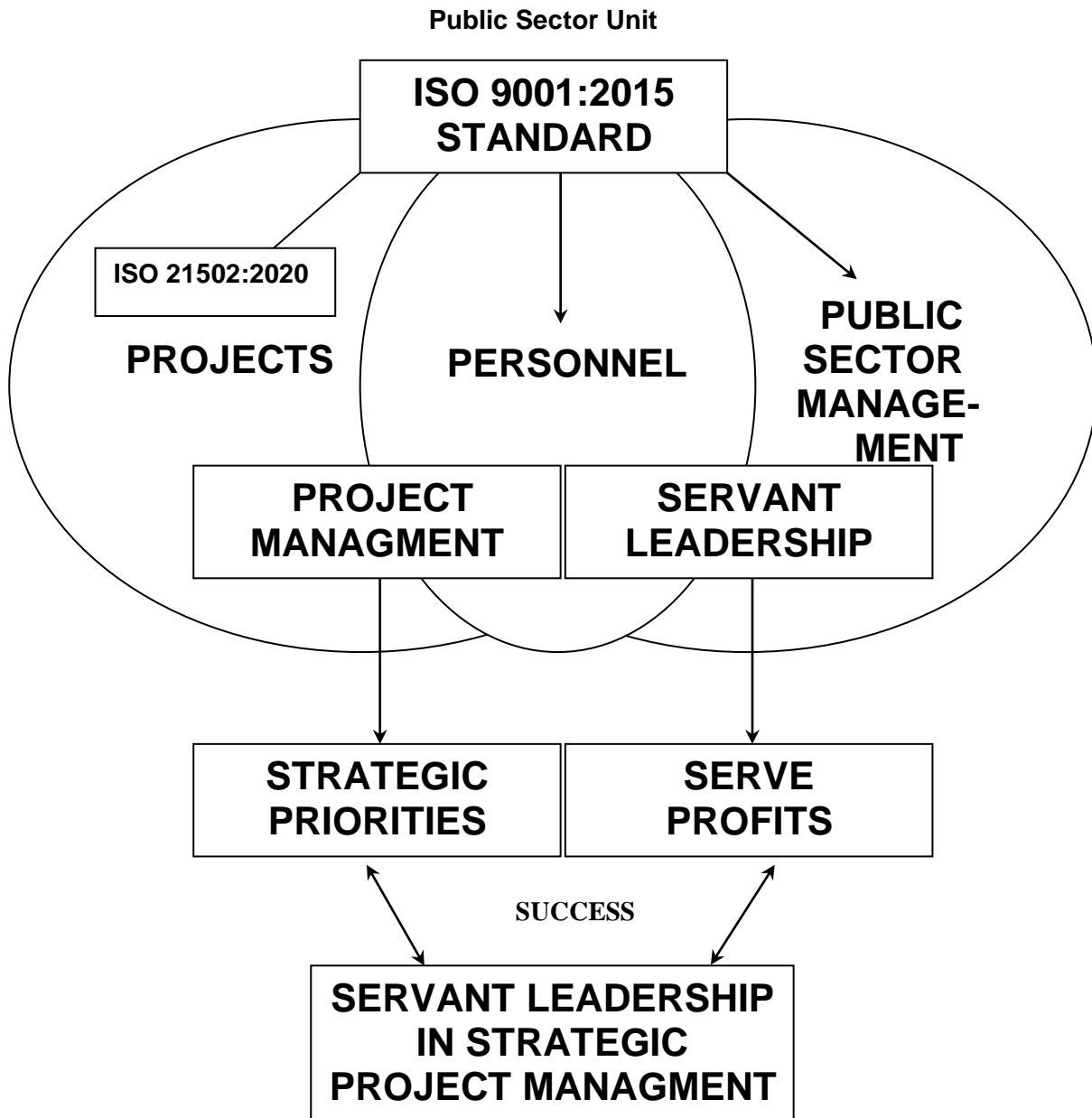
Figure 8: **Structural Model for Practicing Servant Leadership in Strategic Project Management Impacted by ISO 9001:2015 aligns with ISO 21502:2020**

It may be assumed that the concept of implementing ISO 21502:2020 in Indian manufacturing PSUs for practicing strategic project management & servant leadership is impacted by ISO 9001:2015 which is investigated in this research study. Based on the continual improvement the researcher propose the theory on Success in Strategic Project Management and Servant Leadership.
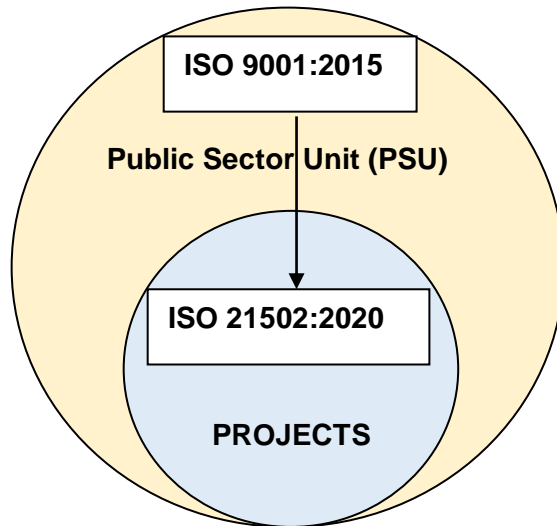
Figure 9: **Structural Model for the relation between ISO 9001: 2015 (QMS) and ISO 21502:2020**

There is a positive relationship between ISO 9001: 2015 (QMS) and ISO 21502:2020 (Guidance on project management) and influences Project Management and Leadership.
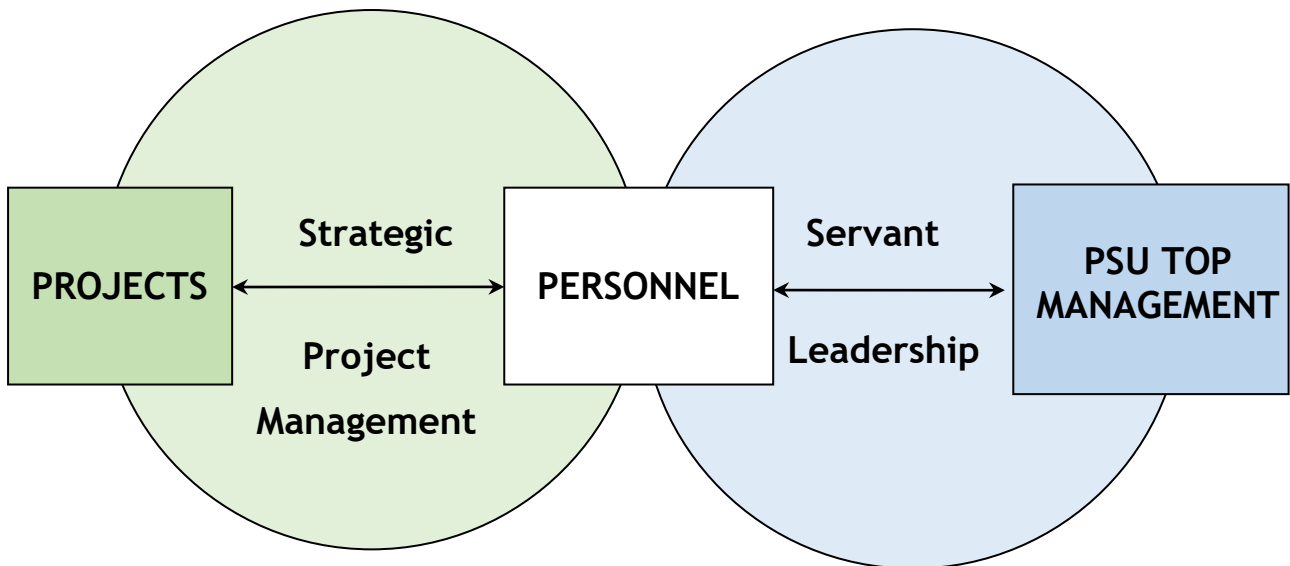
Figure 10: **Structural Model for Combination of Strategic PM and Servant Leadership**

Servant leadership in strategic project management is essential for successful projects in Indian manufacturing public sectors.

The implementation of Strategic Project Management and Servant Leadership by adopting ISO 21502:2020 influences the personnel and business growth in Indian manufacturing public sectors

Potential benefits of implementing ISO 21502:2020
1   Reduce project costs & increase revenue
2   Better planning, monitoring & controlling for project success
3   Better communication & team collaboration
4   Optimize the use of resources & maximize the value creation
5   Knowledge transfer through lessons learned framework
6   Recommend implementation iso 21502:2020 to practice in PSUs

CHAPTER III: METHODOLOGY

3.1 Introduction

As empirical research, the International Standard ISO 9001:2015 aligned with related Standards like ISO 10006:2017 (Quality management systems – Guidelines for quality management in projects); and ISO 21502:2020 (Guidance on project management) that guides the organizations to choose the project objectives and strategy to progress beyond their requirements. The proper implementation of strategic project management and servant leadership can also be expected to bring other organizational benefits, such as improved internal communication, better understanding, and control of the organization's processes, and improve the organization's overall performance and lead personnel, especially in the Indian manufacturing public sectors. The implementation of ISO 21502:2020 project management standard is a big decision by top organizational management to change certain processes, incorporate new working styles, and/or change the entire organization structure.

The conventional ISO 21502:2020 project management life cycle consists of five major phases: Initiation, Planning, Implementation, Monitoring and controlling, and closing. This research study analyzes processes and improves and implements the project management life cycle by incorporating proper strategic methodologies impacted by ISO 9001:2015 and ISO 21502:2020 to achieve high project objectives, especially in the manufacturing of Control and instrumentation (C&I) Systems successfully and consistently. Strategic Project Management methodologies deliberate strategic choices of organizational decision-making to survive in the modern global market. It can be implemented in the working environment effectively to achieve the project objective's strategy and business strategy.

This chapter explores the philosophy of servant leadership in project management; qualitative methods and procedures will be used in this study, which consists of the following sections: research approach & and strategy, study population, and sampling data collection methods and instruments, data analysis, research study period, trustworthiness and ethical considerations through questioner, feedbacks and expert suggestions, interviews shall be conducted into the skills, cultural values, and behavior of servant leaders and antecedents to servant leadership which is lacking in this field.

3.2 Overview of the Research Problem

This study explores strategic project management and servant leadership in Indian public sector manufacturing, focusing on effective process management and implementation. The research objectives are as follows: first, to understand and implement the extent the strategic project management and servant leadership processes can be characterized by the set of elements in the organization through International Standards ISO 9001:2015 and 21502:2020 which are both recognized by top management and consistent with available literature. Second, to understand and explore the relationship between ISO 9001:2015 and ISO 21502:2020 and how useful for Indian manufacturing PSUs, and continual improvement of ISO 9001:2015 by adopting ISO 21502:2020 towards achieving project management success through cost, time, scope, resources, quality, and stakeholder, procurement, communication, and ability to promote guidance, experience and synergize to lead quality projects through servant leadership. Finally, the aim is to analyze the results and implementation of combining Strategic Project Management and Servant Leadership in Indian PSUs. This aims to improve project performance activities and processes effectively. It will provide guidelines on procedures, controls, and review formats, and create strategic project management and servant leadership awareness to help organizations reduce project failures.

3.3 Research Design

This research is exploratory and uses a qualitative research design to conduct surveys and interviews. The interviews were structured and semi-structured, focusing on project management and leadership practices following ISO standards. The questionnaire survey will be sent via mail to senior project leaders and project managers working in the manufacturing sector in India.

An abductive approach will be utilized in this empirical research study to investigate project management and leadership. This research will follow qualitative research methods and the researcher will make several observations by conducting interviews and surveys. The survey and interviews will be both structured and semi-structured. The list of questions will cover project management and leadership practices through ISO standards to gather interviewees' experiences and thoughts. The questionnaire survey will be distributed via hardcopy, mail to all suitable senior project leaders and project managers working in the manufacturing sector in India. The strategy of this empirical research study is to formulate hypotheses and experiment with them to produce results and conclusions in line with the research questions and objectives. The quantitative research method (Leavy Patricia, 2022) will be used for mathematical and statistical analysis by asking "how much/many/often" with close-ended questions, while the qualitative research method (Kotari, 2004; Williams et al., 2022) will be used for manual theory and personal experiences and views of knowledge by asking "why" and "how" with open-ended questions.

The data was collected through a survey questionnaire. The data collected from the surveys will be transferred to Microsoft Excel for statistical analysis. The data collected from interview recordings and handwritten notes will be transcribed either manually or through suitable transcribing software and imputed in Microsoft Excel spreadsheets for further analysis. Then, thematic analysis using an addictive approach will be used to identify, analyze, and report themes within the data. The content

analysis will be used to examine the keyword frequencies, common phrases, and related keywords which will be used to create categories and identify recurrent themes. It will then be used to derive the conclusions and valuable insights.

3.4 Population and Sample

This research explores tools, techniques, strategies, skills, and cultural values as antecedents to endorsing servant leadership (Mittal and Dorfman, 2012), and project management (Grundy & Brown, 2002; Patel & Davidsson, 2003; Reiling, 2008; Goodwin, 2008; Frankk, 2012). According to (Mcquade et al., 2021; Fitzgerald & Apfel, 2009), highlighted within the literature review, servant leadership is lacking in qualitative research and its data collection methods. The preferred data collection method will be a literature review, survey, documentation, and in-depth interviews / unstructured interviews. These are the research instruments that will be used in this research study.

The survey method will have structured questions, open-ended, closed-ended, and Likert-type questions (1-5), and will provide objective quantifiable data including the participant's demographic data and the participant's affiliated or employer organization(s). The documentation that will be used during the research study would be, but not limited to, interview questions, survey forms, and profiles of organizations from their websites. This study's purpose, is intended to collect feedback and to conduct one-on-one personal interviews with a small set of experienced project managers, ISO auditors, team leaders, senior project management executives, and organizational leaders in various organizations.

All the interviews and surveys will be conducted in English and recorded to maintain the validity and reliability of the study. All the participants will be responded to orally over the telephone or via

video conference or written communication by sharing the questions through emails. All responses to interviews will maintain strict confidentiality.

The data was collected through a survey questionnaire. The questionnaire was distributed to 414 participants to gather their perceptions on the unique combination of Strategic Project Management and Servant Leadership implemented through ISO 9001:2015 and ISO 21502:2020 for the successful execution of projects and business performance. To ensure the relevance and effectiveness of the questionnaire to the manufacturing public sector, the questionnaire has been pre-tested on a sample of the public sector. (Gurinder Singh, 2013) The suggestions received from peers and senior executives from the public sector have been incorporated into the questionnaire to ensure its relevance to the purpose and to bring out key outcomes resulting from ISO 21502:2020 implementation.

This empirical research study adopted a non-probabilistic sampling method for the ease of access to the target participant's responses. Moreover, two different techniques shall be used to calculate the sample size. (Morgan, 1970) suggested an effective method of determining a sample size of 306 participants is sufficient to represent the population size of 1500 based on their assumptions. Whereas, the second method of determining a sample size is the G*Power tool (Faul, 2007). At a power of 95%, a statistical significance level of 5%, and an effect size of 30% the proposed sample size appeared to be 134 respondents. Hence, a sample size between these two suggested ranges is considered sufficient to represent the population.

3.5 Participant Selection

This research study preferred to collect data from lower-level, middle-level, senior-level, and top-level managers, and executive directors as participants of PSUs because they are experienced and

knowledgeable. Especially, project engineers, project managers, program managers, Heads, General managers, and executive directors are more suitable participants for this study because they have a sound understanding of project management and leadership qualities.

In this research study, a research instrument was developed consisting of four sections. In the first section, the demographics of the participants were noted such as designation, gender, age, experience, sector type, etc., and the purpose of this section is to validate the participants in the study possess adequate knowledge and experience in the relevant field.

The next section of the questionnaire intends to understand the significance of project management and leadership impacted by ISO 9001:2015 and ISO 21502:2020. The third section of the questionnaire is used to measure the art of mixing the combination of Strategic Project Manager and Servant Leadership for project success in the Indian manufacturing public sectors. A five-point "Likert scale" is used to collect the responses ranging from 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. The final section of the questionnaire is used to measure the implementation of project management best practices & servant leadership techniques through ISO 21502:2020 influence project performance in Indian Manufacturing PSUs.

3.6 Data Collection Procedures

The authors (Mittal and Dorfman, 2012), stated that the research explores societal and cultural values as antecedents to nations endorsing servant leadership. According to (Katie Elizabeth Mcquade Christian Harrison, and Heather Tarbert, 2021), highlighted within the literature review, servant leadership is lacking in qualitative research and its data collection methods.

The data collection methods for this research study will include a literature review, survey, documentation, and in-depth interviews. The survey will consist of structured, open-ended, closed-ended, and Likert-type questions (rated on a scale of 1-5) to gather objective quantifiable data, including participant demographic information and their affiliated organizations. The documentation used in the study will include interview questions, survey forms, and organization profiles obtained from their websites. The study aims to gather feedback and conduct one-on-one interviews with experienced project managers, ISO auditors, team leaders, senior project management executives, and organizational leaders from diverse organizations. The interviews will be conducted orally over the telephone or via video conference and will be recorded to ensure the validity and reliability of the study.

The data was collected through a survey questionnaire. The questionnaires were mailed to the PSUs and all participants from the database, a hardcopy was provided and explained by telephone the context of the present research work and clarified all queries/doubts regarding the ISO 21502:2020 questionnaire. The questionnaire was distributed to 414 participants to gather their perceptions on the unique combination of Strategic Project Management and Servant Leadership implemented through ISO 9001:2015 and ISO 21502:2020 for the successful execution of projects and business performance. However, 2 out of the 414 responses were incomplete and were not included in the analysis. 381 out of the 414 responses were collected from Project Managers/Senior Project Executives in the various PSUs (eleven PSUs). 22 responses were collected from the Private sector, 6 responses from the Government sector, and 3 responses from the other sector (entrepreneurs).

3.7 Research Design Limitations

This research demonstrates that implementing ISO 21502:2020 for Strategic Project Management and Servant Leadership can help highlight potential limitations, making it a wise decision for top

management. This study has shown that further research is needed regarding the Psychology of Servant Leadership in Strategic Project Management and the Trait theory of Servant Leadership in Strategic Project Management. In line with other empirical studies, our research has some limitations. The researcher conducted a case study on one PSU and collected only a few samples from other manufacturing PSUs in India, but the researcher did not cover all manufacturing PSUs in India.

Additionally, further research could be conducted on other core areas such as construction, IT/software, agriculture, education, government, healthcare, mining and exploration, oil & gas, finance, and other services in PSUs in India and other manufacturing PSUs from different countries.

In addition, this study suggests that future research through empirical study to be conducted on the personality traits of the project team, team characteristics, team behavior, and personnel commitment may impact the excellent project's success, and organizational performance varies by gender, level of education, thinking level, age, and experience of leaders as managers. Future research should explore the combined impact of transformational and servant leadership in strategic project management using mixed methods to benefit both personnel and organizations.

3.8 Conclusion

Servant leadership requires intelligence, trustworthiness, humaneness, courage, and discipline. Relying only on intelligence can lead to rebellion. Emphasizing humaneness alone can result in weakness. Placing excessive trust can lead to folly. Depending solely on courage can result in violence. Excessive discipline and sternness can lead to cruelty. When all five virtues are present and appropriately applied, one can effectively serve the organization and lead the team (Sun Tzu in 2010). This research study demonstrates that implementing ISO 21502:2020 connected with ISO

9001:2015 for practicing Strategic Project Management and Servant Leadership is a wise decision for top management. The unique combination of Strategic Project Management & Servant Leadership has been recognized as an important field in Indian Manufacturing Public Sector Units since the Manufacturing process involves many quality processes & procedures to complete the activities. Maintaining & monitoring the quality key processes requires more quality procedures and serving & leading the personnel requires twelve more Servant Leadership quality skills & values: Empathy, Active Listening, Stewardship, Emotional Intelligence, Resolution, Self-Realization, Inter-personnel relationships, Wisdom decision-making, Trust, Empowerment, Emissary and Resilience and is suitable in PSUs.

This study also contributes to improving operational performance as part of continual improvement and the relationship between ISO 9001:2015 and ISO 21502:2020 for Indian Manufacturing Public Sectors. According to the results of the analysis I conducted: Implementation of ISO 21502:2020 in Indian Manufacturing PSUs is required to improve the project performance and ultimately result in the growth of organizational performance. Hence, embracing Strategic Project Management and Servant Leadership underscores the significance of servant leaders embodying the attitudes and actions of strategic project managers. They should prioritize selflessness and thoughtfulness, concentrating on attaining organizational objectives and nurturing the capabilities of their team members.

CHAPTER IV: RESULTS

4.1 Introduction

This chapter presents and discusses a concise summary of the data in a visual manner. It begins by discussing the characteristics of the participants and firms involved in the study. Therefore, in this research study, the researcher seeks to contribute to the literature by empirically examining the impact of Strategic Project Management and Servant Leadership practices through ISO 21502:2020 aligned with ISO 9001:2015 in Indian Manufacturing PSU.

4.2 Data Analysis of Demographic Characteristics

The researcher gathered 412 responses from different PSU sectors using Google Forms. Next, they analyzed the data using the powerful tools in MS Excel spreadsheets. The analysis included meticulous data preparation and comprehensive descriptive statistics to analyze the data, all of which are presented in the research to conclude.

Type of Sector:

Figure 11 shows that out of these, 381 (91.5%) were from Project Managers/Senior Project Executives working in eleven different PSUs like manufacturing & production, petrochemical & natural gas, and services. 22 (5.3%) responses were from Project Managers/Senior Project Executives in the Private sector, 6 (2.2%) were from the Government sector, and 3 (1.1%) were from the other sector (entrepreneurs).
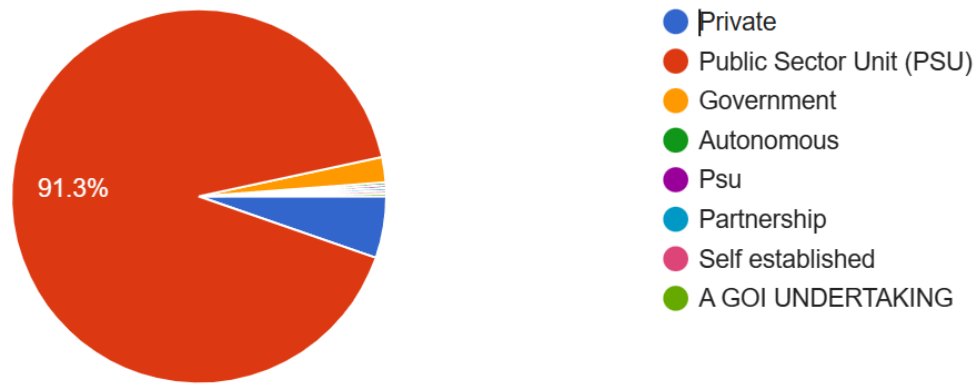
Figure 11: Participation of Project Managers from various PSUs

Impact of Gender:

Figure 12 shows the 246 (59.9%) of our participants are men, and 166 (39.9%) of our participants are women.
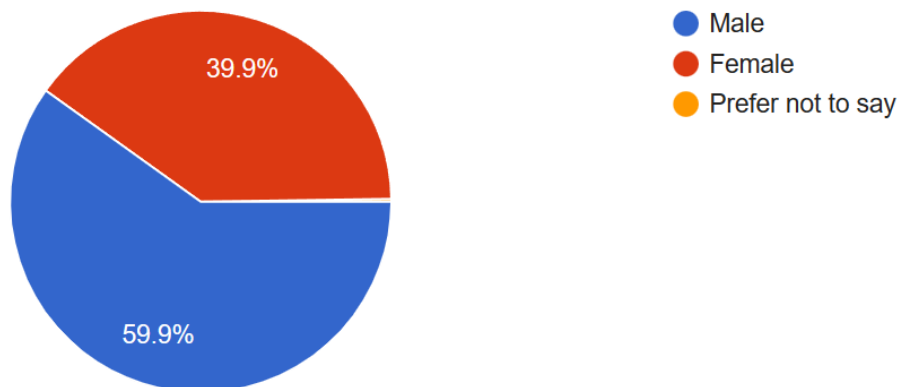
Figure 12: Gender Data representation

Impact of Participant's designation:

Figure 13 shows that 115 (27.9%) of the participants are lower-level managers including officers, project engineers, and Technical managers from departments of design & engineering, Manufacturing & production, planning, quality assurance, and technical, 257 (62.3%) are middle-level & Senior-level managers including senior managers, deputy general managers, senior deputy general manager, additional general managers from departments of finance, planning & monitoring, procurement, design & engineering, Manufacturing & production, quality control & assurance,

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and technical, 37 (8.9%) are Top-level managers including head of the department, general managers, executive directors from departments of finance, defense, nuclear, and technical, and 3 (0.7%) are director-level.
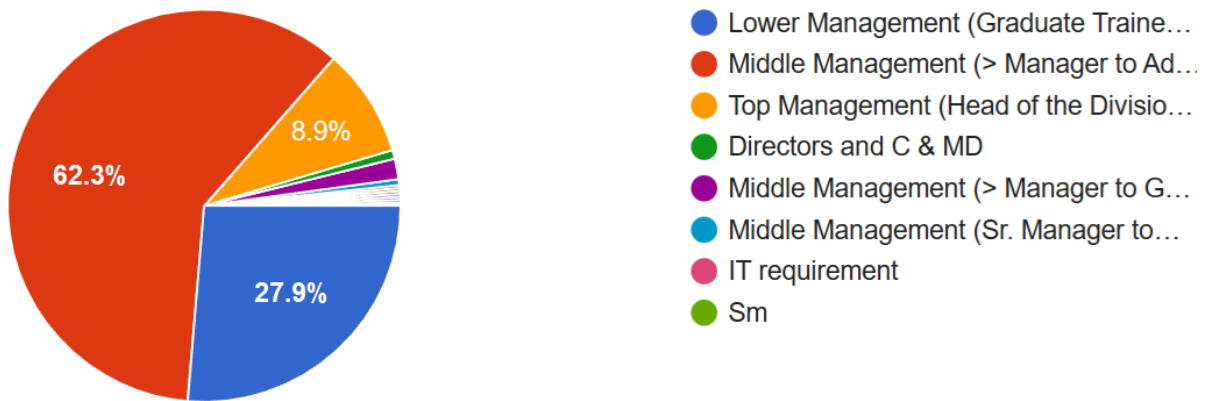
Figure 13: Data Representation in Participants Designation

Impact of Total years of experience:

Figure 14 shows that 8 (1.9%) of our participants have been working for less than 5 years, 38 (9.2%) of our participants have been working for 5-10 years, 210 (51%) of our participants have been working for 10-20 years, 101 (24.6%) of our participants have been working for 20-30 years, 52 (12.6%) of our participants have been working for 30-40 years, and 3 (0.7%) of our participants have been working for greater than 40 years.
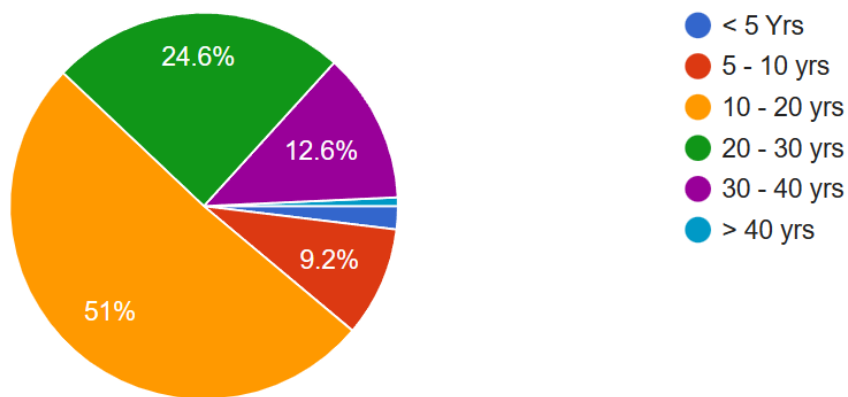
Figure 14: Participant's Total years of experience in the organization

No. of Participant's & Designation	Lower-Level: 115 (27.9%)		Middle-Level: 257 (62.3%)		Top-Level: 37 (8.9%)		Director-level: 03 (0.7%)	
Years of Experience	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Total Participants 412 includes PSUs, Government, Private, and Others								
< 5 years (08) (1.9%)	3	5	0	0	0	0	0	0
5 – 10 years(38)(9.2%)	17	18	1	2	0	0	0	0
10 – 20 years (210)(51%)	42	23	81	61	3	0	0	0
20 – 30 years (101)(24.6%)	3	1	51	38	5	2	0	1
30 – 40 years (52)(12.6%)	2	1	10	13	25	1	0	0
> 40 years (3)(0.7%)	0	0	0	0	1	0	2	0
TOTAL Participants (412)	**67**	**48**	**143**	**114**	**34**	**3**	**2**	**1**
Responses 381 includes eleven PSUs								
Years of Experience Vs. No. of Participants	**Lower-Level: 107 (28%)**		**Middle-Level: 243 (63.7%)**		**Top-Level: 28 (7.3%)**		**Director-level: 03 (0.7%)**	
< 5 years (06)	2	4	0	0	0	0	0	0
5 – 10 years (37)	17	18	1	1	0	0	0	0
10 – 20 years (197)	38	22	77	60	0	0	0	0
20 – 30 years (89)	3	1	44	38	1	1	0	1
30 – 40 years (49)	1	1	9	13	24	1	0	0
> 40 years (03)	0	0	0	0	1	0	2	0
TOTAL eleven PSU Participants (381)	**61**	**46**	**131**	**112**	**26**	**2**	**2**	**1**
Responses 357 includes one PSU (EC) for the case study								
Years of Experience Vs. No. of Participants	**Lower-Level: 105 (29.4%)**		**Middle-Level: 224 (62.7%)**		**Top-Level: 26 (7.3%)**		**Director-level: 02 (0.5%)**	
< 5 years (06)	2	4	0	0	0	0	0	0
5 – 10 years (36)	16	18	1	1	0	0	0	0
10 – 20 years (184)	37	22	66	59	0	0	0	0
20 – 30 years (82)	3	1	40	36	1	1	0	0
30 – 40 years (46)	1	1	8	13	22	1	0	0
> 40 years (03)	0	0	0	0	1	0	2	0
TOTAL one PSU (EC) Participants (357)	**59**	**46**	**115**	**109**	**24**	**2**	**2**	**0**

Table 6: Demographic Characteristics of the Participants

Table 7 shows the participation of a total of 412 respondents, Lower-level managers are 115 (27.9%), out of these 37 are men and 48 are women. Middle-level & Senior-level managers are 257 (62.3%), out of these 143 are men and 114 are women. Top-level managers are 37 (8.9%), out of these 34 are men and 3 are women, Director level are 3 (0.7%), out of these 2 are men and 1 are women.

Core Area:

PSU Name	No. of Participants	No. of Employees (Range)	Annual Sales (Rs.)	Core Area
PSU1 (EC)	**357**	1000-2500	2500-5000 crs	Manufacturing & Production
PSU2 (NPC)	8	>10000	>10000 crs	Manufacturing & Production
PSU3 (BDL)	5	1000-2500	2500-5000 crs	Manufacturing & Production
PSU4 (MDNL)	3	500-1000	100-2500	Manufacturing & Production
PSU5 (BHEL)	2	>10000	>10000 crs	Manufacturing & Production
PSU6 (BEL)	1	7500-10000	>10000 crs	Manufacturing & Production
PSU7 (MCL)	1	100-500	100-1000 crs	Manufacturing & Production
PSU8 (BCPL)	1	500-1000	2500-5000 crs	Petrochemical & Natural gas
PSU9 (ONGC)	1	1000-2500	>10000 crs	Petrochemical & Natural gas
PSU10(EPFO)	1	>10000	>10000 crs	Service
PSU11 (SBI)	1	>10000	>10000 crs	Service
TOTAL	**381**			

Table 7: Participants from various PSUs

Figure 15 shows that 344 (83.1%) of our participants have been working in Manufacturing & Production, 31 (7.5%) of our participants have been working in IT/Software, 16 (3.9%) of our participants have been working in Services, 21 (5.04%) of our participants have been working in Other sectors.
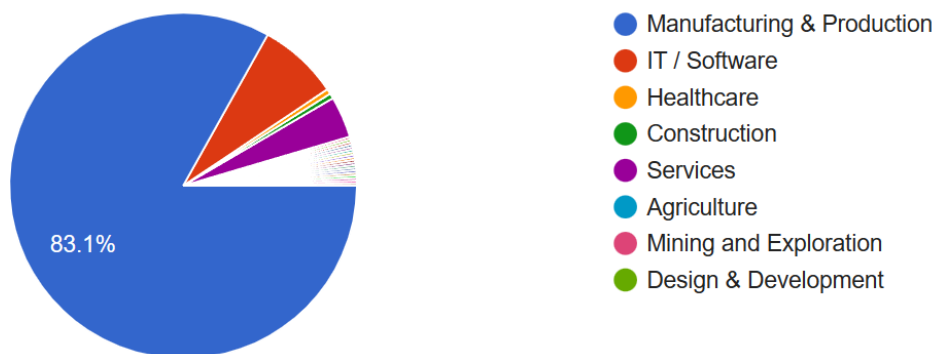
Figure 15: Core Area of Participants

Employee Strength:

Figure 16 & Table 7 shows that 283 (68.4%) of our participant's employee strength is 1000-2500. 82 (19.8%) of our participant's employee strength is 2500-5000. 24 (5.8%) of our participant's employee strength is >10000.
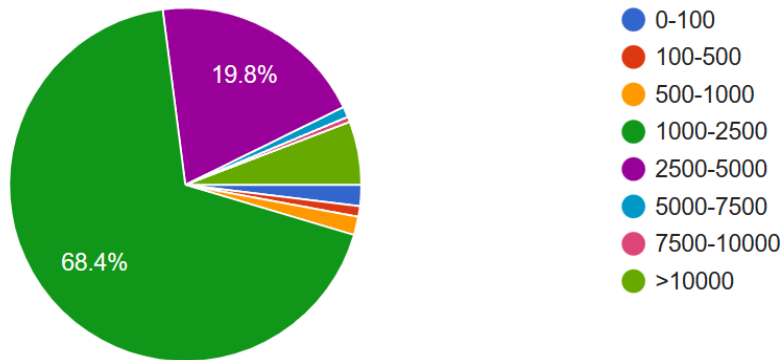
Figure 16: Employee strength (On rolls) of your organization

Impact of Age Group:

While Figure 17 shows that 16 (3.9%) of the participants stated that they were in the less than 30 years of age, 162 (39.1%) of the participants stated that they were in the less than 30-40 years of age range, 144 (34.8%) of the participants stated that they were in the less than 40-50 years of age range, 80 (19.3%) of the participants stated that they were in the less than 50-60 years of age range, 12 (2.9%) of the participants stated that they were in the greater than 60 years of age.
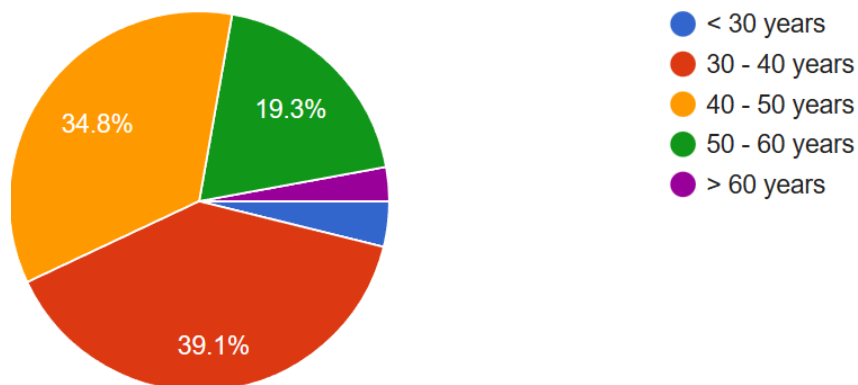
Figure 17: Participants Age Group

Total years of experience in PM & L	PSU1 (EC)	PSU2 (NPC)	PSU3 (BDL)	PSU4 (MDNL)	PSU5 (BHEL)	PSU6 (BEL)	PSU7 (MCL)	PSU8 (ONGC)	PSU9 (BCPL)	PSU10 (EPFO)	PSU11 (SBI)
< 5 yrs. (42) (11.8%)	38	2	0	2	1	0	0	0	0	0	0
5 – 10 yrs. (102) (27.1%)	99	0	1	0	0	0	1	0	0	0	1
10 – 15 yrs. (114) (29.2%)	108	2	0	1	1	0	0	1	1	0	0
15-20 yrs. (73) (19.3%)	65	4	3	0	0	0	0	0	0	1	0
20 – 25 yrs. (36) (8.9%)	34	0	1	0	0	1	0	0	0	0	0
> 25 yrs. (13) (3.2%)	13	0	0	0	0	0	0	0	0	0	0
TOTAL	357	8	5	3	2	1	1	1	1	1	1
N: 381 Participants											

Table 8: Participant's total years of work experience in Project Management & Leadership
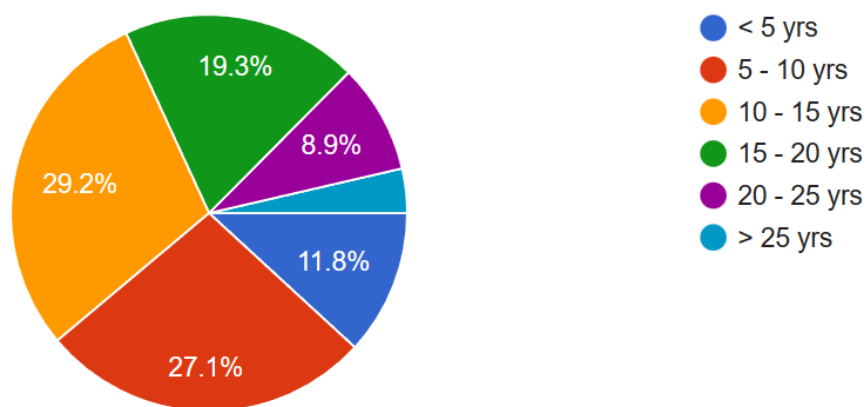
Figure 18: Participant's total years of work experience in Project Management & Leadership

No. of Projects manging & Leading	PSU1 (EC)	PSU2 (NPC)	PSU3 (BDL)	PSU4 (MDNL)	PSU5 (BHEL)	PSU6 (BEL)	PSU7 (BCPL)	PSU8 (ONGC)	PSU9 (MCL)	PSU10 (EPFO)	PSU11 (SBI)
< 5 (209) (54.8%)	**201**	2	0	2	1	1	1	0	1	0	0
5 – 10 (129) (34.1%)	**119**	3	5	1	0	0	0	0	0	0	1
10 – 20 (25) (6.2%)	**21**	3	0	0	1	0	0	0	0	0	0
20 – 50 (8) (1.9%)	**7**	0	0	0	0	0	0	0	0	1	0
> 50 (10) (2.4%)	**9**	0	0	0	0	0	0	1	0	0	0
TOTAL	**357**	**8**	**5**	**3**	**2**	**1**	**1**	**1**	**1**	**1**	**1**
N: 381 Participants											

Table 9: Number of Projects Lead by PSUs
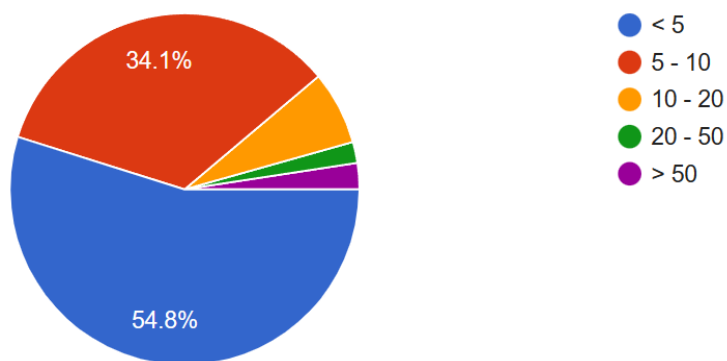
Figure 19: Number of Projects lead by PSUs

% of successful projects	PSU1 (EC)	PSU2 (NPC)	PSU3 (BDL)	PSU4 (MDNL)	PSU5 (BHEL)	PSU6 (BEL)	PSU7 (BCPL)	PSU8 (ONGC)	PSU9 (MCL)	PSU10 (EPFO)	PSU11 (SBI)
0 – 10% (8) (1.9%)	6	1	0	0	1	0	0	0	0	0	0
10 – 25% (5) (1.3%)	4	0	1	0	0	0	0	0	0	0	0
25 – 50% (41) (9.84%)	38	0	2	0	0	0	0	0	0	1	0
50 – 75% (169) (44.4%)	157	5	1	3	1	0	0	0	1	0	1
75 – 100% (158) (37.92%)	152	2	1	0	0	1	1	1	0	0	0
TOTAL	357	8	5	3	2	1	1	1	1	1	1
N: 381 Participants											

Table 10: Percentage of successful projects led by PSUs
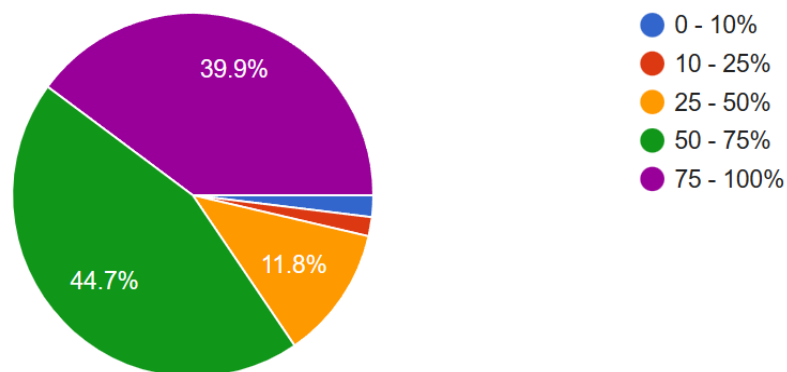
Figure 20: Percentage of successful projects led by PSUs

Impact of Use of tools & techniques for Project Management:

130 (34.12%) of our participants have been using tools & techniques for Project Management and Leadership, 154 (40.42%) of our participants have not used tools & techniques for Project Management and Leadership, and 97 (25.46%) of our participants are neutral that they are not sure.
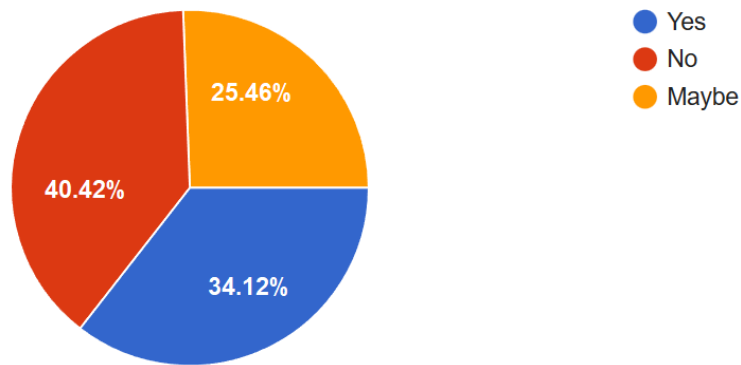
Figure 21: Use of tools & techniques for Project Management and Leadership in PSUs

4.3 Data Analysis of Firm Characteristics

Reasons for project failures:

Still, projects are failing due to a lack of practicing Project Management Standards and techniques 199 (52.9%), a Lack of Project environment 108 (28.5%), and a lack of leadership techniques 36 (9.4%), and other reasons are 38 (9.92%). To achieve project success, project managers and leaders need to master both project management 356 (86%) and leadership skills (282 (68.1%). These combined abilities are the key to driving projects towards successful outcomes.

Figure 22: Data graphs for reasons for project failures

	n	%
Lack of practicing Project Management Standards	**199**	**52.9%**
Lack of Project environment	108	28.5%
Lack of leadership techniques	36	9.4%
Other reasons	38	9.92%

N=381; Z-score=1.96

Table 11: Data graphs for reasons for project failures

As per the survey study, the following other reasons are also causing for project failure:

1. Lack of commitment

2. Lack of coordination and project planning

3. Due to some unforeseen situations

4. Due to R&D in the project unexpectedly & undefined

5. Involvement of multiple stakeholders

6. Lack of resource planning

7. Lack of right Decision Making at the right time

8. Lack of required training & guidance

9. Stringent material Procurement policies & standards

10. Lack of proper schedules and continuous follow-up

11. Lack of efficient team

12. Lack of clear goals, Risk management & Poor communication skills

13. Biasing, partialities, and groupism, etc

14. Lack of understanding of the customer requirements and organizational strategy

15. Lack of adopting new technologies and practices

16. Lack of Conducive environment

Impact of Skills for Project Success:
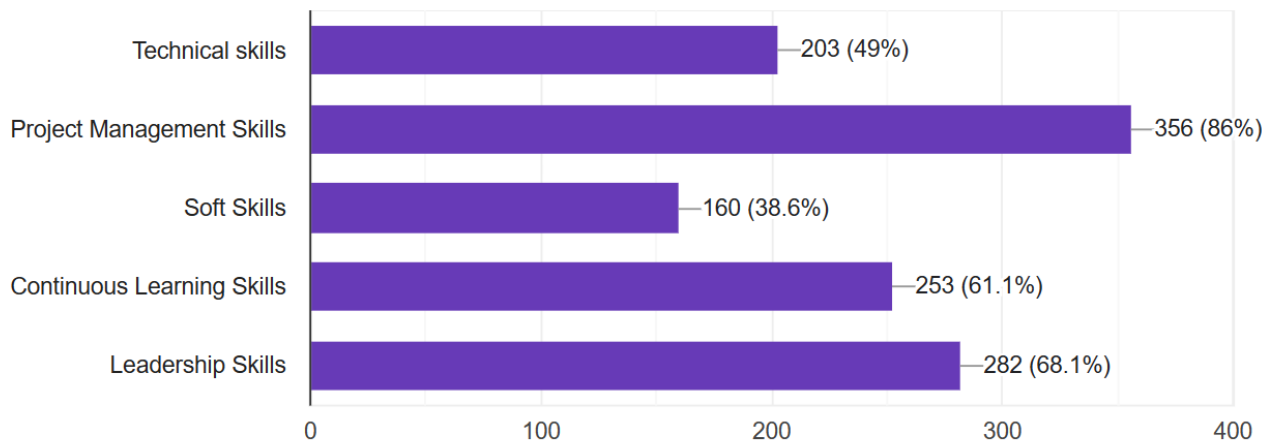
Figure 23: Status of Skills for Project Success

Key Knowledge areas of project success:

Figure 23 stated that Resources 300(76.7%) that is playing the major role for project success, Time 260 (66.5%), Procurement 250 (63.9%), Quality 248 (63.4%), Cost 201 (51.4%), Scope 192 (49.1%), Communication 181 (46.3%), Integration 172 (44%), Experience 161 (41.2%), Documentation 155 (39.6%), Risks 137 (35%), and Stakeholders 128 (32.7%) are major key knowledge areas of project success in Project Management field.
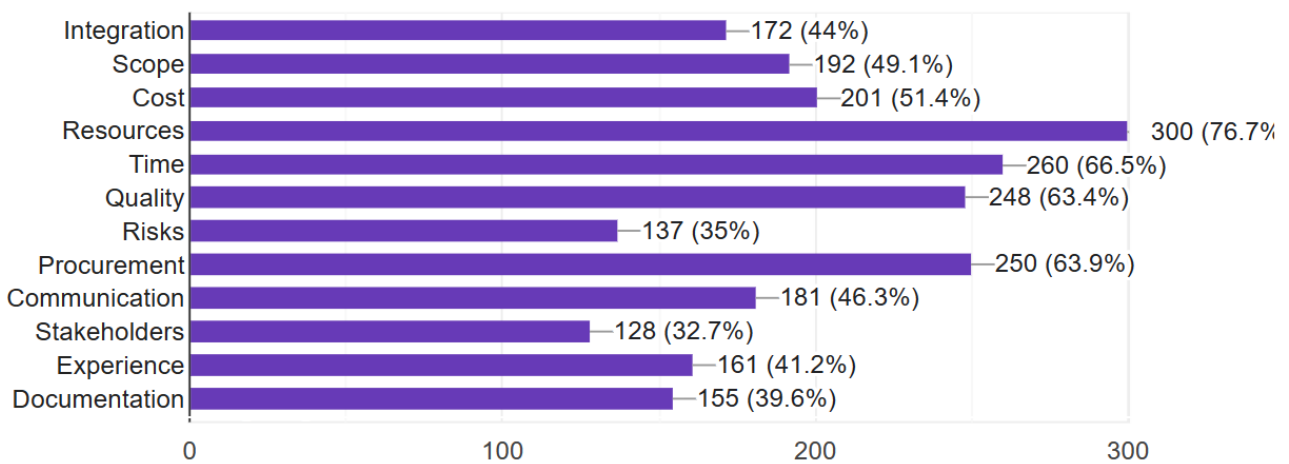
Figure 24: Major key knowledge areas of project success in Project Management

Project Management processes:

Project planning, accounting for 76% of the success, and project monitoring & controlling, contributing 57.3%, unequivocally drive the project strategy.
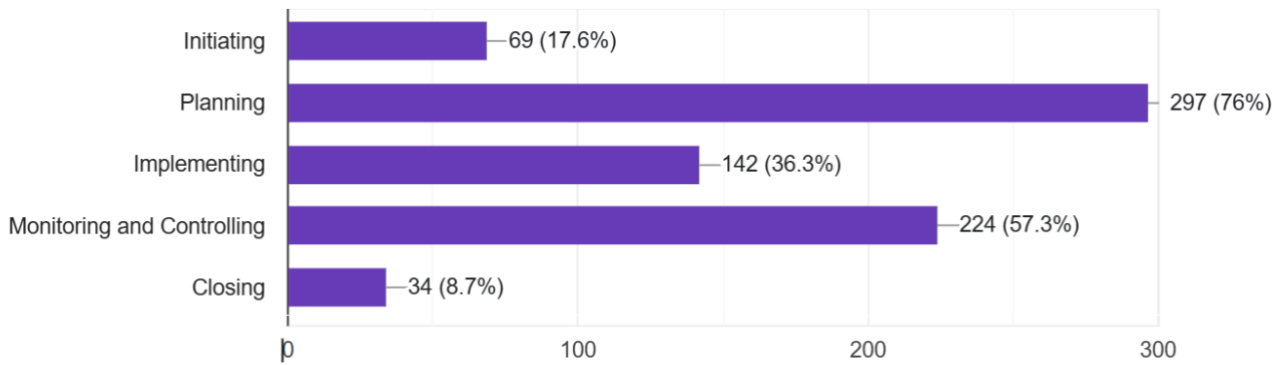
Figure 25: Project Management processes
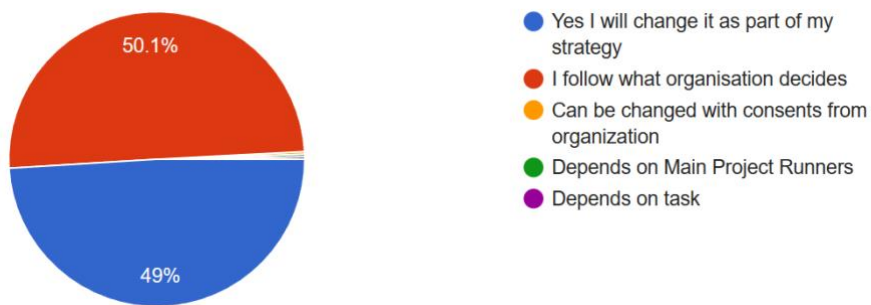
Figure 26: Status of Project Strategy

According to the research survey, 50.1% of followers decide to practice the project management methodologies that the organization has set for its benefit. This means that 50% of project managers are willing to adopt new standards to improve organizational performance through project performance.

Understanding the importance of Project management and leadership impacted by ISO International Standard

ISO 9001:2015 plays a vital role in manufacturing organizations to ensure quality processes, products, and services and achieve customer satisfaction. Currently, PSUS is practicing ISO 9001:2015 for measuring Project progress and performance evaluation, which is not adequate.
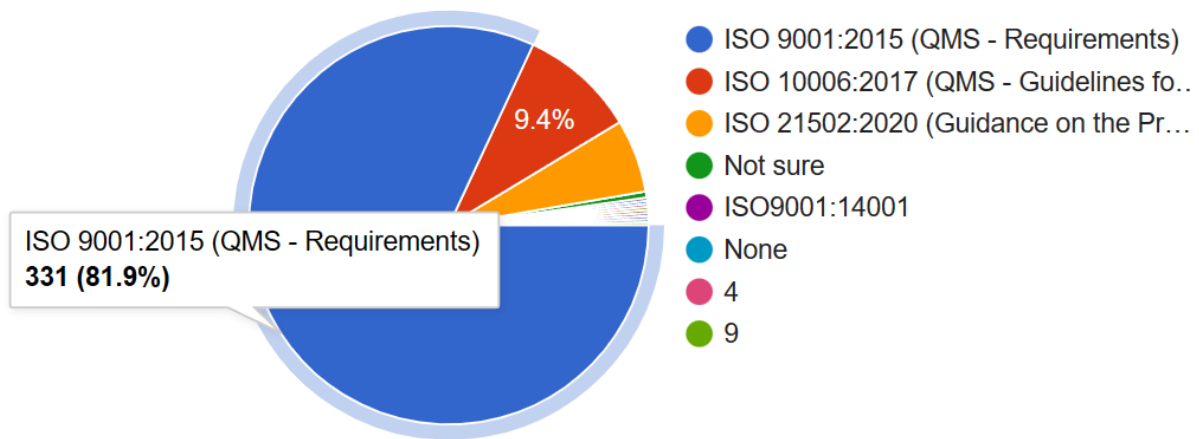
Figure 27: **Practicing of ISO 9001:2015 standard to measure project performance status**

According to the research survey results & Figure 27 shows that 331 (81.9%) out of 412 participants followed the ISO 9001:2015 standard instead of dedicated Project management standards to measure project progress and performance evaluation. This is simply because there is a lack of awareness to adopt Project management standards/guidelines. Top management decisions must create awareness and significance of practicing project management standards for the organization.

Table 12 shows that ISO 9001:2015 does not cover the concepts and practices for project management essential for project-based organizations. ISO 9001:2015 specifies only Requirements for Quality Management Systems. Practitioners can measure operational performance to ensure the quality of products and services to achieve customer satisfaction.

Hence it is required to adopt a separate new International Project Management standards for practiving and improving the project level performance effectively and efficiently. According to the research survey results, 149 (36%) out of 412 participants, highly agreed that ISO 9001:2015 standard does not cover the concepts and practices for project management which is essential for project-based organizations.

International project management standards are essential to measuring and improving project progress and performance in manufacturing and operational PSUs. According to the research survey results, Figure 28 shows that 182 (44%) out of 412 participants highly agreed that the adoption of separate project management standards to measure project progress and performance evaluation extremely increases project success rates.

	ISO 9001:2015		ISO 21502:2020	
Project Management	**F**	**%**	**F**	**%**
	149	36%	182	44%
	Not covered		Required to adopt	
Leadership	174	42%	174	42%
	Covered under Clause No. (5)		Covered under Clause No. (5)	

Table 12: **Combination of Project Management and Leadership with ISO**
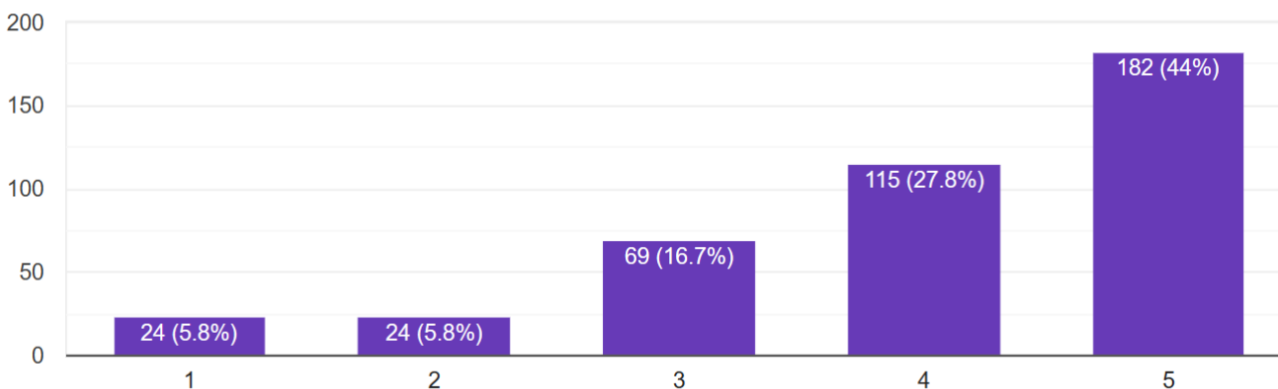
Figure 28: Adoption of ISO 21502:2020 standard

ISO 9001:2015 influences the leadership mentioned in its ISO standard under clause no. (5). According to the research survey results, 174 (42%) out of 412 participants highly agreed both leadership in project management influences the quality of project success in the manufacturing public sector.

Top management Review:
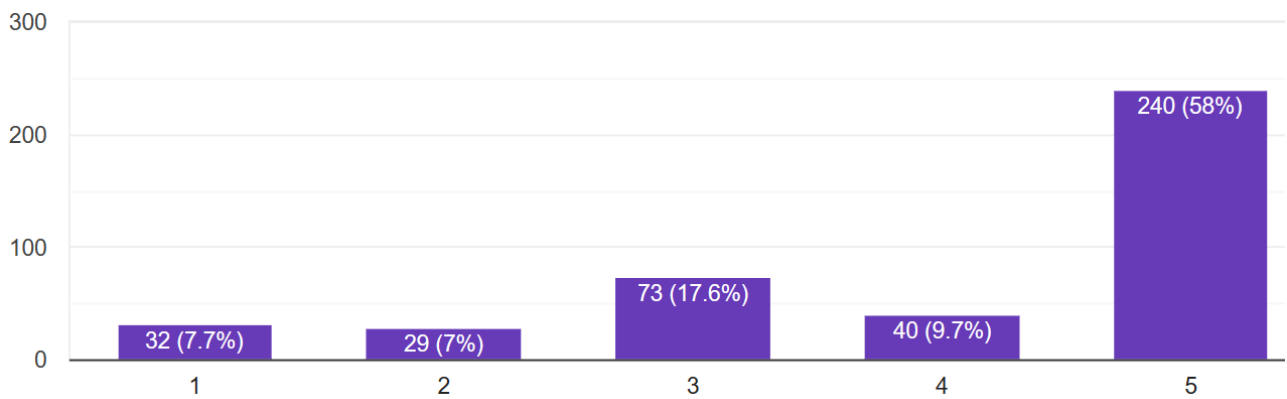
Figure 29: Top management review status

According to the research survey results, 240 (58%) out of 412 participants, is a highly agreed monthly review of the project management plan by top management in the manufacturing public sector as per Figure 29.

Team Review:
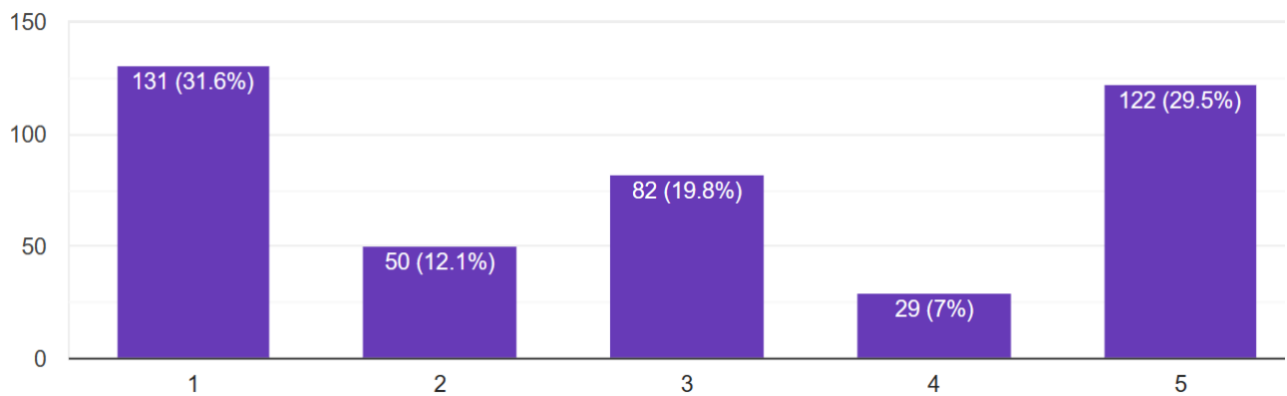
Figure 30: **Team review status**

According to the research survey results, 131 (31.6%), is a highly agreed-upon daily review of the project management plan by the project in-charge in the organization. 122 (29.5%), stated that the Project in-charge reviews the team & project progress weekly in the organization as per Figure 30. The daily review helps to know the progress of the project and the team's performance toward achieving the target goals.

4.4 Research Finding

Best Leadership Style for Strategic Project Management:
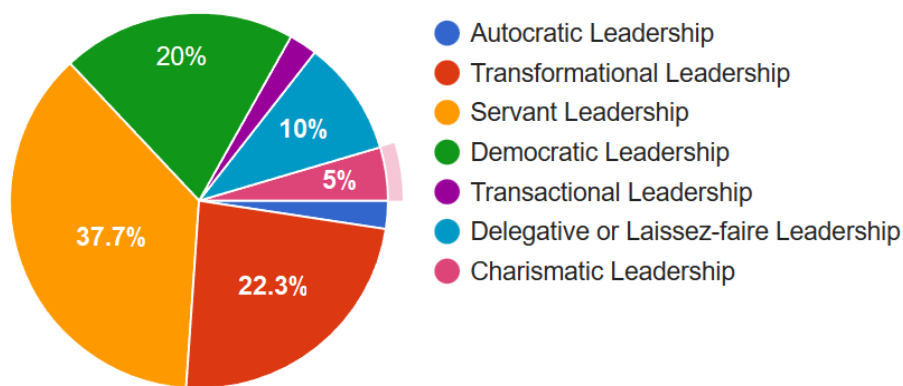
Figure 31: **Best leadership style for strategic project management**

	Rank	**n**	**%**
Servant Leadership	**1**	**144**	**37.7%**
Transformational Leadership	**2**	85	22.3%
Democratic Leadership	**3**	79	20%
Delegative (or) Laissez-faire leadership	**4**	38	10%
Charismatic Leadership	**5**	19	5%
Transactional Leadership	**6**	9	2.4%
Autocratic Leadership	**7**	7	1.8%
N=381; Z-score=1.96			

Table 13: **Best leadership style for strategic project management**

Servant Leadership is a unique style for serving team and organizational performance. This type of leadership provides service purely based on morals and ethics for the realization of benefits, project goals, and objectives. Servant leadership knows the root cause of problems and provides a better solution, guidance, and effective support. They recognize and appreciate good team efforts to drive both personnel and organization in parallel. Servant leader feels and operate as a part of team and support teamwork. Develop values and a *culture of service* for the organization and customers.

Research results as per the above Table 13 & Figure 31 show that servant leadership 144 (37.7%) is highly suitable for strategic project management, and transformational leadership 85 (22.3%) is the next highly effective leadership style for this purpose. Both leaderships visualize and do things effectively. They think from different perspectives to analyze and solve problems. They can also explore, implement, and adapt the situations and work for personnel and organizational benefits. This leadership style creates huge followers to build future leaders who can serve as well as lead. This leadership can envision, empower, encourage, engage, enforce, and synergize the team and build the organization. Servant leaders develop their followers with MESPI skills (Mental, Emotional, Spiritual, Physical, and Intellectual). Servant leaders are at a more practical (or) down-to-earth level (Sri Lakshmi Peyyala, 2022).

Project Strategy of Strategic Project Manager:
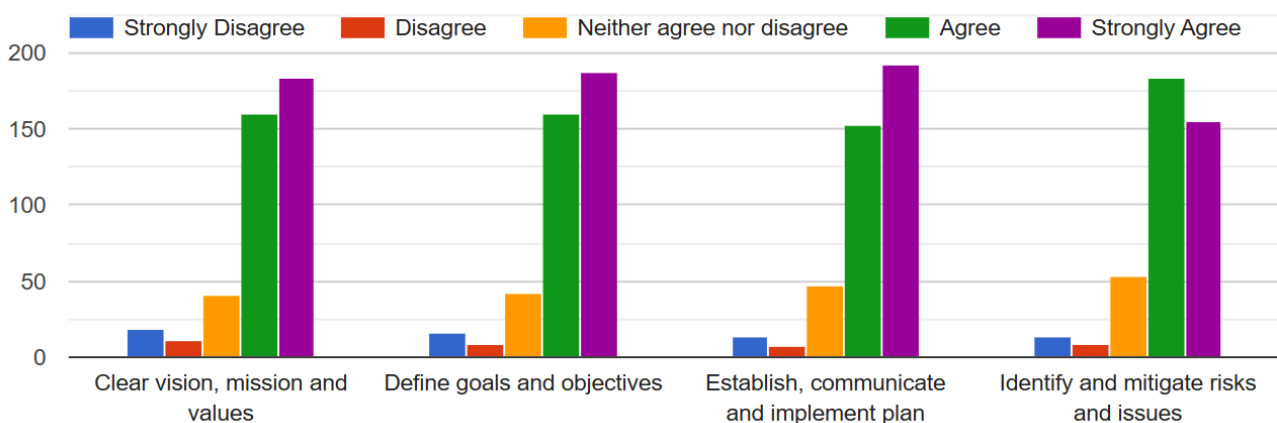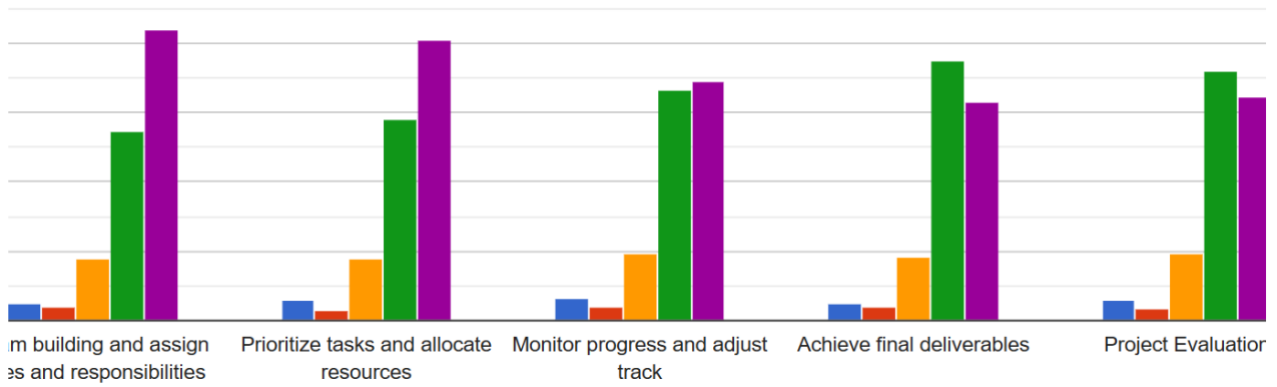
Figure 32: Project Strategies of Strategic Project Manager

	Rank	n	%
Clear vision, mission, and values	5	184	44.4%
Define goals and objectives	**4**	**187**	**45.2%**
Establish, communicate, and implement a plan	**3**	**192**	**46.4%**
Identify and mitigate risks and issues	6	183	44.2%
Team building and assigning roles and responsibilities	**1**	**210**	**50.7%**
Prioritize tasks and allocate resources	**2**	**202**	**48.8%**
Monitor progress and adjust track	8	173	41.8%
Achieve final deliverables	**4**	**187**	**45.2%**
Project evaluation	7	180	43.5%
N=412; Z-score=1.96			

Table 14: Project Strategy of Strategic Project Manager

Servant Leadership in strategic project management:

As per the study results, Figure 33, 205 (49.5%) out of 412 participants stated that servant Leadership in strategic project management is very much suitable for middle-level management and it has a special skill to act as a bridge between low-level management and top-level management very efficiently. They always believe in a promise that "*when serving best for team and organization, will serve best for the customer also*".
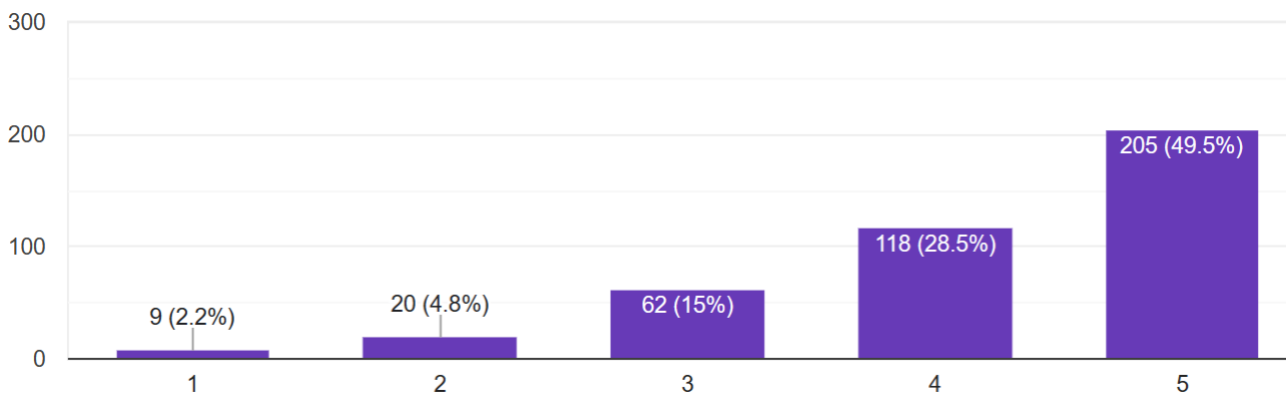
Figure 33: **Servant leadership in strategic project management**

Servant leaders in strategic project management have a unique ability to enhance team communication and collaboration, utilizing higher emotional intelligence to create a healthier work environment.

Characteristics of Servnat Leadership in Strategic Project Management:
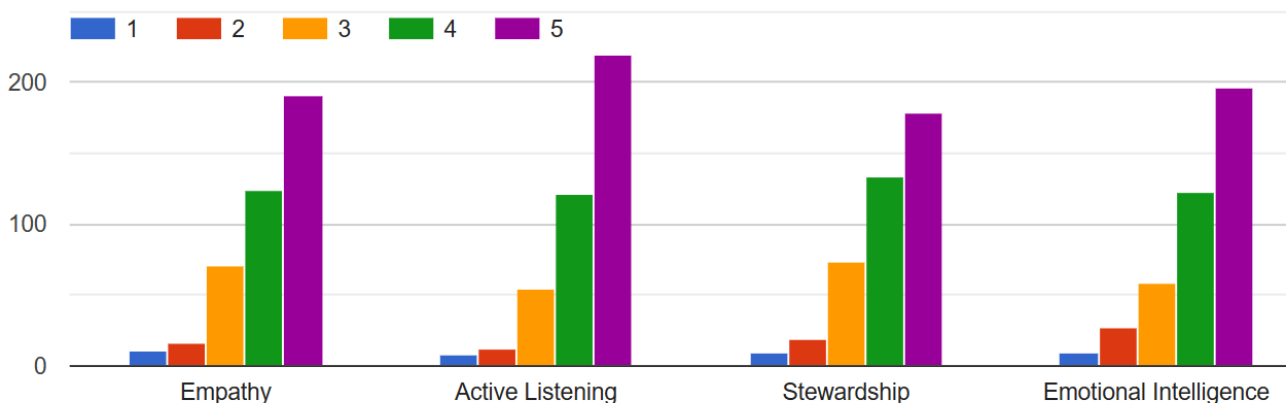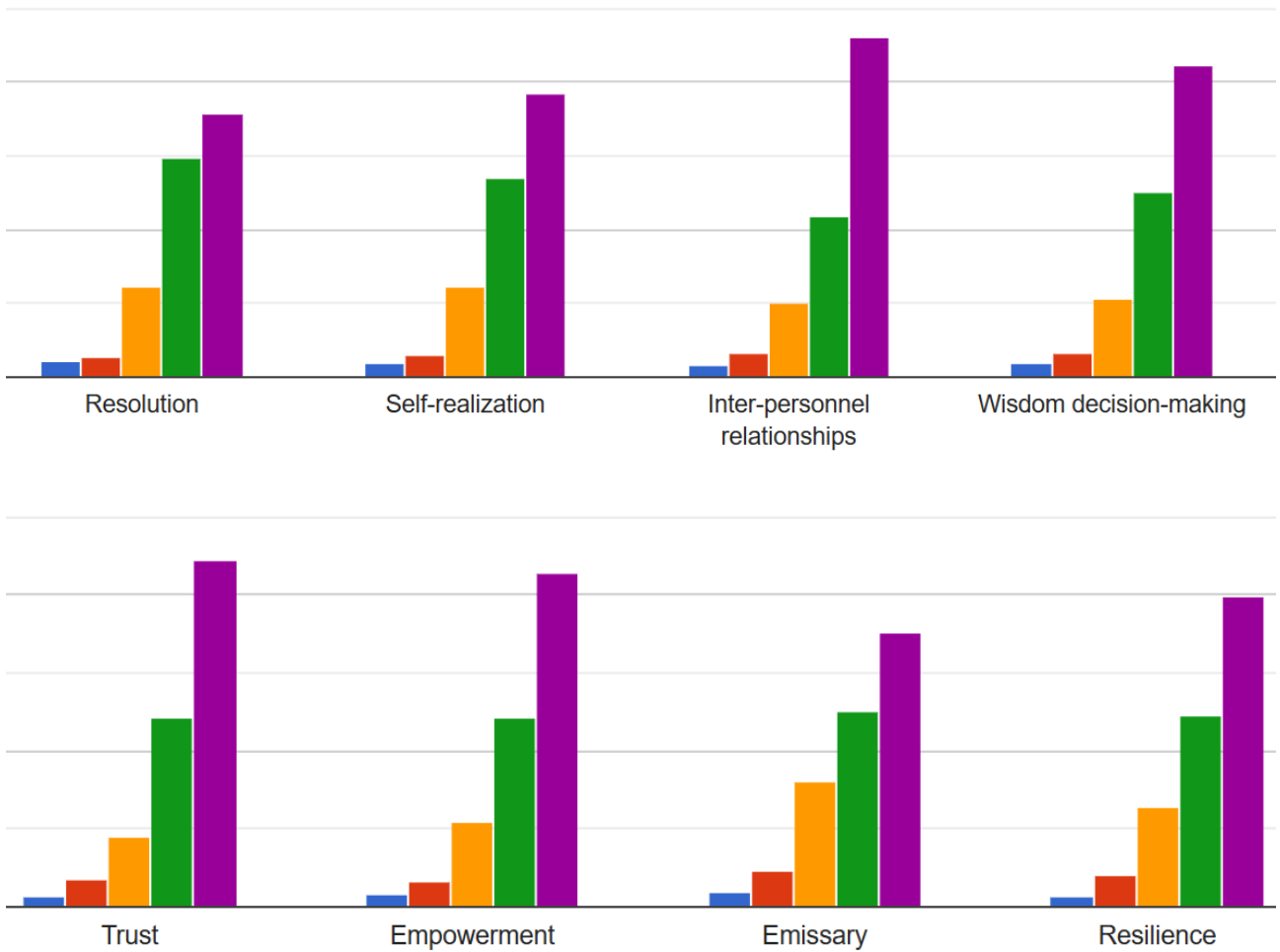
Figure 34: Characteristics of Servnat Leadership in Strategic Project Management

According to a survey stated that as per Figure 34, 181 (43.7%) strongly agree that Servant leadership in strategic project management affects the three areas of the organization's culture i.e. personnel, second values, and their vision for project strategy. Servant leaders as strategic project managers ensure the team is aligned and understands project objectives and deliverables.

As per data statistics of this research study, Figure 35, 317 (76.6%) of participants are "satisfied" with the leadership style of their superiors/governance. 29 (7%) of participants are "not satisfied" with the leadership style of their superiors/governance. 68 (16.4%) of participants are "not sure" about the leadership style of their superiors/governance in the organization.
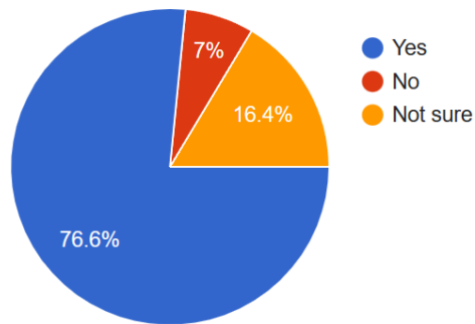
Figure 35: Satisfaction level of superior's leadership style

	Rank	n	%
Interpersonal relationship	**1**	**231**	**55.8%**
Trust	**2**	**222**	**51%**
Active Listening	**3**	**219**	**52.9%**
Empowerment	**4**	**214**	**51.7%**
Wisdom Decision-making	**5**	**211**	**51%**
Resilience	**6**	199	48.1%
Emotional intelligence	**7**	197	47.6%
Self-realization	**8**	192	46.4%
Empathy	**9**	191	46.1%
Stewardship	**10**	179	43.2%
Resolution	**10**	179	43.2%
Emissary	**11**	176	42.5%
N=412; Z-score=1.96			

Table 15: Characteristics of Servnat Leadership in Strategic Project Management

Implementation of Project Management practices through ISO 21502:2020 standard:

Implementation of Project Management practices through ISO 21502:2020 standard influences project performance in Indian manufacturing PSUs. Adopting ISO 21502:2020 can lead to better planning to make business decisions in prioritization of tasks, mitigation of tasks for projects, and improving project performance levels. Practicing ISO 21502:2020 establishes a project environment for better stakeholder communication and results in customer satisfaction which improves the organization's reputation. This standard helps organizations to practice better process quality to optimize the use of resources, maximize the value creation, and achieve intended outcomes. The following are the potential benefits of implementing the ISO 21502:2020 standard in project-oriented organizations as per Figures 36, 37 & 38 and Table 16:

	n	%
Role of change catalyst in adopting PM practices	202	48.8%
Reduce project costs & increase revenue	167	40.3%
Better planning, monitoring & controlling for project success	168	40.6%
Better communication & team collaboration	180	43.5%
Optimize the use of resources & maximize the value creation	175	42.3%
Knowledge transfer through lessons learned framework	175	42.3%
Recommend of implementation ISO 21502:2020 in PSUs *	191	50.0%

N=412; Z-score=1.96

* N (PSUs)=381

Table 16: Potential benefits of implementing ISO21052:2020 standards
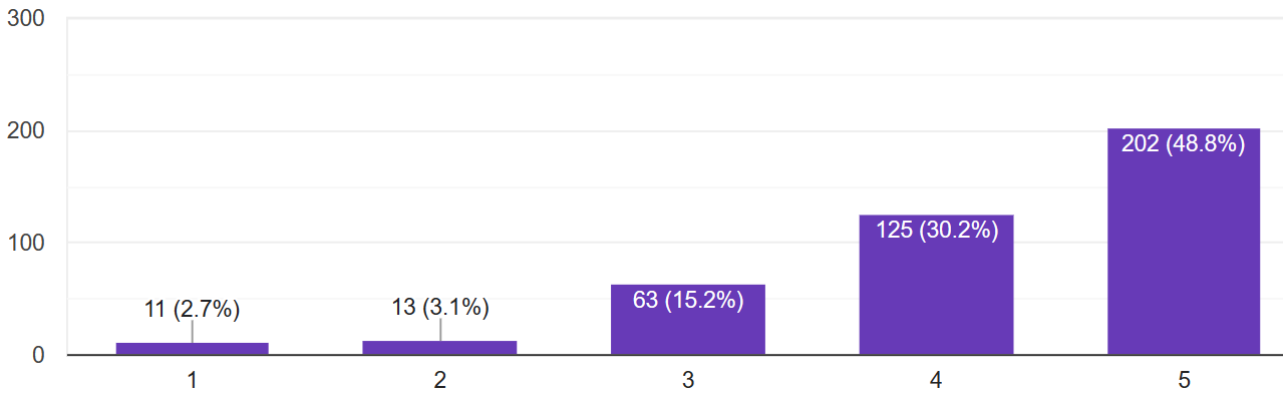
Figure 36: Role of change catalyst status
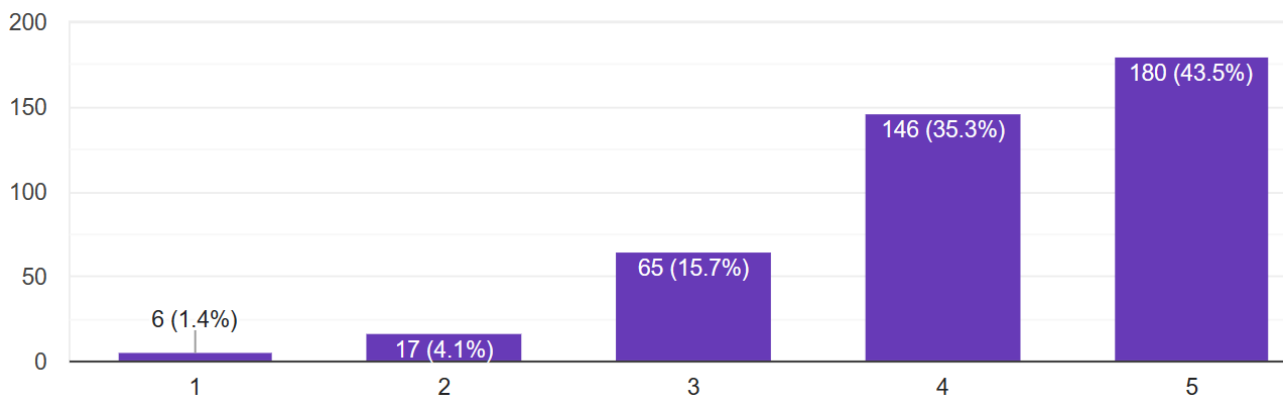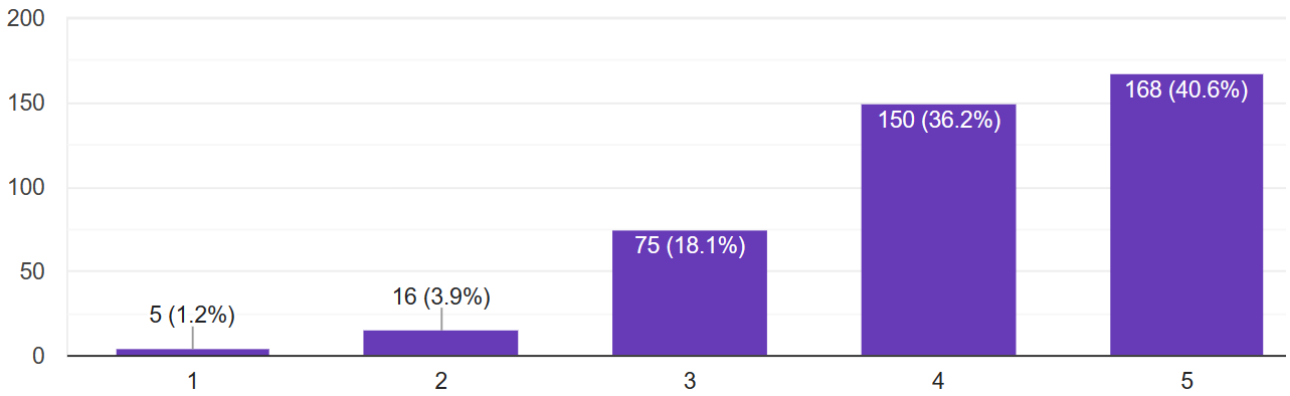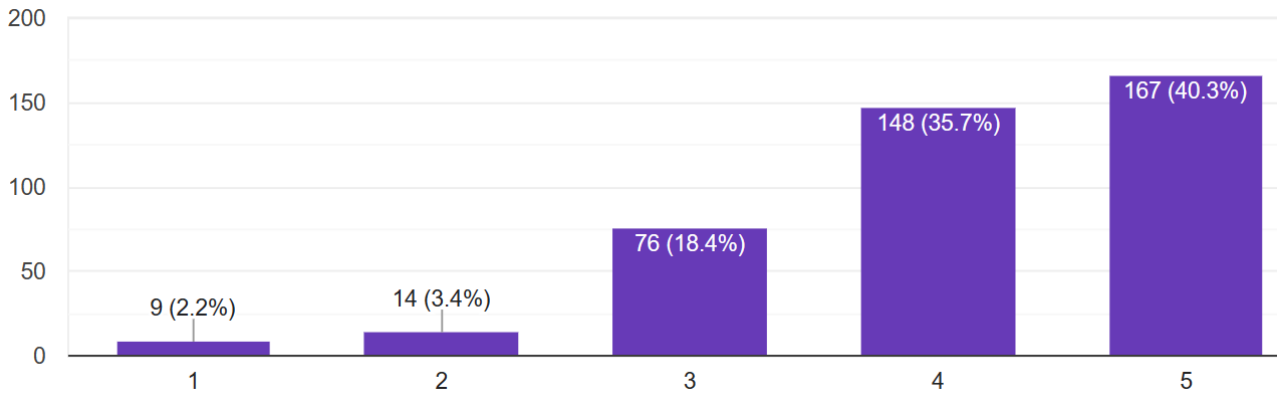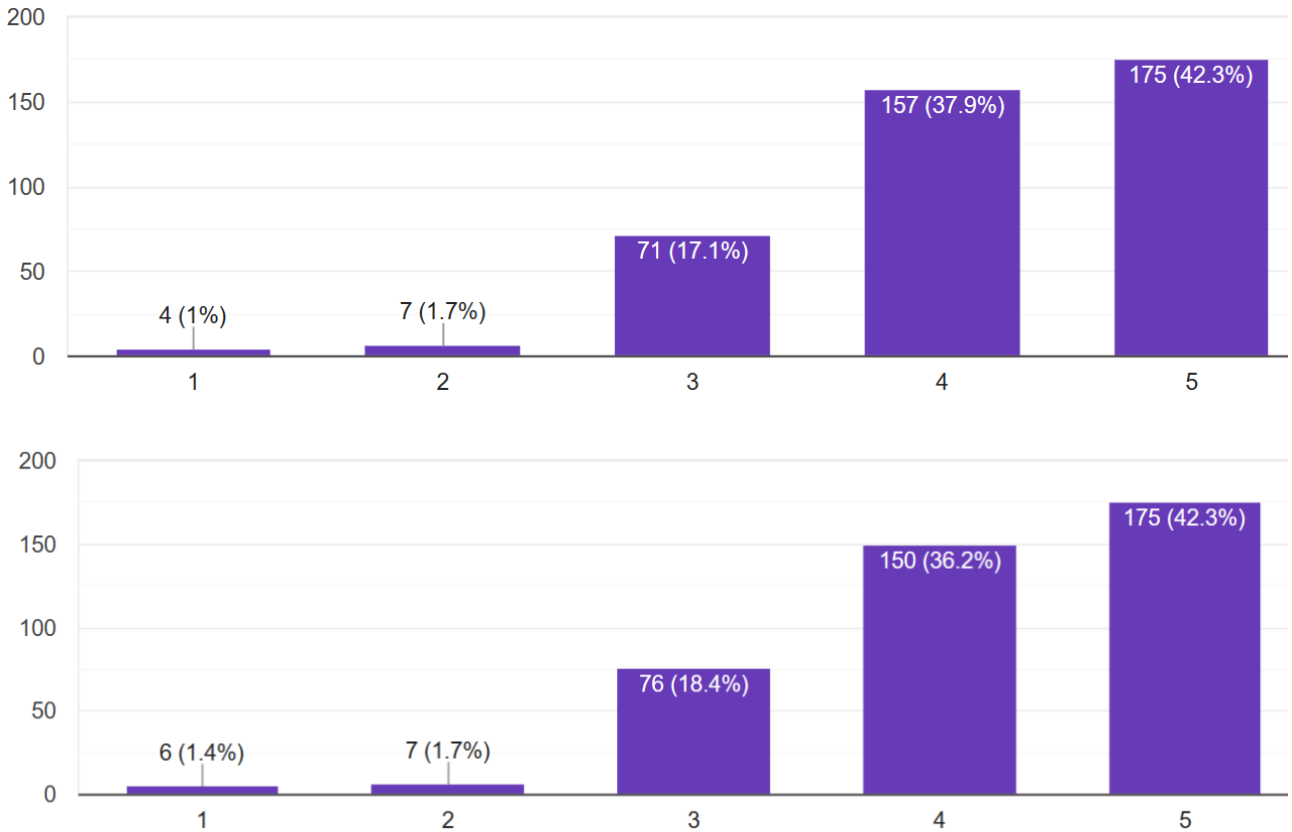
Figure 37: Potential benefits of implementing ISO21502:2020 standards

As per statistics of this research study, Figure 38, 201 (48.6%) out of 412 participants are "recommending" the implementation of ISO 21502:2020 standard to practice project management in the PSUs. As a researcher, created awareness of the benefits of implementing the ISO 21502:2020 standard in the organization. Participants have shown more interest in knowing about the ISO 21502:2020 standard.
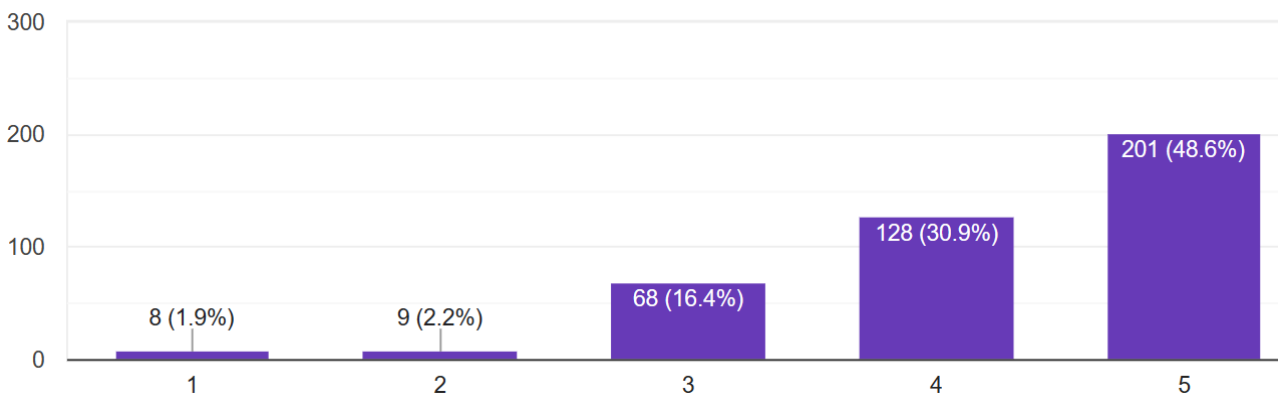
Figure 38: Recommendation status of implementing ISO 21502:2020 standards

CHAPTER V: DISCUSSIONS

5.1 Discussions of Results

Introduction In this chapter, the author discusses the findings presented in Chapter 4. The researcher begins by discussing the research question.

5.2 Discussion of Research Question

1. *Is ISO 9001:2015 essential in terms of measuring the Project process performance and evaluation in the Manufacturing Public Sector?*

ISO 9001:2015 specifies and measures only Quality Management System – Requirements and operational process performance to ensure the quality of processes, products, and services to achieve customer satisfaction.

The ISO 9001:2015 International Standard can not specify project vision, mission, values, objectives, goals, strategies, and policies. The ISO 9001:2015 standard alone is not sufficient to measure the project success rate, project process performance, and evaluation. To practice and improve project-level performance effectively and efficiently, a dedicated international standard for project management must be adopted separately.

Sub question:

a. *What is the relation between ISO 9001:2015, ISO 10006:2017, and ISO 21502:2020?*

Top management responsibility (or) Leadership in projects:

Top management responsibility plays a vital role in Projects and the following are responsibilities:

(i) Commitment and active involvement in continual improvements

(ii) Apply knowledge and experience for organizational growth

(iii) Strategic approach to gain customer satisfaction

(iv) Adoption of guidelines and international standards as required

(v) Leadership and effective communication

(vi) Planning to meet project objectives and goals

(vii) To improve the performance of project management

(viii) Facilitate a culture to learn lessons

(ix) Division of authority and responsibility

(x) Periodic management review and decision-making

(xi) Team development and engagement of people

(xii) Integrate risk management practices into resource management

(xiii) Focus on customer and continual improvement to achieve organizational strategy

(xiv) Competence for project personnel

Management practices for a project:

Best Project Management practices are essential for better project planning, implementation, and monitoring & controlling effectively for both project and organizational success.

b. *What needs to be considered if implementation of ISO 21502:2020 is sought?*

The following factors are to be considered if implementing ISO 21502:2020 in the organization:

1. What are the reasons behind implementations?

2. What might stand in the way of completing the implementation process?

3. How does it realize the benefits, it might bring?

4. What might be the optimum implementation strategy?

5. What is necessary to have the top management commitment and decision-making fo maximizing the organizational benefits?

By adhering to the ISO 21502 project management guidelines, organizations and project managers can: convert their ideas into quantifiable or abstract deliverables, effectively manage and involve stakeholders during the project development and implementation processes and projects, Launch, strategize, execute, monitor, and conclude projects with well-defined objectives, scope, and resources, regulate modifications to projects, navigate organizational and societal shifts that influence projects, Perform risk evaluations related to the project and address identified risks, learn project management activities.

The implementation of Strategic Project Management and servant Leadership in Manufacturing PSUs affected by ISO 9001:2015 aligns with ISO 21502:2020. This reflects a highly sensitive and wise decision-making process by top management and requires professional expertise to incorporate the standards within the organization. Training is necessary to enable a project team to practice project management standards and develop professional expertise to achieve the desired goal. In Indian public sector units (PSUs), servant leaders prioritize the development of all personnel to execute projects and generate profits successfully. Therefore, servant leaders should exemplify high character and ethical values. (Thanh Nguyen Hai, 2021) stated that the Servant leadership style is more suitable for the public sector and always emphasizes mutual benefits, facing challenges of developing quality leaders with more transparency, accountability, and control of stakeholders. Training leaders in servant leadership for the public sector takes time. This required more proactive decision-making and developing personal qualities and dedication services towards the organization and personnel.

2. *How is Servant Leadership in Strategic Project Management impacted by ISO 9001:2015 in Indian manufacturing public sectors?*

The organization should maintain all necessary project documentation that is related to project goals and objectives aligned with organizational strategy and business objectives, and also measure the project process performance and its evaluation on successful completion of the project. It is part the of ISO 9001:2015 audit. The project management establishes project objectives relevant to organizational strategy and the quality objectives (ISO 9001:2015, page 5) shall be:

- Be consistent with the organizational quality policy
- Be measurable;
- Consider applicable requirements;
- Be relevant to the conformity of products and services and the enhancement of customer satisfaction
- Be monitored;
- Be communicated;
- Be updated as appropriate

When planning the project management how to achieve the project objectives and quality policy, the organization shall determine (ISO 9001:2015, page 5):

- What will be done;
- What resources will be required;
- Who will be responsible;
- When it will be completed; and
- How the results will be evaluated.

ISO 9001:2015	ISO 10006:2017[E]	ISO 21500:2012	ISO 21502:2020
Quality Management Systems - Requirement	*QM - Guidelines for quality management in projects*	*Guidance on project management*	*Guidance on project management*
Cl.No.5: Leadership	Cl.No.5: Management responsibility in projects	Cl.No.3.3: Project management, 3.6: Project governance, 3.8: Stakeholders and Project Organizations	Cl.No.5: Prerequisites for formalizing project management
Cl.No.8: Operations	Cl.No.7: Products/ Services realization in projects	Cl.No.3.7: Projects and operations	Cl.No.6: Integrated project management practices; Cl.No.7: Management practice for a project
Cl.No.10.3: Continual improvement	Cl.No.8.3: Improvement	Cl.No.4.3.8: Collect lessons learned	Cl.No.7.18: Lessons learned
Defines a **process** as *"a set of interrelated or interacting activities that use inputs to deliver an intended result"*	-	-	Defines a **practice** as a *"way of doing something that is the usual or expected way in a particular organization or situation."*

Table 17: Relationship between Servant leadership in strategic project management impacted by ISO standards

Sub questions:

a. *How is the Servant leadership style unique among all other leadership styles? How Servant leadership style is more suitable for Project Management?*

Servant leadership is a unique style for serving the team and organization first. This leadership style's main motto is to think about others instead of self-benefits. It is purely based on morals and ethics to realize benefits, project goals, and objectives. Servant leaders know the root cause of problems and provide the best solutions by using wisdom skills and giving guidance and support effectively. Drive both personnel and organization and serve them in parallel. Servant leadership is a great theory for middle-level managers to serve their team or followers first, rather than lead, and the most suitable style of leadership in project management is to influence, empower, and motivate personnel and lead them toward organizational targets and achievements. The servant leader as project

manager feels and operates as a part of the team supports teamwork, and recognizes and appreciates all team efforts. This type of leader develops values and a culture of service for the personnel, organization, and customer. Servant leaders of project managers always encourage, engage, enforce, and empower the team efficiently. They develop followers with MESPI skills (Mental, Emotional, Spiritual, Physical, and Intellectual).

b. *Does the Servant Leader as a project manager work for both personnel as well as operational growth?*

The Servant leadership of the project manager function is to serve the personnel for their growth and empower one side and parallel on the other side helping an organization to formulate the strategic framework, communication strategy, roles and responsibilities & authority, management commitments, and wisdom decision-making capability for organizational benefits. The success of any project depends on the goals/objectives, project strategy, planning & executing, effective communication, and team performance, and critical decision-making, Servant leadership in strategic project management has a special skill to act as a bridge between low-level management and top-level management very efficiently and successfully to execute projects and maintain sustainability in the organization. The following conceptual framework for servant leadership of the project manager to fill the gaps and communication between personnel and top management serves to realize benefits and profits.

Middle-level management

| Low-level Management | | Servant Leadership of the project manager act as a bridge | Top-level Management |
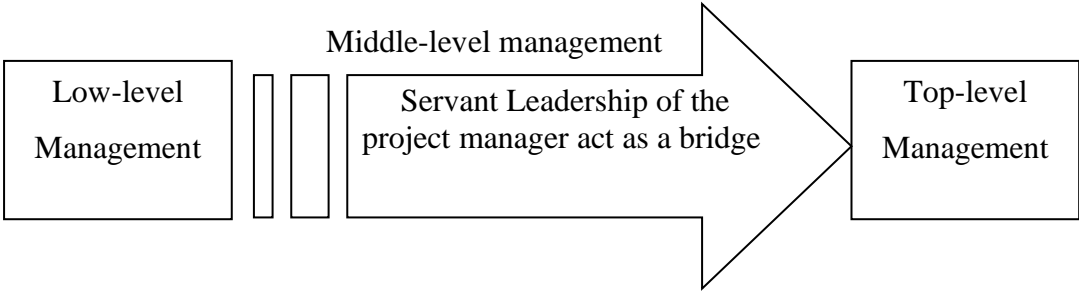
Figure 39: Conceptual framework for servant leadership of the project manager

This research study results stated that the importance of the servant leadership of project managers is to develop teams, recognize teamwork, and fulfill team needs, personnel growth, innovation technology, and stakeholder satisfaction. The research study shows 181 (43.7%) out of 412 participants stated that the servant leadership of project managers affects the three areas of organizational culture ie., first personnel, second values, and third vision for business strategy.

3. *Which clause of ISO 21502:2020 has the greatest impact on the success of project management?*

The new standard ISO 21502:2020 (practice-based approach) was formed from ISO 21500:2012 (process-based approach) and it is aligned with the other series of documents. This new standard ISO 21502:2020 has four main clauses, those are:

- Clause no. 4: Project management concepts

- Clause no. 5: Prerequisites for formalizing project management

- Clause no. 6: Integrated project management practices

- Clause no. 7: Management practices for a project

ISO 21502:2020 states that "*a project's objectives can be achieved through a combination of* **deliverables, outputs, outcomes, and benefits**, *depending on the project's context and the governance provided.*"

It also notes that "*benefits realization is typically the responsibility of organizational management. This management may utilize the project's deliverables to align benefits with the organization's strategy. The project manager should consider the benefits and their realization, as they will influence decision-making throughout the project life cycle.*"

*Project management involves integrating various **practices** to initiate, plan, monitor, control, and close a project. It includes managing the resources assigned to the project and motivating team members to achieve its objectives. Project management should be carried out through a cohesive set of **processes** and methods, incorporating the necessary **practices** tailored to each specific project.* All Clause nos. 5, 6, & 7 are highly impacted project success in organizations. As per Table 17 leadership and project management are required for project success.

Sub questions:

a. *What is a Servant Leader cum Project Manager's key roles and responsibilities as per ISO 21502:2020?*

The role of the servant leader cum strategic project manager plan all project activities, undertake activities and tasks within the context of projects, and lead the project team efficiently. They will act as a bridge to fill the gaps between lower management and top management in an organization. They provide their service for projects and personal and organization in parallel. They have special qualities are like like Interpersonal relationships, emotional Intelligence, trust, decision-making, active listening, empowerment, empathy, resilience, stewardship, self-realization, emissary, and resolution for achieving project success. Define the project objectives, scope, schedule, and budget, identify, assess, treat, and mitigate risks, engage, and effectively communicate with stakeholders, and manage the overall implementation of the project.

Servant Leaders cum Strategic Project Managers play strategic skills and qualities in their roles are listed below:

1. To deliver the projects on time and schedule as an operational process leader.

2. To build, motivate, and cooperate with the project team as a Servant leader.

3. To create business results by contributing values to an organization as a strategic business leader.

4. To achieve the significance of multi-business while developing various processes, products, and services, Project Management with Leadership plays a crucial role in every organizational growth.

5. Leadership is an important attribute required for an organization to drive the process, personnel, and technology by doing the right things effectively.

A Servant Leader as a Strategic Project Manager satisfies all the above leadership qualities. In addition to the above, the leadership also should have some more characteristics like Resolution, Self-realization, Moderate act, Adaptability, Critical thinking, Inter-Personnel Relationships, and Wisdom to lead personnel more effectively and to support strategically between personnel, project (or) program objectives, and organizational objectives for future company's benefits.

b. *Which of the Project Management processes has the highest impact on project success?*

Project planning is a crucial part of the project management process focused on creating a details plan from knowledge and experience that outlines the septs and resources necessary to achieve the project's objectives, which include developing integrated project plans, identifying the project scope, establishing a timeline, and assigning tasks and resources. Budgeting for the project. effective communication & documentation, a risk management plan to monitor and control by an iterative process of risk identification, assessment, and treatment, and the project organization provides an adequate procurement plan & control document and conducts regular review of the procurement progress, the results will be considered in the progress evaluation. During

the project planning phase, the following should be considered to prepare the project management plan:

1. Refer to customer requirements

2. Define project process and activity dependencies

3. Prepare project organizational structure

4. Project planning processes integrate with:

5. Plan and conduct reviews regularly

6. Define key performance indicators

7. Resi a plan for the remaining work to identify risks and opportunities

8. Prepare project evaluation reports and communicate to all project stakeholders

This case study recommends implementing ISO 21502:2020 in PSU for project success. Achieving this objective requires training for project teams to understand the significance of the project environment and embrace new challenges at PSU.

CHAPTER VI: SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

This research study, presented in this chapter, examines the implementation of Strategic Project Management and Servant Leadership within the framework of ISO 21502:2020, demonstrating alignment with ISO 9001:2015 standards. The integration of Servant Leadership principles with Strategic Project Management under ISO 21502:2020 in manufacturing public sector units (PSUs) can be assessed through the following key dimensions:

- **Accountability and Responsibility**: Ensuring leadership accountability and responsibility for the effectiveness of project management practices.

- **Alignment with Organizational Vision**: Establishing and aligning project vision, mission, goals, and objectives with the strategic direction of the organization to reinforce organizational purpose.

- **Integration with Business Processes**: Embedding project management requirements and practices within the organization's core business processes.

- **Implementation of Risk-Based Practices**: Promoting risk-based thinking and robust project management practices to support project stability and success.

- **Stakeholder Engagement**: Actively engaging stakeholders and managing their expectations throughout the project lifecycle.

- **Balanced Stakeholder Perspectives**: Considering and balancing the diverse interests and perspectives of all stakeholders.

- **Effective Communication**: Maintaining clear and consistent communication channels internally and externally to support project objectives.

- **Efficient Use of Resources**: Optimizing resource allocation to achieve maximum efficiency and effectiveness.

- **Organizational Efficiency**: Streamlining processes and eliminating waste to enhance organizational efficiency.

- **Scope, Budget, Schedule, and Quality**: Adhering to defined scope, budget, timeline, and quality standards to meet project deliverables.

- **Training and Skill Development**: Providing necessary training and developing essential skills for project management.

- **Interpersonal Skills for Project Teams**: Cultivating key interpersonal skills (e.g., leadership, team building, motivation, communication, influence, decision-making, cultural awareness, negotiation, trust building, conflict management, coaching) among project managers and team members to effectively achieve project goals.

- **Engagement and Support of Project Teams**: Actively engaging, directing, and supporting project teams to enhance the effectiveness of the project management system and foster continuous improvement.

- **Risk Management and Visibility**: Ensuring proactive risk management practices and transparency to mitigate potential project risks.

- **Alignment and Control of Stakeholder Elements**: Maintaining alignment, control, and accurate reporting related to stakeholder elements and their interactions with the project.

- **Benefit Realization**: Focusing on the realization of project benefits to ensure alignment with strategic organizational goals.

This study provides a comprehensive analysis of how Servant Leadership and Strategic Project Management principles, under the guidance of ISO 21502:2020, can drive improved project outcomes in manufacturing PSUs by fostering a culture of accountability, strategic alignment, and continuous improvement.

The Role of Servant Leadership in Strategic Project Manager

The purpose of this research is to examine the impact of servant leadership strategies and competencies of strategic project managers on the success of projects in the public manufacturing sector in India. For this study, data were collected through a survey involving 412 participants from both public and private sectors in India. Among these, 381 participants included project managers, senior project managers, heads, general managers, and executive directors specifically from the public sector.

The role of the strategic project manager as a servant leader involves unique competencies essential for managing projects, personnel, and processes. This includes planning project activities, executing tasks within the context of projects, and leading the project team efficiently. Key responsibilities also include defining project objectives, scope, schedule, and budget; identifying, assessing, treating, and mitigating risks; engaging with stakeholders; effectively communicating; and managing the overall implementation of projects. Servant leadership in strategic project management encompasses various skills and qualities, which are listed below:

1. To deliver the projects on time and schedule, in line with quality and other specifications as an operational process leader.

2. To build, motivate, and cooperate with the project team as a Servant leader.

3. To create business results by contributing values to an organization as a strategic business leader.

4. To achieve the significance of multi-business while developing various processes, products, and services, Project Management with Leadership plays a crucial role in every organizational growth.

5. Leadership is an important attribute required for an organization to drive the process, personnel, and technology by doing the right things effectively.

Servant leadership is vital in strategic project management for public sector projects, as the influence of diverse stakeholders directly impacts project success. Public sector projects need analysis, as servant leaders of project managers often have to suppress elements to remain within budget. A lack of emotional leadership competence can affect the project management system and the implementation of project goals (Asare, 2016). Servant leaders as strategic project managers effectively plan, lead teams, and solve unexpected problems very efficiently during project execution.

This study focused on manufacturing units, specifically within the public sector, to identify necessary changes and reforms in standards, guidelines, and policies. It aimed to enhance the quality of leadership to ensure project success. Servant leadership in strategic project management is essential for effective project execution, outweighing technical and soft skills. Moreover, the performance of public sector projects in India is comparatively poorer than in other sectors due to a lack of skills and non-availability of resources (Ahmed & bin Mohamad, 2014b).
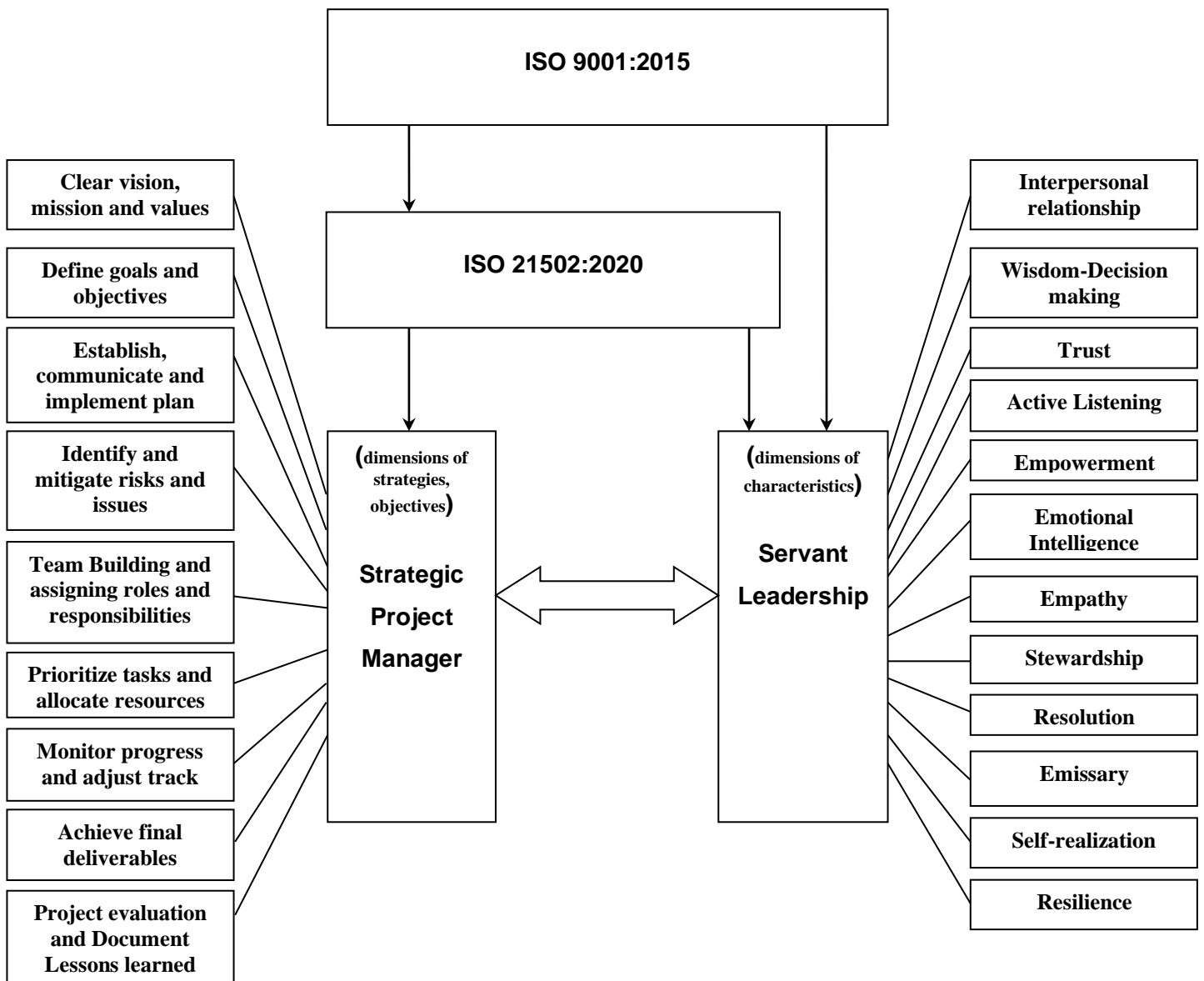
Figure 40: Successful implementation of Servant Leadership of Project Manager Model in PSUs

Research indicates that the success of a project is closely linked to a combination of servant and transformational leadership styles used by project managers. These managers should be attuned to their team members' feelings and capable of recognizing their strengths and weaknesses. By motivating individuals appropriately and influencing them positively, servant leadership in project managers can enhance overall organizational performance. The Public sector organizational

performance assesses a company's achievements against its goals and objectives and mainly focuses on financial performance, market performance, and stakeholder value performance. Success relies on its strong performance, employee satisfaction, and dedication. Project managers with high emotional intelligence positively influence their teams and are more enthusiastic about tackling challenging tasks (Riaz Ahmed, 2021).

Primary Characteristics and Definitions of Servant Leadership in Strategic Project Management:

	Characteristics	Definitions (abilities to)
1	Empathy	Explore things from another person's viewpoint with an open mind and solid reasoning.
2	Active Listening	Discernment to understand perspective deeply through communication.
3	Stewardship	Embrace the responsibility to decisively guide and lead people and organizations in trust for the greater good.
4	Emotional Intelligence	Appraisal, expression, and regulation of emotions in self and others (J.D. Mayer and Salovey, 1997)
5	Resolution	Address followers' problems and implement the best solutions efficiently for their development; conflict resolution.
6	Self-Realization	Understanding our strengths and weaknesses can enhance our ability to serve others effectively.
7	Inter-Personnel Relationships	Communication, problem-solving, influence, recognition, motivation, collaboration, quality teamwork, openminded, inspiration for a common goal,
8	Wisdom Decision-making	Document all trustworthy strategies, decisions, and actions, fostering a culture of transparency and accountability to eliminate any regrets down the line.
9	Trust	Emphasizing reciprocal sharing, ensuring accessibility, promoting transparency, fostering accountability, and enhancing the development of people's skills to drive success.
10	Empowerment	Authorise responsibilities and expect accountability
11	Emissary	Negotiate with high communication & soft skills, messenger, influence, and represent to gather information, opinions, or feedback to make sound decisions.
12	Resilience	Handling high-pressure situations, risks, and criticism effectively, cultivating self-awareness, adaptability, optimism, peace & harmony mindset in challenging environments.

Table 18: Characteristic Definitions of Servant Leadership in Strategic Project Management

The Researcher highlighted that servant leaders as project managers motivate their teams positively and develop future leaders cum managers successfully. Projects are typically deemed successful when they meet their time, budget, scope, and goals/objectives. However, it is also crucial to properly identify and measure additional factors that contribute to project success, such as quality, resources, risks, procurement, communication, stakeholder experience, and documentation. These elements significantly impact the overall success of a project. Servant leadership as project manager skills establish a significant positive communication between PSU Management and team members to execute project strategy towards organizational strategy.

A Servant Leader as a Strategic Portfolio Project Manager satisfies all the above leadership qualities. In addition to the above, the leadership also should have some more characteristics like Resolution, Self-realization, Moderate act, Adaptability, Critical thinking, Inter-Personnel Relationships, and Wisdom to lead personnel more effectively and to support strategically between personnel, project (or) program objectives, and organizational objectives for future company's benefits. Effectively handling high-pressure situations and criticism is essential. By cultivating self-awareness, adaptability, and optimism, you can foster a mindset prioritizing peace and harmony, leading to better outcomes in challenging circumstances.

Project management monitoring, measurement, analysis, and evaluation practices

The organization should systematically evaluate the processes, performance, and effectiveness of its project management system against established objectives. Documented information should be identified, maintained, and retained as evidence of monitoring and measurement outcomes. During the project planning process, the following considerations are essential:

- **Identification of Monitoring and Measurement Needs**: Define the specific project management processes and controls that require monitoring and measurement to ensure effective oversight.

- **Methodologies for Monitoring and Evaluation**: Establish appropriate methods for monitoring, measurement, analysis, and evaluation, to obtain reliable and valid results.

- **Timing of Monitoring and Measurement**: Determine the frequency and timing of monitoring and measurement activities to ensure timely data collection and response.

- **Assignment of Responsibilities**: Identify individuals or teams responsible for conducting monitoring and measurement to maintain accountability.

- **Timing of Analysis and Evaluation**: Define when the collected monitoring and measurement results should be analyzed and evaluated.

- **Assignment of Analysis and Evaluation Roles**: Specify the roles or individuals who will analyze and evaluate these results to ensure accurate interpretation and actionable insights.

By addressing these elements, the organization can enhance the rigor of its project management evaluation process, ensuring alignment with strategic objectives and fostering continuous improvement.

Practice approach of ISO 21502:2020 model

This research study aims to introduce effective frameworks and templates to enhance ongoing projects through improved project management and leadership tools and techniques, leading to successful outcomes. Implementing these changes at the departmental level requires organizational support and approvals.

My goal is to raise awareness among all employees regarding the successful execution of quality projects, products, processes, or services that positively influence organizational performance. A

straightforward solution to quality-related challenges is the implementation and improvement of ISO 9001:2015 QMS procedures, which foster continual enhancement in project quality and customer satisfaction.

ISO 21502:2020 is a required international standard in manufacturing to improve project performance techniques. In the ever-changing world, it is important to implement project management to ensure the organization's excellence and consistent and successful project deliveries. Project management standards have evolved and are continuously updated to provide excellent best practices for project management concepts, foster continuous improvement of the environment, and realize the benefits. The researcher emphasized that many prerequisites must be considered to establish and enhance project management structures and methods before creating the appropriate project environment. According to (Monassi, 2021) Requirements for formalizing the project management checklist of organizational management focus on developing project management internally through continuous improvement. It enhances capabilities that can be defined in various ways, such as project management maturity.

This study also contributes to improving operational performance as part of continual improvement and the relationship between ISO 9001:2015 and ISO 21502:2020 for Indian Manufacturing Public Sectors. According to the results of the analysis I conducted: Implementation of ISO 21502:2020 in Indian Manufacturing PSUs is required to improve the project performance and ultimately result in the growth of organizational performance. Hence, embracing Strategic Project Management and Servant Leadership underscores the significance of servant leaders embodying the attitudes and actions of strategic project managers shown in Figure 41. They should prioritize selflessness and thoughtfulness, concentrating on attaining organizational objectives and nurturing the capabilities of their team members. Servant leadership in project management ensures the successful completion

of projects through the right decisions at the right time by the right people in the right place. The advantages of servant leadership in project management for the organization are as follows:

1. Set the clear and achievable goals and targets

2. Deliver the project on time, in line with quality

3. Build, motivate, and cooperative team

4. Create business results by contributing values

5. Provide resources and tool

6. Active the significance of multi-business

7. Drive the process, personnel, and technology by doing the right things effectively

8. Spend 90% of their time communicating with all stakeholders

9. Establish KPIs related to resource utilization and improvement

10. Regular monitoring and control

11. Encourage regular constructive feedback sessions

12. Lead by example.
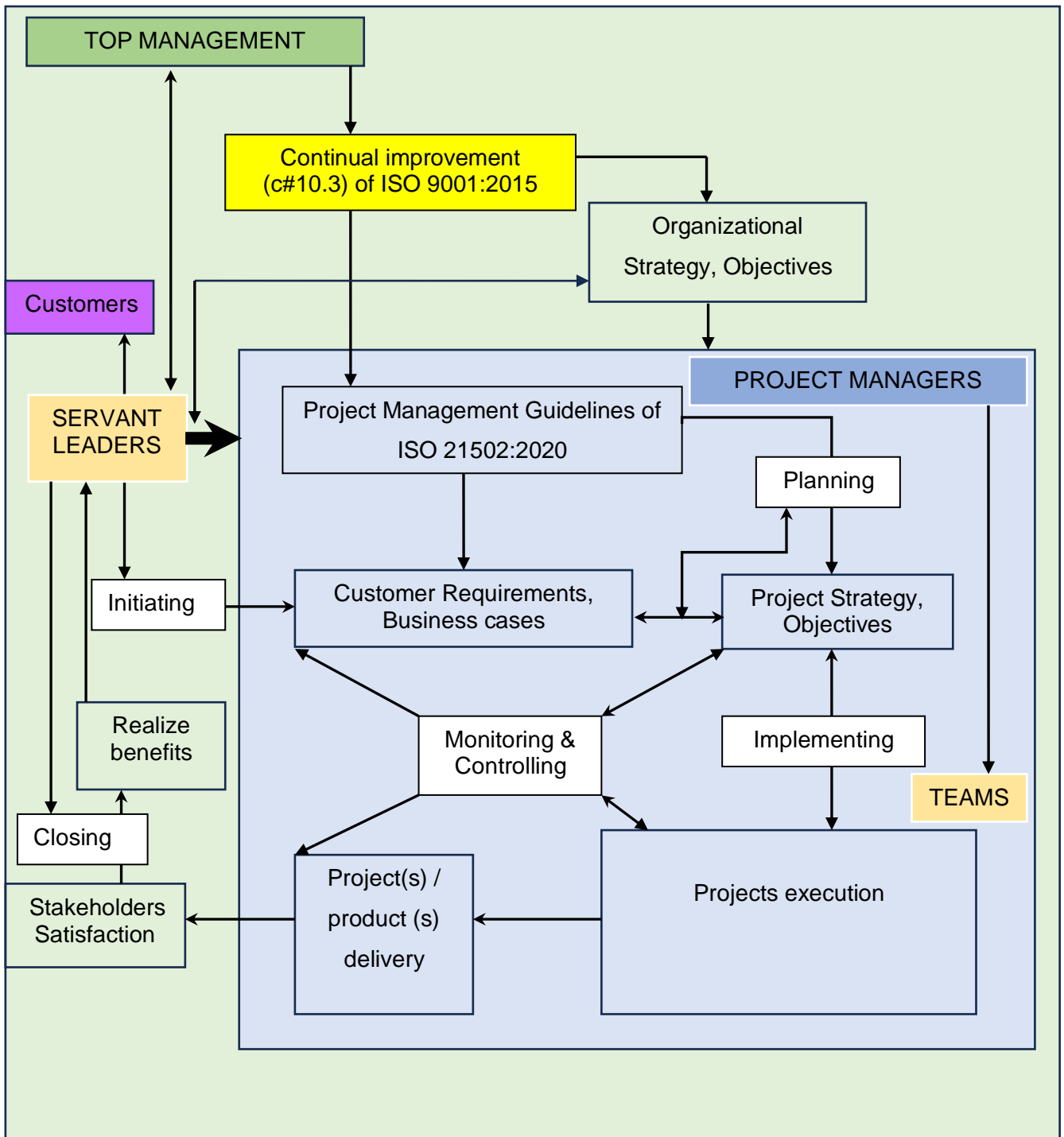
Figure 41: Implementation of Practice approach of ISO 21502:2020 model

Considerations for Implementing Project Management

According to ISO 21502:2020[E], organizations must consider several prerequisites before establishing a formal project management environment. Implementing project management should itself be approached systematically—as a distinct project, program, or portfolio. Critical factors for assessment include:

a) The type, size, frequency, and complexity of both current and anticipated projects;

b) The balance of positive versus negative impacts on the organization, particularly regarding strategic objectives, vision, mission, and other organizational considerations;

c) Preparations for implementing project management, such as assessing human resource needs, organizational structure, and necessary changes to systems and processes;

d) The potential effects on customers and other stakeholders.

Top management, including executives and senior leaders, plays a crucial role in establishing an environment that fosters continuous improvement in project management practices. Their responsibility is to ensure the ongoing suitability, adequacy, effectiveness, and efficiency of project management within the organization. To encourage continuous improvement, organizations should initiate improvement activities as needed. Regular evaluation of project management progress can yield valuable insights, furthering the development of enhanced processes, frameworks, methods,

and techniques. This evaluation should be integrated with the governance framework and communication strategies.

When aligning project management practices and systems, several organizational factors should be considered:

- Existing functional and physical structures;

- Potential conflicts between procedures, processes, plans, and systems;

- Established communication methods and cycles;

- Availability of technology and accessibility for all stakeholders;

- Operational context specific to the organization;

- The need to balance and optimize social, economic, and environmental objectives;

- Administrative and authorization systems;

- Sustainability and oversight requirements.

This research study found that, as illustrated in Figure 38, 201 out of 412 participants (48.6%) recommend adopting the ISO 21502:2020 standard for project management in Public Sector Undertakings (PSUs). This study aims to raise awareness of the benefits of implementing the ISO 21502:2020 standard in organizations. The data indicate a growing interest among participants in understanding and adopting this standard.

The study emphasizes the development, implementation, maintenance, and enhancement of servant leadership within strategic project management. It explores project organization, roles, responsibilities, and process and method definitions required to achieve organizational objectives and results. A unique aspect of this research is its focus on collaborative project control practices, which are identified as key to successful project delivery.

6.2 Implications

One important consideration for organizations is the cost associated with implementing the new project management standard ISO 21502. Many public sector entities believe that adopting the ISO 21502:2020 standard provides greater benefits compared to other alternatives. Another key aspect to consider regarding ISO is the importance and reliability of the certification audit. Additionally, it is essential to build an internal audit team through ISO training to ensure quality processes and effectively evaluate project performance. Training is also required for all project teams to raise awareness about leadership and project management topics impacted by ISO 21502:2020.

This research study introduces effective frameworks and templates aimed at enhancing current projects through strategic project management and servant leadership tools and techniques for successful implementation. Adopting these changes at the departmental level requires organizational support and approval.

The primary goal of my research is to raise awareness among employees about project management strategies, methods, tools, and techniques that contribute to the successful execution of quality projects, products, processes, or services, ultimately impacting organizational performance. A straightforward solution to quality-related issues is to implement and refine ISO 9001:2015 QMS procedures to align with ISO 21502:2020, which promotes continual improvement in project quality and customer satisfaction.

This study emphasizes the development and application of servant leadership within strategic project management, focusing on project organization, defining roles and responsibilities, and outlining processes and methods to achieve objectives. The uniqueness of this research lies in its approach to project control practices that foster collaboration for successful delivery.

Additionally, this research addresses managing various activities, including project planning and tracking. Key factors include monitoring time (planned vs. completed schedules), costs (planned vs. completed expenses), work progress (planned vs. completed tasks), and cost estimations. By utilizing Earned Value Management techniques, the study aims to improve the project success rate.

The project success rate of 100% is too much to expect but, as per research results, the researcher can achieve at least 75% by proper planning, monitoring, controlling, and the right decision-making in procurement management. The material procurement stage takes much time taking process in the manufacturing public sectors. The Projects are often failing due to a lack of awareness of the procurement process and decision-making skills. Project Procurement Management (PPM) and Resource Management (RM) are a big challenge for public sectors with a set of limitations and vigilance rules. PPM requires a framework that includes initiation, planning, contract writing, executing procurement, or purchase orders issued by authorized project team members, closing, and completing. Effective Resource Management (RM) is essential for success, requiring a robust framework that streamlines the identification, planning, allocation, and release of resources for projects. By implementing this framework, organizations can maximize efficiency and ensure that every project has the necessary resources to thrive. PPM & RM are necessary processes to execute products, services, or results needed from outside depending on the nature of the project for the project team to complete the project in time. PPM & RM are under research to make organizational benefits. These are all common causes of project failure. Adequate employee training, project management strategies, solid project planning, and management transparency lead to a successful project.

Challenges of implementing ISO 21502:2020:

The challenges of implementing ISO 21502:2020 in the Indian manufacturing PSUs are as follows:

1. Project governance and define organizational structure, maturity, and culture

2. Establishment and maintenance of a project management office (PMO) for project planning, monitoring, and controlling

3. Organizational commitment to meet business objectives and customer satisfaction

4. Achievement of project objectives and managing them with organizational strategy & Objectives

5. Standardizing project methods and process

6. Support innovation and values creation

7. Project management information system for analysis and decision-making

8. Optimizing cost, schedule, quality & resources

9. Improving communication and collaboration

10. Improves functional experience, production capability, delivery times, quality management systems, risk management and lessons learned

11. Develop project management knowledge and capabilities

12. Documentation and reporting

6.3 Recommendations for Future Research

This research demonstrates that implementing ISO 21502:2020 for Strategic Project Management and Servant Leadership can help highlight potential limitations, making it a wise decision for top management. This study has shown that further research is needed regarding the Psychology of Servant Leadership in Strategic Project Management and the Trait theory of Servant Leadership in Strategic Project Management. In line with other empirical studies, our research has some limitations. I conducted a case study on one PSU and collected only a few samples from other manufacturing PSUs in India, but I did not cover all manufacturing PSUs in India. Additionally,

further research could be conducted on other core areas such as construction, IT/software, agriculture, education, government, healthcare, mining and exploration, oil & gas, finance, and other services in PSUs in India and other manufacturing PSUs from different countries. Further research can be conducted in various key areas within the public sector. However, no study has dealt seriously with such topics relating to servant leadership in strategic project management impacted by ISO 9001:2015 and ISO 21502:2020 in Indian manufacturing public sector organizations.

This study suggests that future research should conduct empirical investigations on how the personality traits of project teams, team characteristics, team behavior, and personnel commitment influence project success and organizational performance. These factors may vary based on gender, level of education, cognitive abilities, age, and the experience of leaders in managerial roles. Future research should examine the combined effects of transformational and servant leadership in strategic project management through mixed methods, benefiting both personnel and organizations. This research recommends exploring additional qualities of servant leadership skills that are suitable for project management. It suggests further extending the concept of servant leadership in project managers by adopting more quality leadership skills, such as SMART: Strategic, Mentor, Appreciative, Risk Manager, and Teamwork.

6.4 Conclusion

The existing limitations and gaps in the literature have affected the exploration of servant leadership's role within project management. Servant leadership in this context represents a relatively novel area of study, with the potential to foster the development of skills that drive business growth by enabling the successful execution of multiple projects through a cohesive and effective team. Team selection, therefore, is critical to project success, as the composition and capability of the team directly impact project outcomes. Despite the inherent complexities in

delineating leadership and project management roles, empirical research is essential for clarifying the roles and responsibilities of servant leaders among strategic project managers to reduce the risk of project failures.

Servant leadership as applied to strategic project management is particularly demanding within Indian public-sector manufacturing, where project managers must possess advanced interpersonal and management skills to lead teams and execute a substantial volume of projects concurrently. Establishing best practices is crucial to mitigate the high risk of project failure in this sector, ensuring project goals are met effectively and with long-term value. Such best practices include:

1. Make a concrete project plan and periodically review it

2. Establishing clear and realistic goals using methods like SMART goals

3. Conducting smart risk management

4. Determining resources and making a budget for the project

5. Using technology for seamless project management tools like WBS, resource allocation, GANTT charts, project scheduling models, project cost estimating, cost management

6. Good leadership skills

7. Monitoring progress and communication effectively

8. Automating tasks to boost productivity and service quality

9. Train personnel to meet project objectives

The roles of Servant Leadership and Strategic Project Managers are distinct. This study examines the integration of these two roles into a single position. Further research is needed to enhance the application of servant leadership in project management to ensure project success. Any leadership requires intelligence, trustworthiness, humaneness, courage, and discipline. Relying only on intelligence can lead to rebellion. Emphasizing humaneness alone can result in weakness. Placing excessive trust can lead to folly. Depending solely on courage can result in violence. Excessive

discipline and sternness can lead to cruelty. When all five virtues are present and appropriately applied, one can effectively serve the organization and lead the team (Sun Tzu, 2010).

This research study explored and demonstrated that implementing ISO 21502:2020 connected with ISO 9001:2015 for practicing Strategic Project Management and Servant Leadership is a wise decision for top management. The unique combination of Strategic Project Management & Servant Leadership has been recognized as an important field in Indian Manufacturing Public Sector Units since the Manufacturing process involves many quality processes & procedures to complete the activities. Maintaining & monitoring the quality key processes requires more quality procedures and serving & leading the personnel requires twelve more Servant Leadership quality skills & values: Empathy, Active Listening, Stewardship, Emotional Intelligence, Resolution, Self-Realization, Inter-personnel relationships, Wisdom decision-making, Trust, Empowerment, Emissary and Resilience and is suitable in PSUs. This research study compellingly demonstrates that the integration of Transformational leadership and strategic project management, as emphasized by senior executives, is crucial for ensuring project success.

The implementation of ISO 21502:2020 project management standards in Indian manufacturing PSUs influences project success by applying strategic methodologies and priorities to achieve project objectives and business strategy. The potential benefits of implementing ISO 21502:2020 for manufacturing Indian PSUs are reduced cost, increased revenue, enhanced project success in terms of adherence to budget, schedule, and quality, competitive advantage, improved project performance levels, improved the company's reputation, improvement of management information system, motivated employees toward the firm goals, improvement regarding the quality of projects, process, documentation, and communication. Adoption of the best practice of project management

as per 21502:2020 in the Indian manufacturing PSUs gives positive results in project success and subsequently business growth:

1. Plan the work by creating a project charter document

2. Creates a planning horizon

3. Have a project kick-off meeting

4. Keep a watch on warning signs

5. Ensure that the sponsor approves the scope-change request

6. Safeguards against scope-creep

7. Identify risks during planning

8. Lookout for potential risks throughout the project

9. Understand the difference between the risks and issue

10. Have a project post-mortem meeting

11. Conducting Internal audits to check the project performance and evaluation

This case study strongly recommends the positive implementation of ISO 21502:2020 at PSU to achieve project success. The benefits include reduced project costs, increased revenue, improved planning, monitoring, and control, enhanced communication and team collaboration, optimized resource utilization, maximized value creation, and effective knowledge transfer through a lessons-learned framework. To achieve these objectives, training for project teams is essential to help them understand the significance of the project environment and embrace new challenges at PSU.

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QUESTIONNAIRE

Section 1: characteristics of demographics data

1) Participant's Designation

      a) Lower Management (Graduate Trainee to Manager)

      b) Middle Management (> Manager to Additional General Manager)

      c) Top Management (Head of the Division to Executive Directors)

      d) Directors and C & MD

      e) Others

2) Years of Experience

      a. < 5 Yrs

      b. 5 - 10 yrs

      c. 10 - 20 yrs

      d. 20 - 30 yrs

      e. 30 - 40 yrs

      f. > 40 yrs

3) Gender

      a) Male

      b) Female

      c) Prefer not to say

4) Age Group

      a) < 30 years

      b) 30 - 40 years

      c) 40 - 50 years

      d) 50 - 60 years

      e) > 60 years

5) Geographic Location _____

6) Type of Organization

a) Private

b) Public Sector Unit (PSU)

c) Government

d) Others

Organization Name: _____

7) Core area of organization

a) Manufacturing & Production

b) IT / Software

c) Healthcare

d) Construction

e) Services

f) Agriculture

g) Mining and Exploration

h) Others

8) Employee strength (On rolls) of your organization

a) 0-100

b) 100-500

c) 500-1000

d) 1000-2500

e) 2500-5000

f) 5000-7500

g) 7500-10000

h) >10000

9) Your company's annual sales (in INR) (Approximately)

a) < 100 Crs

b) 100 - 1000 Crs

c) 1000 - 2500 Crs

d) 2500 - 5000 Crs

e) 5000 - 7500 Crs

f) 7500 - 10000 Crs

g) > 10000 Crs

10) Participant's total years of work experience in Project Management & Leadership

a) < 5 yrs

b) 5 - 10 yrs

c) 10 - 15 yrs

d) 15 - 20 yrs

e) 20 - 25 yrs

f) > 25 yrs

11) Number of projects are you currently managing and leading

a) < 5

b) 5 – 10

c) 10 – 20

d) 20 – 50

e) > 50

12) Percentage of projects are successful as per your strategic plan

a) 0 - 10%

b) 10 - 25%

c) 25 - 50%

d) 50 - 75%

e) 75 - 100%

13) Your team size _____

14) Do you use any tools & techniques for Project Management & Leadership

a) Yes

b) No

c) Maybe

15) As a successful project manager or leader, why projects still fail?

a) Lack of practicing Project Management Standards and techniques

b) Lack of Leadership techniques

c) Lack of project environment

d) Others

16) Which skill(s) are mostly required to boost your project success rate? choose as many as applicable

a) Technical skills

b) Project Management Skills

c) Soft Skills

d) Continuous Learning Skills

e) Leadership Skills

17) In the Project Management process, which major changes can impact the success of your project? choose as many as applicable

a) Integration

b) Scope

c) Cost

d) Resources

e) Time

f) Quality

g) Risks

h) Procurement

i) Communication

j) Stakeholders

k) Experience

l) Documentation

18) What tools are being used for project planning and monitoring in your organization?

a) Gantt Chart

b) PERT Chart

c) MS Project

d) Critical Path Method (CPM)

e) Others

19) In the Project Management life cycle, which process group highly influences your project's strategy?

    a) Initiating

    b) Planning

    c) Implementing

    d) Monitoring and Controlling

    e) Closing

20) Does your organization use any Project Management Software?

    a) Yes

    b) No

    c) Maybe

Section 2: Understanding the importance of Project Management and Leadership impacted by ISO 9001:2015 International Standard

21) To what extent do you agree with the following statement:
To measure and improve project progress and performance, International Project Management Standards are essential to implement in manufacturing organizations. How do you rate it?

	1	2	3	4	5	
International Project Management Standards are not required to measure and improve project progress and performance	○	○	○	○	○	International Project Management Standards are extremely required to measure and improve project progress and performance

22) Please indicate which of the following ISO standards, your organization is practicing currently for measuring Project progress and performance evaluation

    a) ISO 9001:2015 (QMS - Requirements)

    b) ISO 10006:2017 (QMS - Guidelines for Quality Management in Projects)

    c) ISO 21502:2020 (Guidance on the Project Management)

    d) Others

23) To what extent do you agree with the following statement: ISO 9001:2015 International Standard does not cover the concepts and practices for project management that are essential for project-based organizations.

	1	2	3	4	5	
ISO 9001:2015 specifies only Quality Management System-Requirement and measures operational performance to ensure quality products and customer satisfaction.	○	○	○	○	○	Required to adopt a new International Standard for Project Management separately to practice and improve project level performance effectively and efficiently

24) Please indicate which of the following International Project Management Standards your organization is practising process of measuring Project progress and Performance evaluation

   a) ISO 21502:2020 (Guidance on Project Management), Switzerland

   b) PMBOK (Project Management Body of Knowledge) Guide, PMI, USA

   c) PRINCE2 (PRojects IN Controlled Environments), UK

   d) Not sure

25) The integrated approach of the following ISO International Standards influences quality and success of "Leadership in Project Management" in the Indian manufacturing public sectors

1. ISO 9001:2015 (Clause No.5: Leadership)

2. ISO 10006:2017 (Clause No.5: Management Responsibility in projects)

3. ISO 21502:2020 (Clause No. 5: Prerequisites for formalizing project management)

	1	2	3	4	5	
Poor influence quality and success of Leadership in Project Management	○	○	○	○	○	Strong influence quality and success of Leadership in Project Management

26) How often do your top management review the project management plan

	1	2	3	4	5	
Weekly review	○	○	○	○	○	Monthly review

Section 3: The Art of mixing the combination of strategic project management and servant leadership for project success in the Indian manufacturing PSUs

27) How often do you monitor your team's progress

	1	2	3	4	5	
Daily review	○	○	○	○	○	Weekly review

28) As a project manager/leader, what are your responsibilities for project strategy? choose as many as applicable

   a) Project planning

   b) Project controlling

   c) Project performance & progress

   d) Project budget setting

e) Project reporting

f) Resource management

g) Earned value analysis

h) Risk management

i) Stakeholder communication

j) Team structure

k) Others

29) Imagine your team has some internal issues in finalizing scope, and the project is suffering due to these internal conflicts. What will be your course of action?

	1	2	3	4	5	
Talk to top management directly and inform design limitations & difficulties and request customers for more time to finalize the scope.	○	○	○	○	○	Let us encourage the team to resolve conflicts on their own first to build relationships and improve communication. Sometimes I intervene, know the root cause, and arrange meetings to build collaboration within a team, find solutions, and communicate with customers to understand the exact requirements & feasibility and get the scope approved.

30) How confident are you of the ability of your team to support project success?

a) No confident

b) Little confident

c) Neutral

d) Confident

e) Very confident

31) Imagine that your boss did not recognize and appreciate your role and contribution to the successful project. What do you do?

	1	2	3	4	5	
Seek for new opportunities to prove your contribution	○	○	○	○	○	Still, you work hard more without expecting recognition & appreciation

32) Imagine one of your team members is requesting more time to complete a task and putting the project at risk of missing an important deadline. How would you handle this situation?

	1	2	3	4	5	
As a project manager, know the root cause for more time and assign the task to another efficient team member to complete within time.	○	○	○	○	○	As a project manager, know the root cause for more time and help team members to complete the task on schedule in the interest of the project. If the project requires more resources and time, negotiate with the stakeholders, and change the plans and maximize team potential.

33) What do you decide to prioritize and how do you prioritize projects on multiple projects at once?

	1	2	3	4	5	
Interest of the project, meet project goals within the deadlines and budget constraints	○	○	○	○	○	Interest of the organization, Stakeholder's needs and allocate resources to meet targets and business strategy

34) How do you ensure successful project delivery and overall team satisfaction with every step of the project? Marking on Scale of 1-5 with 1=Strongly Disagree, 2=Disagree, 3= Neither agree nor disagree, 4=Agree, 5=Strongly Agree

	1	2	3	4	5
Project milestones and deadlines met on time	○	○	○	○	○
Project stay within budget	○	○	○	○	○
Scope changes during the project handled effectively	○	○	○	○	○
Our team listen to and incorporate customer suggestions adequately	○	○	○	○	○
Our team get adequate training and support for project-related systems or processes	○	○	○	○	○
Our team achieve the good collaboration and teamwork during the project	○	○	○	○	○
Effectiveness communication with all stakeholders throughout the project	○	○	○	○	○
Successful project deliverables meet the requirement and quality	○	○	○	○	○

35) As a project manager, what's your leadership style?

    a) Autocratic Leadership

    b) Transformational Leadership

    c) Servant Leadership

    d) Democratic Leadership

    e) Transactional Leadership

    f) Delegative or Laissez-faire Leadership

    g) Charismatic Leadership

36) To what extent do you agree with the following statement:
"Servant Leadership is more suitable for middle-level management i.e. Strategic Project Management"

Marking on Scale of 1-5 with 1=Strongly Disagree, 2=Disagree, 3= Neither agree nor disagree, 4=Agree, 5=Strongly Agree

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Unique style for serving team and organization performance	○	○	○	○	○
Purely based on morals and ethics	○	○	○	○	○
Know the root cause of problems and provide solutions, guidance and support effectively	○	○	○	○	○
Realization of benefits, project goals and objectives	○	○	○	○	○
Recognition and appreciation team efforts	○	○	○	○	○
Drive both personnel and organization in parallel	○	○	○	○	○
Feels and operate as a part of team and supports teamwork	○	○	○	○	○
Develop values and culture of service for organization and customers	○	○	○	○	○
Encourage, engage, enforce and empower the team efficiently	○	○	○	○	○
Developing followers with MESPI skills (Mental, Emotional, Spiritual, Physical and Intellectual)	○	○	○	○	○

37) Marking on Scale of 1-5 with 1=Strongly Disagree, 2=Disagree, 3= Neither agree nor disagree, 4=Agree, 5=Strongly Agree, please answer the following, A Servant Leader cum Strategic Project Manager can do better project planning, monitoring and controlling the projects which highly impact success of a project. What do you consider accordingly for your project strategy?

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Clear vision, mission and values	○	○	○	○	○
Define goals and objectives	○	○	○	○	○
Establish, communicate and implement plan	○	○	○	○	○
Identify and mitigate risks and issues	○	○	○	○	○
Team building and assign roles and responsibilities	○	○	○	○	○
Prioritize tasks and allocate resources	○	○	○	○	○
Monitor progress and adjust track	○	○	○	○	○
Achieve final deliverables	○	○	○	○	○
Project Evaluation	○	○	○	○	○

38) Servant Leadership in Strategic Project Management has a special skill to act as a bridge between low-level management and top-level management very efficiently and always believes a promise that " When serving best for team and organization, will serve best for customers also."

	1	2	3	4	5	
Poorly agree	○	○	○	○	○	Strongly agree

39) Marking on Scale of 1-5 with 1=Strongly Disagree, 2=Disagree, 3= Neither agree nor disagree, 4=Agree, 5=Strongly Agree, please answer as a Servant Leader cum Strategic Project Manager, how do you ensure your team is aligned and understood project objectives and deliverables:

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Effective communication in delivery timelines	○	○	○	○	○
Engage and empower team in decision-making	○	○	○	○	○
Enforce plan to update project progress and provide timely feedback	○	○	○	○	○
Conduct regular team review meetings	○	○	○	○	○
Encourage team to be open with core values, feeling of ownership and collaboration	○	○	○	○	○

40) Servant Leadership in Strategic Project Management affects the three areas of organizational culture i.e. first personnel, second values and third vision for project strategy

	1	2	3	4	5	
Poorly agree	○	○	○	○	○	Strongly agree

41) Do you agree, Servant Leaders in Strategic Project Management with higher emotional intelligence maintain a healthier workplace

	1	2	3	4	5	
Poorly agree	○	○	○	○	○	Strongly agree

42) Marking on Scale of 1-5 with 1=Strongly Disagree, 2=Disagree, 3= Neither agree nor disagree, 4=Agree, 5=Strongly Agree, please answer unique characteristic of Servant Leadership in Strategic Project Management

	1	2	3	4	5
Empathy	○	○	○	○	○
Active Listening	○	○	○	○	○
Stewardship	○	○	○	○	○
Emotional Intelligence	○	○	○	○	○
Resolution	○	○	○	○	○
Self-realization	○	○	○	○	○
Inter-personnel relationships	○	○	○	○	○
Wisdom decision-making	○	○	○	○	○
Trust	○	○	○	○	○
Empowerment	○	○	○	○	○
Emissary	○	○	○	○	○
Resilience	○	○	○	○	○

43) Iam satisfied with the leadership style of my Project In-charge/Governance.

    a) Yes

    b) No

    c) Not sure

Section 4: **Implementation of Project Management practices through ISO 21502:2020 influence project performance in Indian manufacturing PSUs**

44) The biggest challenge in adopting Project Management best practices in your organization, what is your role as change catalyst

	1	2	3	4	5	
Collect feedback/suggestions and go for majority decision	○	○	○	○	○	Create awareness to adopt new practices and its benefits

45) To what extent do you agree with the following statement:

"The potential benefit of implementing ISO 21502:2020 standard in the Indian manufacturing PSUs is to reduce project failures and increase revenue"

	1	2	3	4	5	
Poorly agree	○	○	○	○	○	Strongly agree

46) To what extent do you agree with the following statement:

"Implementing ISO 21502:2020 Project Management best practices in your organization is for better planning and controlling can lead to better business decisions in prioritization of tasks, mitigation of risks for project and improves project performance levels"

	1	2	3	4	5	
Poorly agree	○	○	○	○	○	Strongly agree

47) To what extent do you agree with the following statement:

"Implementing ISO 21502:2020 Project Management best practices in your organization is for better communication and collaboration among stakeholders and results customer satisfaction and improves company's reputation"

	1	2	3	4	5	
Poorly agree	○	○	○	○	○	Strongly agree

48) To what extent do you agree with the following statement:

"Implementing ISO 21502:2020 Project Management best practices in your organization is for better process quality helps to optimize the use of resources, maximize the value creation and achieve intended outcomes"

	1	2	3	4	5	
Poorly agree	○	○	○	○	○	Strongly agree

49) To what extent do you agree with the following statement:

"Implementing ISO 21502:2020 Project Management best practices in your organization is for transfer of knowledge in project management thru lessons learned framework"

	1	2	3	4	5	
Poorly agree	○	○	○	○	○	Strongly agree

50) Do you recommend ISO 21502:2020 International standard to practice for knowledge and implementation of project management methods and processes in your organization

	1	2	3	4	5	
Poorly recommend	○	○	○	○	○	Strongly recommend

51) Who is the real-world best servant leader who leads by example?

   a) Lord Sri Rama

   b) Lord Buddha

   c) Lord Sri Krishna

   d) Jesus Christ

   e) Prophet Muhammed P.B.U.H

   f) Others

52) In your opinion, what should be the primary focus of improvement to projects? _____