EVOLUTION OF PROJECT MANAGERS TO PROJECT LEADERS DUE TO ARTIFICIAL INTELLIGENCE

by

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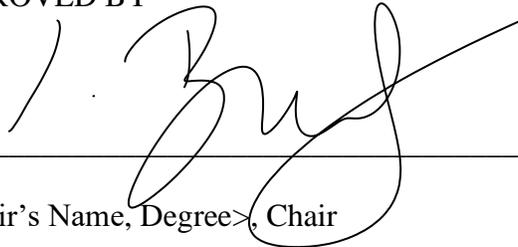SWISS SCHOOL OF BUSINESS AND MANAGEMENT GENEVA

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DEDICATION

I dedicate this research endeavor to all those who seek knowledge, understanding and pushing the boundaries of human understanding forward. To my mentor, whose guidance and wisdom have shaped my academic journey, and to my wife, family and friends, whose unwavering support has been my pillar of strength. This work is a tribute to the countless individuals whose contributions paved the way for scientific progress, and to the hope that my humble efforts may add a small yet meaningful drop in the ocean of human knowledge.

ACKNOWLEDGEMENTS

ABSTRACT

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INTELLIGENCE

Manwendra Singh

2023

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This research explores the evolving role of project managers in response to the integration of

artificial intelligence (AI) into project management practices. Traditionally, project managers

were primarily tasked with administrative functions, but the rise of AI is ushering in a

transformation that demands a shift towards strategic leadership. The objectives of this study are

to investigate the impact of AI integration on project manager's evolving roles.

Key research questions delve into workload changes, required skill sets, perceptions of

leadership transformation, perceived benefits and challenges, and the attitudes of project team

members.

The findings of this research affirms that the increasing incorporation of AI in project

management is indeed driving a fundamental transformation in the role of project managers.

They are transitioning from task-focused managers to Project Leaders who play a pivotal role in

guiding projects towards achieving broader organizational objectives. This research also sheds

light on the changing landscape of project management in the era of AI.

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CHAPTER I:

INTRODUCTION

1.1 Introduction

Project management is an essential function in every organization, a study conducted by the Project Management Institute (PMI) revealed that 93% of organizations view project management as critical to business success and it has evolved over the years (Project Management Institute, 2018). The emergence of artificial intelligence (AI) is changing the way project managers work, and it is transforming the role. Project managers are now expected to be more than just administrators of projects; they need to be thinkers and thought leaders.

The use of AI in project management is a growing trend, with the global market for AI in project management expected to grow from $406 million in 2019 to $1.27 billion by 2027, at a compound annual growth rate (CAGR) of 15.4%. This growth is being driven by the increasing adoption of AI technologies, such as machine learning, natural language processing, and predictive analytics, in project management. According to a survey by PMI, 81% of project managers believe that AI will have a significant impact on project management in the next five years. This highlights the increasing importance of AI in project management and the need for project managers to adapt to this changing landscape.

The evolution in project management practices has significant implications for project management methodologies and approaches, a greater emphasis on data-driven decision-making and continuous improvement. Before we dig deeper, let's understand who is a Project Manager, what they do and how Project Manager is different from Project Leader.

Project Manager

As per Project Management Institute (2019), a Project Manager is an individual responsible for planning, executing, and overseeing a project from initiation to completion. They are accountable for achieving the project's objectives within the constraints of scope, time, cost, quality, resources, and risk. The role of a Project Manager includes defining project goals, creating a detailed project plan, assigning tasks to team members, monitoring progress, managing risks, and ensuring effective communication among stakeholders. The Project Manager is the central figure in project management, ensuring that all project components are aligned to meet the goals and deliverables.

Project Leader

Krahn and Hartment (2018) in their research summarized that a Project Leader is an individual who plays a crucial role in guiding and inspiring a project team to achieve its objectives. While similar to a Project Manager in some aspects, a Project Leader often focuses on the human, strategic and leadership aspects of project management. They are responsible for motivating team members, fostering collaboration, facilitating communication within the team and ultimately achieve growth with greater success.

A Project Leader leads by example, setting a positive tone, and ensuring that the team is cohesive and committed to achieving the goals. They may or may not have formal authority over team members but exert influence through their leadership skills and expertise.

AI is now enabling project managers to automate repetitive, mundane and time-consuming tasks, which allows them to focus on more tactical aspects of project management, such as stakeholder engagement, risk management, and team leadership etc. AI-powered tools and technologies can

analyze data and provide information that enables project managers to make more informed decisions, anticipate risks, and optimize project performance.

According to El Khatib and Al Falasi (2021), AI has become a crucial player in the world of data management and decision-making. Its remarkable precision when handling data is a huge advantage. It significantly boosts the quality of decisions made with its assistance. AI has shown its ability to efficiently handle vast amounts of data, surpassing what organizations relied on, in the past.

According to Gopal (2023) AI and machine learning's correlation abilities are valuable for reducing time and budget risks in projects. When there's a robust data tracking system in place, machine learning algorithms can proactively detect gaps, issue warnings about potential roadblocks, estimate their likelihood, and provide detailed and timely reports by correlating multiple factors. For example, in complex project cost management, relying solely on human oversight can be tedious and error-prone. The most effective approach is to blend AI-generated knowledge with human judgment to make well-informed decisions and manage costs effectively.

Project managers are now expected to take a more proactive and pivotal approach to project management, thinking beyond traditional project boundaries and looking for opportunities to improve project performance and grow the account by up-sell and cross selling.

The evolution of project managers to project leaders has led to a more holistic approach to project management, with project leaders acting as mini-CEOs, responsible for the overall success and growth of the project along with Project team's growth. This shift in the role of project managers has led to the development of new project management methodologies, such as agile and design thinking, that emphasize collaboration, iteration, and continuous improvement.

These methodologies place a greater emphasis on customer-centricity and involve a more collaborative approach to problem-solving.

This shift towards leadership-driven approach will require project managers to possess a wider range of skills and competencies, including strong communication skills, emotional intelligence, adaptability, negotiation skill, thought leadership and creativity. As a result, project managers will need to evolve into project leaders who can inspire, motivate teams, facilitate collaboration, knowledge-sharing, and drive innovation in their projects.

1.2 Research problem

Annually, a staggering sum of approximately $48 trillion is invested in projects. Shockingly, only 35% of these projects are deemed successful, leaving an astounding 65% with wasted resources and unrealized benefits (PMI,2019). A contributing factor to this poor success rate is the antiquated state of technology utilized in project management, with many organizations and managers relying on tools like spreadsheets and slides that have seen little evolution over many years.

In this context, the increasing adoption of artificial intelligence (AI) in project management holds the potential to transform the role of project managers. As AI technology becomes more pervasive in project management, project managers are undergoing a shift from conventional task-centric leadership to improve the project success rate and resource utilization.

Project management encompasses a spectrum of administrative functions with direct implications for an organization's financials. While vital for project success, these tasks can be mundane and resource-intensive for project managers. Leveraging AI technologies can streamline these routine operations, liberating project managers to channel more of their time and

expertise toward strategic thinking, decision-making, and innovation, thereby enhancing and optimizing their "Ways of Working."

1.3 Purpose of research

The objectives of this research study are to investigate the impact of artificial intelligence (AI) integration in project management on the role of project managers. In this study researcher wants to prove below hypotheses:

Hypothesis: The increasing use of artificial intelligence (AI) in project management are leading to a shift in the role of project managers from traditional task-oriented leadership to a more strategic and visionary leadership approach, transforming them into project leaders.

Rationale: As AI continues to gain prominence in project management, it is expected to take over certain project management tasks that are repetitive, time-consuming, and prone to human errors. This will allow project managers to focus more on strategic thinking and developing innovative solutions, leading to a more leadership-driven approach.

1.4 Significance of the study

In recent times, the remarkable capabilities of generative AI (GenAI) have left a profound impression on the world. Towards the end of 2022, ChatGPT's extraordinary growth captured our collective attention (Hu,2023). This surge in interest has led to some significant moves by business leaders, eager to harness this technology for immediate impact. For instance, Suumit Shah, the CEO of the e-commerce platform Dukaan, made headlines by replacing 90% of his support staff with an AI chatbot that outperformed human employees in initial tests (Teo, 2023). Similarly, IBM's CEO Arvind Krishna announced a temporary halt in hiring, later revealing plans to replace nearly 8,000 jobs with AI (Mancini, 2023).

These recent developments take place in the context of many of today's most disruptive and successful businesses relying on AI in various ways to shape their business models. This influence extends to our everyday lives, whether it's in writing emails, grocery shopping, or daily commutes (PMI, 2023).

Beyond the ongoing challenges of achieving transformation excellence and enhancing the maturity of enterprise project management functions for maximum success, there are specific AI-related issues we must collectively address (Scanlon, 2023). These issues encompass embedded bias, hallucinations, the use of synthetic data, explainability, data privacy, and cybersecurity—all of which have significant implications for both customers and employees (PMI, 2023). Additionally, there's the enduring challenge of culture change, which may become even more pronounced among our most experienced teams (Koetsier, 2023).

In the face of these challenges, a structured approach is essential to balance the need for speed while mitigating the mentioned risks. Consequently, Project Managers must adapt to this transformation and position themselves as leaders in this evolving landscape to remain relevant and effective.

This research will give perception into the transformation of project managers into project leaders due to AI integration in project management. As AI becomes an integral part of project management practices, understanding its effects on project manager's roles and responsibilities is vital for organizations to adapt, thrive, and excel in an AI-driven future. The findings of this study will benefit project management professionals, organizational leaders, researcher, and the broader business community by providing guidance on navigating the changing landscape of project management in the age of artificial intelligence.

The significance of this research lies in its exploration of the profound impact of artificial intelligence (AI) integration in project management on the role of project managers. As the use of AI in project management continues to grow and reshape the way projects are conducted, understanding the implications of this transformation is crucial for both practitioners and organizations. The study will provide understanding on the changing responsibilities, skills, and competencies required for project managers to adapt successfully to the AI-driven project landscape. Understanding how AI influences project manager's delibrate thought process will help organizations optimize project performance and achieve better outcomes. By understanding the necessary adaptations, organizations can invest in training and development programs to equip project managers for the future.

This study will also add to the body of knowledge on the evolving field of project management and the influence of AI. Academicians and researcher can build on these findings to explore additional dimensions and conduct further investigations.

CHAPTER II:

REVIEW OF LITERATURE

2.1 Evolution of Project Manager role

According to Chiu (2010) before the 1950s, individuals in charge of large-scale undertakings, which are now commonly referred to as projects, identified themselves as priests, engineers, architects, generals, or civic leaders. Despite the absence of project management as a formal profession, many of the techniques utilized in modern-day project management were necessary for the successful completion of significant historical developments.

People were appointed to operate projects in the next stage of this evolution, but there were no recognized standards or credentials because project management associations had not developed them! The accidental project manager was born and has lived in business project history for more than a generation.

Bourne (2010) argues that accidental project managers are those who were allocated to projects because they were available rather than because they have project management knowledge or abilities. Some unintentional project managers have been and continue to be extremely successful; but many others are blamed for issues and project failures that they are ill-equipped to forecast or prevent. The introduction of project management training, certificates, and professional pathways should have rendered the unintentional project manager obsolete; yet, this is not the case.

The qualified project manager emerged around the end of the twentieth century. The codification of project management knowledge, as well as the testing and certification of project managers based on the established knowledge framework, has been a main priority of all project

management associations worldwide. The knowledge examined first concentrated on the iron triangle of schedule, cost, and scope control; however, this gradually evolved to encompass risk and quality management.

Acknowledging knowledge is insufficient; twenty-first-century trends include a shift towards assessing and certifying proficiency. Competence evaluation considers the project manager's desire and ability to successfully use knowledge to accomplish results. The other key development has been a growing emphasis on the value of teamwork and stakeholder relationship management. These needs are now firmly ingrained in the knowledge framework against which a qualified project manager is assessed, and they are inherent in a project manager's capacity to generate successful outcomes working through and with people, which is measured in a competence assessment.

As per PMI (2020) the ideal sets of skills project professionals must develop and hone to be successful and work smarter in today's evolving world of project management. To cater and help navigate the learning journey of a PM, PMI has updated the talent triangle to

•   Ways of Working: formerly Technical Project Management

•   Power Skills: formerly Leadership

•   Business Acumen: formerly Strategic and Business Management

Updated PMI Talent Triangle
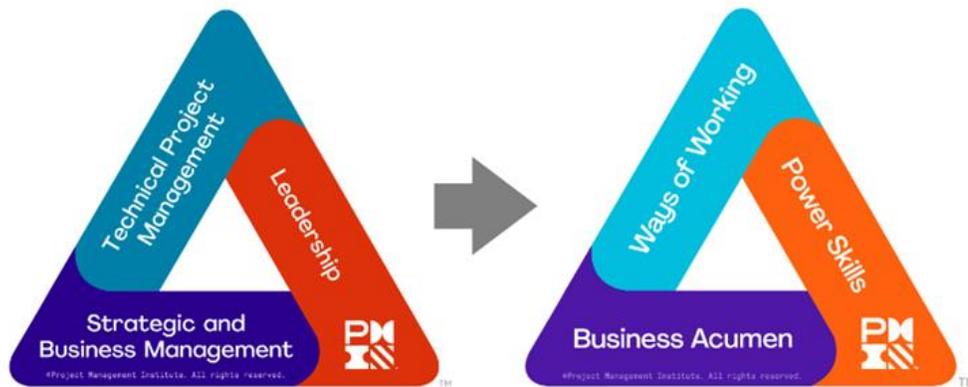
According to Bourne (2010) these foundations are required for new age project leaders to deal with the problems of leading knowledge workers in virtual teams to build new goods or services for global market. The new era leader is also likely to be an accomplished corporate project manager. The modern business project manager understands that project success is assessed in terms of the organization's value and stakeholder satisfaction. Rather than being a goal in itself, the project is viewed as part of the company's strategic objective, with success measured by how well the project's outputs assist the organization in achieving its targeted results.

Eventually, the combination of skilled project managers working in support of corporate goals, backed up by global project management associations, is gradually changing project management from a "skill" to a "full-fledged profession" and seen as a leader.

According to PMI (2017) a PMI-commissioned talent gap research by Anderson Economic Group (AEG) reveals excellent employment and career possibilities for project managers in the 11 countries evaluated. The project management-oriented labor force in seven project-oriented

industries is predicted to rise by 33%, or almost 22 million additional employments, through 2027.

Employers will require roughly 88 million project management professionals by 2027. China and India will account for more than 75% of overall project management-related employment. According to this analysis, project managers are key contributors to productivity. During a 10-year period, talent shortages in the profession might pose a risk of almost US$208 billion in GDP in the 11 nations studied.

2.2 Evolution of Project Management

Humanity has gone through three Industrial Revolutions and is now at the middle of the fourth. Each of these four Industrial Revolutions needed certain skills and competencies from people, who were forced to improve their skills and competences in order to remain relevant in a demanding working environment.

Mechanization ushered in the First Industrial Revolution, and physical abilities were essential (Drath & Horch, 2014). While the emphasis was on mass manufacturing throughout the Second Industrial Revolution, cognitive abilities were required (Mokyr, 1998). The labour force needed to transition from employing physical abilities to using cognitive ones (Liu & Grusky, 2013). The Third Industrial Revolution was about manufacturing automation, and Maqbool et al. (2017) and Müller and Turner (2010) conclude that the essential talents were soft skills backed by emotional intelligence (EQ).

The fourth revolution is about digital skills that must be learned (Park, 2019). According to Santos et al. (2017) the 4th Industrial Revolution focuses on integrating multiple technologies that enable ecosystems to work intelligently and autonomously, as well as on decentralising

factories and integrating product-services. During the previous few centuries, the essential abilities have shifted from physical to digital. Physical abilities are becoming less important at this time, but workers must have cognitive, soft, and digital skills. As we progress farther into the fourth industrial revolution, the need for digital skills will become more crucial says (Marnewick & Marnewick ,2021).

This is also relevant in the project management discipline. Project management had its origins in the construction and defence disciplines (Shenhar & Dvir, 2004). According to Turner et al. (2013) until the 1980s, project management was found in the engineering, defence and IT disciplines, after which it became much more widely accepted within management and other disciplines. The four industrial revolutions are driven by technical achievements that in-turn, had an impact on project management.

Impact of industrial revolutions on project management.

Revolution	Period	Technical achievements	Modern project management
1st	1765–1850	Steam engine, mechanization	
2nd	1870–1950	Internal combustion engine	Project management started as an administrative function of scheduling and coordinating to shorten delivery times by parallel planning.
3rd	1969–2000	Computer, robots, automation, laser, internet, mobile phones	• Advances in technology increased the utilization of tools in project management (PERT, WBS). • Management sciences were introduced as projects grew in complexity. However, the focus was still on administrative function of scheduling and coordinating and excluded functions such as project definition, quality assurances and success criteria. • Enterprise-wide project management developed as technology advanced and were integrated across the enterprise. Professional bodies, competency frameworks, standards and methodologies emerged.
4th	2000 and beyond	Internet of Things, cyber systems, smart industry, advance robotics, artificial intelligence	Project management developed into a complex discipline requiring project managers that can manage complexity, coordinate social interaction among people, create value for business, operated across disciplines and continuously learn and reflect.

Project management is an essential function in every organization, a study conducted by the Project Management Institute (PMI) revealed that 93% of organizations view project management as critical to business success according to Project Management Institute (2018) and it has evolved over the years. Project managers are now expected to be more than just administrators; they need to be methodical thinkers and leaders.

2.3 Artificial Intelligence and Project Management

Acording to Kestenholz (2023) in his article "How AI Is Revolutionizing Project Management: Three Use Cases", integrating AI into Project Portfolio Management (PPM) systems offers organizations the opportunity to enhance project planning, execution, and tracking. AI can support project managers in generating detailed schedules, robust risk assessments, outcome predictions, resource allocation optimization, and improved communication. However, it's crucial to customize AI solutions to align with the specific requirements of the organization. When implemented correctly, AI solutions empower organizations to execute their plans with greater efficiency, ultimately yielding improved business outcomes.

The research defines artificial intelligence (AI) as a system's capacity to accurately interpret external data, learn from it, and apply that knowledge to achieve specific objectives and tasks. According to Russel (2010) in the book Artificial Intelligence: A Modern Approach, there are four approaches to AI: acting humanly, thinking humanly, thinking rationally, and acting rationally. AI technology relies on developing a knowledge base that is not programmed directly, but instead accumulates as the machine "learns" in a designed environment. According to Porsteinsson et al.(2019) this allows processes that incorporate data and AI technologies to be automated .

Frank et al. (2019) suggests that in the short term, AI's ability to perform specific tasks may alter the demand for particular skills in the labour market. While these changes may initially be minor, they could ultimately lead to significant shifts in the labour market, including the redefinition of occupational skills, job creation, and increased unemployment in technical fields. Job skills are not static and can evolve over time. But some skills, such as social skills, are challenging to automate.

In their review of three popular business books on the use of AI in organizations, Raich and Krakowski (2020) concluded that the central message of these books is that AI should be utilized to automate processes and enhance managerial functions.

According to Foster (1988), AI has the potential to be effectively applied to project management by analyzing large datasets to identify patterns, trends, and potential issues based on prior knowledge. AI can also monitor a project's progress and make adjustments to future activities as needed. Rule-based project management schedules are particularly well-suited for AI methods, as are resource-constrained scheduling and time, cost, and risk scheduling. AI can also expedite the process of creating a project network. AI can automate project management tasks and assist in decision-making related to project direction, as noted by (Munir, 2019).

Arup et al. (2017) published a report outlining seven trends that are expected to transform the project management profession in the future. One of these trends is the automation of tasks and the collaboration between humans and machines. The report suggests that intuitive user interfaces will lead to significant changes in workplaces, communication, and collaboration. Furthermore, such interfaces may also contribute to creating and maintaining a positive atmosphere that can enhance productivity and creativity in the workforce.

According to Lahmann et al. (2018) of PricewaterhouseCoopers (PWC), AI is expected to revolutionize the delivery and management of project management processes in the near future. The authors predict that AI will advance from basic task automation to encompass predictive project analytics, advice, and actions.

Wang et al. (2012) and Wauters and Vanhoucke (2017) have discussed the application of AI methods for various project management tasks, including project forecasting, cost management, and schedule success. Additionally, as reported by Chuo et al. (2010) research has been

conducted on hybrid systems that combine AI methods to achieve accurate cost estimation and project risk calculations.

Forster (1988) has identified the lack of knowledge and understanding of AI and the high cost of implementing an AI system as the main obstacle to using AI in project management. Lahmann et al. (2018) added that the requirement for large historical datasets and project information in a standardized form also poses a challenge. However, Kolbjørnsrud et al. (2021) suggested that managers would be more willing to use AI systems if they understand how, it works and if it provides convincing explanations with a proven track record.

As per Lahmann et al. (2018) while AI will significantly impact project management, human project managers are still essential. They suggest that human skills such as empathy, emotional intelligence, negotiation, decision-making, and human resource management will be increasingly valuable in the future. The Project Management Institute acknowledges that project managers need digital skills to keep up with emerging technologies as per (Forbes Insights, 2018).

The technical project management skill group is considered to have the most potential to be supported by AI functions. AI project management bots, assistants, and algorithms can analyze project status and provide observations and predictions with data. In strategic and business management, AI can support project managers by fitting parameters and making forecasts. In general, leadership might not be ideal for consideration in AI systems, but it could be in the future. By using AI for projects, project managers can have more assistance, efficiency, knowledge, and strategy, resulting in more productivity (Munir, 2019).

2.4 Brief understanding on AI's Impact

According to PMI (2023) in their report named "Leading AI-driven Business Transformation: Are You In?" The way AI technology can change things a lot offers many chances for businesses, but it also brings new problems. Leaders need to make choices based on facts, not feelings. This part gives you important information about AI, which can help you understand the fast-changing world your organization is in.

McKinsey & Company (2023) in their report named "The economic potential of generative AI" reports that AI will make a big economic difference in every industry. They suggest that AI could bring in between US$2.6 trillion to US$4.4 trillion every year by focusing on 63 different ways to use it. Most of this value, around 75%, can be found in four key areas: taking care of customers, marketing and selling products, improving software, and doing research and development (R&D).

PwC (2017) also predicts in their report "Sizing the prize. PwC's global AI study" that AI could add as much as US$15.7 trillion to the world economy by 2030. Out of this, about US$6.6 trillion would be because businesses are using AI to work more efficiently and adding AI to their workforce. The other US$9.1 trillion would come from things like having better AI-powered products and services that are personalized or of higher quality.

In the realm of Project Management, it's crucial for leaders to recognize the significant potential of AI without rushing into an all-or-nothing approach. It's important to approach AI adoption with caution, as there are numerous unanswered questions and potential risks that must be managed for successful integration. To address these challenges effectively, it's essential to establish proper governance and well-defined policies. These policies should cover critical issues

such as who owns the data, how to mitigate the risk of biased results, and how to handle emerging cybersecurity threats that AI may introduce (PMI, 2023).

It is of utmost importance to take proactive measures to understand the implications of AI and its various aspects on the organization and its project-related activities. However, many organizations currently lack a clear and structured plan outlining why, when, and how they should integrate AI technology into their project management processes (PMI, 2023). To develop and maintain resilience in order to fully harness the potential of AI, organizations must adopt a flexible digital strategy that adapts to emerging needs. This strategy should promote collaboration across the entire organization while fostering a culture that encourages autonomy, enabling the organization to effectively navigate the trade-offs between stability, flexibility, chaos, and order (PMI, 2023). In this rapidly changing landscape, leaders must proactively embrace the disruptions brought about by AI, even if it means stepping out of their comfort zone

2.5 Forbes the Seven Patterns of AI

According to Forbes's article published by Walch (2019), in the realm of technology, a broad spectrum of applications, such as autonomous vehicles, predictive analytics, facial recognition, chatbots, virtual assistants, cognitive automation, and fraud detection, showcases the extensive utility of Artificial Intelligence (AI). While these applications vary significantly in their objectives, a unifying thread emerges among them. Professionals and experts who have undertaken numerous AI initiatives have recognized a recurring set of patterns that categorize these diverse use cases into seven distinct models. These models are as follows: Hyper personalization, autonomous systems, predictive analytics coupled with decision support, facilitation of human interactions through conversations, identification of patterns and anomalies, deployment of recognition systems, and finally, systems driven by predefined goals. These seven

patterns collectively encompass the underlying structure of AI implementations, revealing a comprehensive framework for understanding and classifying its multifaceted applications.

2.5.1 Hypersonalization:

Hypersonalization employs machine learning to create individual profiles that evolve over time for personalized content, product recommendations, healthcare needs, and more. It treats individuals as unique entities, utilizing machine learning to tailor experiences. Applications extend beyond advertising to finance, medicine, and wellness.

2.5.2 Autonomous Systems:

Autonomous systems can perform tasks and interact with surroundings with minimal human intervention. This encompasses both physical hardware and software bots. The aim is to reduce human labor, exemplified by autonomous vehicles and machines, automated documentation, and cognitive automation. Collaborative bots and decision-making systems without human intervention are also part of this pattern.

2.5.3 Predictive Analytics and Decision Support:

Predictive analytics uses machine learning to forecast outcomes and assist human decision-making. It aids in making better decisions through pattern learning from behavior and data. This pattern encompasses forecasting, value predictions, optimizing activities, guided assistance, and advice. It focuses on augmented intelligence, where machines aid human decision-making without replacing them.

2.5.4 Conversational / Human Interaction:

This pattern involves machines interacting with humans naturally, using voice, text, images, and other forms. The goal is to enable smooth human-like interactions between machines and

humans, including chatbots, voice assistants, and content generation for human consumption. Machine learning plays a vital role in interpreting and generating speech, text, and images for various projects.

2.5.5 Pattern and Anomaly Detection:

Pattern & anomaly detection employs machine learning to identify patterns in data and detect outliers. This is crucial for finding anomalies in data, fraud detection, error correction, and discovering insights from data patterns. Machines excel at analyzing large amounts of data to find meaningful patterns and anomalies faster than humans.

2.5.6 Recognition:

Recognition uses machine learning to identify objects within unstructured content such as images, audio, text, and video. This encompasses image recognition, facial recognition, audio recognition, and more. Machines have become proficient in recognizing patterns within unstructured data, making this pattern widely adopted.

2.5.7 Goal-Driven Systems:

Goal-driven systems involve machine learning to learn through trial and error, aiming to find optimal solutions to problems. Examples include game playing, simulation, resource optimization, and reinforcement learning.

2.5.8 Combining Multiple Patterns:

Projects can combine multiple AI patterns to achieve specific objectives. Each pattern corresponds to a different AI technique, like conversational, predictive, or recognition. Combining these patterns allows for multifaceted AI projects that address diverse business requirements, leveraging different AI techniques for specific objectives.

2.6 AI's Impact on different phases of Project Management

As per research conducted by Fridgeirsson et al. (2021) researcher suggest that their respondents believe that AI will have a significant impact on project management over the next 10 years.

The results of the research suggest that AI will have the highest impact on project cost management, project schedule management, and project risk management. These knowledge areas involve processes that can benefit from AI's ability to analyze historical data and monitor project progress.

The research also indicates that AI will have a high effect on creating work breakdown structures (WBS), planning procurement management, and monitoring and controlling project work. These processes are also data-driven and can benefit from AI's ability to process and analyze large amounts of data.

However, the findings suggest that knowledge areas and processes that require human leadership skills, such as managing stakeholder expectations, developing and managing teams, and other soft skills, will be least affected by AI. These processes require empathy, understanding, and personal interactions, which are challenging to automate with AI.

Belharet et. all (2020) proposed below table which illustrate how each of these commonalities relates to the application of artificial intelligence in project management - specifically to the process map described by PMBOK 6th Edition

Crosses AI as categorized by Forbes report and PMBOK view of phases

FORBES 7 PATTERS OF AI	Initiating	Planning	Executing	Monitoring & Control	Closing
Hyper Personalization		✓	✓		
Autonomous Systems	✓	✓	✓	✓	✓
Predictive analytics & Decision Support		✓		✓	
Conversational/ human interactions		✓		✓	✓
Patterns and Anomalies	✓		✓	✓	
Recognition Systems			✓	✓	
Goal-Driven Systems		✓	✓	✓	

Belharet et. all (2020) proposed below table that depicts the relationship between 7 patterns of AI as described by Forbes and the PMBOK phases

The planning section of PMBOK vs FORBES AI 7 patterns

FORBES 7 PATTERS OF AI	Hyper Personalization	Autonomous Systems	Predictive analytics & Decision Support	Conversational / human interactions	Patterns and Anomalies	Recognition Systems	Goal-Driven Systems
Scope Management	✓		✓	✓	✓		✓
Schedule Management	✓	✓		✓		✓	✓
Cost Management		✓	✓	✓			
Quality Management		✓		✓	✓		✓
Resource Management		✓				✓	✓
Communication Management	✓	✓	✓	✓	✓		✓
Risk Management		✓	✓	✓	✓	✓	✓
Procurement Management	✓				✓		
Stakeholder Management	✓	✓	✓	✓		✓	✓
Integration Management				✓	✓		✓

2.7 Evolution of competencies required to be relevant

As noted by Wang and Ha-Brookshire (2018), project managers in the future will be required to have digital competence and skills to effectively navigate digital resources and environments. Authors have summarized in below image

Evolution of competencies for Project Managers

	1765 1st revolution **MECHANIZATION** led by the steam engine	1870 2nd revolution **MASS PRODUCTION** driven by electricity and oil-based power	1969 3rd revolution **AUTOMATED PRODUCTION** supported by electronics and information technologies	Today 4th revolution **NEW TECHNOLOGIES** Internet of Things (IoT), Artificial Intelligence (AI); Big Data, Cloud, Cyber-Physical Systems...
Focus on human worth	Body	Mind (Knowledge)	Mind (Emotions)	Spirit (Values)
Primary skillset	Physical skills	Cognitive skills	Soft skills	Digital skills
Required Intelligence		IQ	EQ IQ	DQ EQ IQ

According to PMI (2019) in the future digital era, project managers will need to focus on developing their people skills, negotiations skills and continuous awareness of latest tools & technologies as AI takes on a more significant role in project management. Project managers will need to have an innovative mindset and customize their knowledge to drive digital transformation, while also possessing strong digital, data science, security, privacy, legal, and regulatory knowledge to manage contracts effectively. AI will act as a project management virtual partner, and project leaders will require a diverse and flexible skill set to cope with future challenges**.**

Research conducted by PwC (2019), as part of a study commissioned by APM on the impact of project management in the UK ('The Golden Thread'), highlights the key skills essential for project managers. These critical skills include leadership and management, budgeting and financial management, planning and monitoring, as well as strategic management, digital proficiency, and risk/opportunity management. Notably, these skills garnered a consensus of importance from over 80% of businesses. Below image depicts how AI and project managers will collaborate in the digital era.

21st-century skills of Project Managers

Project Managers	AI
21st Century Skills	Virtual Partner
Data science	Identifying relationships & trends
Complex problem solving	Intelligent real-time analysis
Ability to make data-driven decisions	optimising schedules
Collaborative leadership	Enhanced data and improved portfolios
Stakeholder management	Providing business insights
Emotional intelligence	Human capital optimization
Communication	Status reporting
Legal & regulatory knowledge	Risk management support
Negotiation	Active assistance
Security & privacy knowledge	Researching new trends and experts
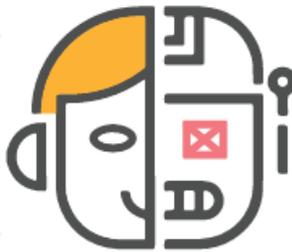
2.8 Role of Leaders and Project Managers

In a complex work environment, leadership and project management are distinct roles, but they are also complementary. According to Cleland (1995), the project manager should perform both roles. Bennis (1984) has highlighted a crucial difference between the roles of a leader and a project manager, where a leader prioritizes effectiveness by doing the right things, while a

manager emphasizes efficiency by doing things right. As a project leader, one is responsible for envisioning the project, bringing together resources, and motivating stakeholders to do the right things to achieve the project's objectives (Cleland ,1995).

According to Shenhar (2004), leaders focus on the what while managers focus on the how, exemplifying the distinction between "doing the right things" and "doing things right." Typically, leaders are tasked with driving transformation while managers navigate complexity, as noted by Kotter (1999), yet it is essential to possess both skill sets in order to effectively address the competitive and volatile challenges of the modern project management.

Lunenburg (2011) highlights that leaders create change and serve subordinates, while managers handle change and serve super ordinates. Raelin (2004) also emphasizes that leaders manage changes while managers handle complexity. As both leaders and managers play essential roles in organizations, Kotter (1987) distinguishes between the two, building on Zaleznik (1977) earlier work.

Zaleznik (1977) argues that managers and leaders differ in their approach to chaos, psyches, and order. Project managers tend to embrace process, prioritize stability and control, and may rush to solve problems even before fully comprehending their significance. In contrast, leaders tend to be more comfortable with chaos and uncertainty, and are more likely to take the time to thoroughly understand issues before making decisions.

Shenhar (2004) notes that effective managers and leaders must be proficient in both vision and execution, direction and planning, as anyone can excel in both areas. In essence, leaders are responsible for navigating change, creating a vision, setting direction, and inspiring and motivating others, while managers focus on bringing order and consistency through organizing, planning, budgeting, and staffing, as outlined by Kotter (1999).

Victor (2023) argues AI can automate many of the everyday duties project managers conduct, but their actual value resides in their ability to teach, lead, and engage with stakeholders. Human contact, good and exible judgement, empathy, and connection to teams and stakeholders need "Human-ness" to be successful. Robots and AI may automate boring chores that waste a project manager's time, such as putting together PowerPoint presentations, focusing on right messaging to the appropriate audience, and/or standardising project data from incompatible systems. Project managers must be leaders and communicators.

2.9 Role and significance of Project Leadership

Project management involves planning and organizing project activities, making decisions that improve the effectiveness and efficiency of the project. Leadership, on the other hand, is a process of guiding and motivating others to achieve project objectives, inspiring individuals to reach their full potential and accomplish challenging organizational goals (Anantatmula, 2010).

Curran et al. (2009) note that while a strong project leader may be necessary for administrative or bureaucratic projects, it does not necessarily guarantee success. The ideal balance for achieving positive outcomes lies in utilizing a combination of strong management and strong leadership skills to complement each other, as emphasized by Kotter (1999). Simply having one or the other is not enough, as a weak management or leadership style may negatively impact results.

Yang et al. (2011) note that leadership traits are often more closely associated with project leadership than with project management, a distinction that has been discussed extensively in project management literature. It is essential to understand the differences between project leadership and project management to gauge the impact of leadership performance on the

success or failure of a project, as highlighted by Nixon et al. (2012). Project leadership refers to the ability to lead others in project work in a powerful and effective manner (Strider, 2002).

Birkinshaw et al. (2008) suggest that project leadership plays a crucial role in improving project management practices, particularly in reducing the uncertainty and complexity associated with project pursuit. Vibrant leadership is necessary to achieve project objectives in a complex working environment, inspiring new ways of thinking and problem-solving while motivating team members to work together, as noted by Nixon et al. (2012). The project leader's role can be seen as a combination of leadership and managerial roles, as well as internal and external roles (Kaulio, 2008).

Kotter (1990) identifies the first dimension of a project manager as encompassing both leadership and management roles. Kaulio (2008) adds a second dimension, which involves internal and external roles. While planning and execution are still critical components of project management, the role of the project leader has evolved to include new responsibilities, such as identifying and articulating a clear project plan that emphasizes revisiting and addressing business assumptions at a higher level. This is achieved by defining project outcomes and managing business expectations (Shenhar, 2004).

Project leaders must have a thorough understanding and application of project management practices, but it should not replace the leadership aspect of the role. The importance of the project manager's role has increased in today's organizations, where they are not limited to just operational activities, and dealing with strategy has become a critical component even at the senior level. Project leaders play a vital role in simplifying complex projects within the organization. Marion and Uhl-Bien (2001) emphasize that project leaders must be adaptable and dynamic in their approach to managing projects.

Project leaders play a crucial role in building a strong team and creating trust among team members, which is essential for the success of any project (Hodgetts, 1968). Projects offer an opportunity for project leaders to turn ideas into reality and achieve the project vision (Shenhar, 2004). Information plays a vital role in project leadership as it enables the project leader to make informed decisions and act as an effective advisor and advocate for the project (Strider, 2002). It is essential for project managers to focus on both efficiency and effectiveness, achieve business results and win in the market, and address tactical, operational, and human-related issues, instead of just focusing on operational matters (Shenhar, 2004).

According to Shenhar (2004), successful projects require project leaders to take on both leadership and management roles, and to provide direction, vision, and planning and execution capabilities. Project leaders must challenge the status quo, inspire the team, and influence organizational members, while competent managers assist in developing and maintaining smooth functioning within the workplace (Lunenburg, 2011). According to Birkinshaw et al. (2008) project leadership responsibilities include regularly providing support and closely monitoring team members. Additionally, Lunenburg (2008) notes that good managers are not necessarily good leaders, and good leaders are not necessarily good managers.

The importance of project leadership in achieving successful business results and project outcomes is a growing paradigm. Strong leadership and effective management are essential for optimal organizational effectiveness, as managers with legitimate authority alone may not be able to provide sufficient assurance for effective leadership. In addition to planning, executing, and controlling the project, project leaders must create an empowering environment to ensure the best possible working conditions for their teams. Leading the team during project implementation is not a replacement for project management (Strider, 2002).

Relationship between organizational structures and role of the project manager.
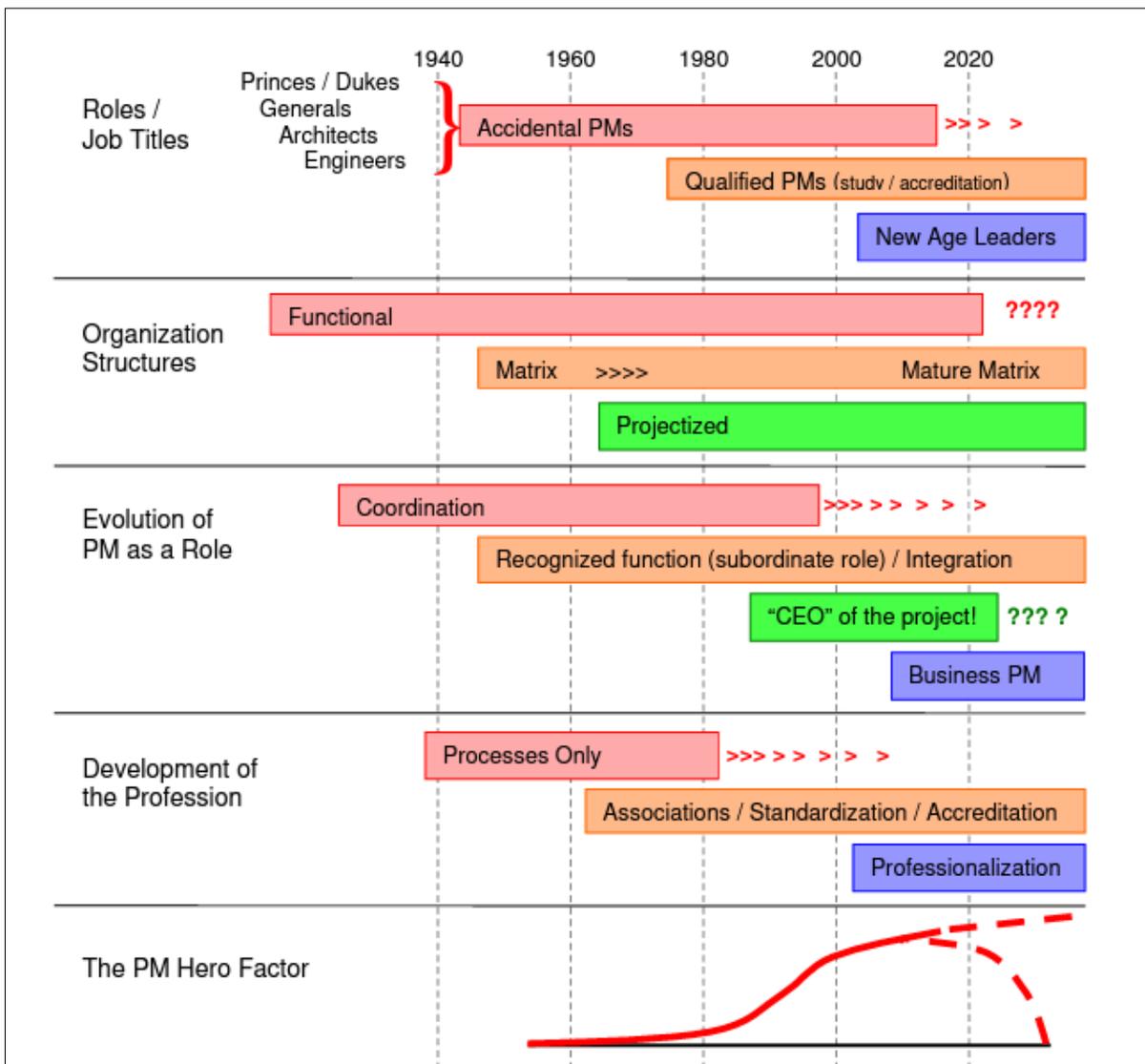
2.10 Similarity with skills/ competencies a CEO has

According to Bourne (2010) The concept of the project manager as the hero or CEO of the project emerged from the legend of the "CEO as hero" during the 1980s and 2000s. However, this model is the opposite of the new age business project manager who values teamwork and stakeholder engagement. Some experts support a different leadership style for project managers and CEOs that prioritize collaboration and stakeholder engagement.

The article by Minavand et al. (2013) suggests that the responsibilities of a CEO can be likened to those of a project manager, as both have to oversee and manage various functions and specialties within the project or organization.

According to Bourne (2010), in the 1980s, project managers were encouraged to view their role as being similar to that of a CEO of a project. This allowed project managers, who had little authority in functional or matrix structures, to act as if they had the same authority as a CEO. However, this perspective was not widely accepted by the rest of the organization, and project managers were still forced to rely on heroic efforts to achieve project success, as they lacked the necessary authority. But now scenario has changed, Gillard (2009) revealed in his research that leading is preferable to managing a project team, and that the leadership style of the project manager directly impacts the outcome of the project.

Logue (2005) article shows a possible career progression for project managers and illustrates common skill sets for project managers and executive leadership.

Common skill sets for project managers and executive leadership

KEY LEADERSHIP SKILLS	CEO RESPONSIBILITIES	PROJECT MANAGEMENT EQUIVALENT
Selling -Up	Board and Shareholder relations	Winning stakeholder Buy-in
Selling Down	The entire firm and its customers	The Project Team
People Skills	Creating followers	Earning respect
Strategic Planning	Big- picture, long term vision for the organization	Project scope planning and definition
Finance	High level budget and funding skills	Project resource planning and cost control
Marketing	Product Management, public relations and advanced promotion skills	Project vision statements, communications planning

2.11 Summary

The rise of AI has brought both exciting opportunities and unique challenges for project managers. To excel as effective leaders in this ever-changing landscape, project managers must acquire new skills and qualities that allow them to navigate AI systems, interpret data, and make informed decisions. This literature review highlights how crucial this topic is and explores some key studies in the field. As AI continues to advance at a rapid pace, project managers need to stay adaptable and continuously evolve to remain relevant who can guide projects to success.

A deep dive into the literature on artificial intelligence and its potential impact on businesses reveals a two-fold effect on organizations. On one hand, AI primarily aims to boost productivity and efficiency, while also yielding insights and transforming core business processes. On the other hand, it also influences broader aspects of business performance and growth, touching areas like operations, finances, markets, and sustainability.

Research also highlights critical factors that facilitate AI adoption. These encompass technological aspects, such as data and technology infrastructure, organizational elements, like fostering the right culture, gaining management support, strategic planning, and environmental considerations, which include addressing ethical concerns and navigating regulatory frameworks.

CHAPTER III:

METHODOLOGY

3.1 Overview of the research problem

The research problem discusses the critical need for modernization in project management practices through the adoption of AI technologies. By leveraging AI to streamline routine tasks and enhance decision-making processes, organizations can significantly improve project success rates, optimize resource utilization, and ultimately transform the ways in which project managers operate. This shift has the potential to yield substantial benefits, both in terms of financial outcomes and organizational efficiency.

3.2 Operationalization of theoretical constructs

In investigating the impact of AI on project management and organizational readiness, a suitable research methodology has been adopted, drawing upon knowledge from various domains. The two primary research methods utilized in this study are quantitative and qualitative approaches.

Quantitative research involves estimating differences and relationships between variables to address questions about correlations among them (Nayak & Narayan ,2019). While this method is valuable for testing theories and exploring causative effects between variables, it was not the primary focus of this study, as statistical significance or insignificance was not the intended outcome.

Recognizing the value of both quantitative and qualitative elements, a mixed-method approach was employed (Evans & Mathur, 2005). By combining features from both approaches, this research aims to provide a holistic understanding of the phenomena under investigation.

For delving into the specific phenomena surrounding AI's impact on project management and organizational readiness, a qualitative approach was preferred (Evans & Mathur, 2005). Utilizing an objectively structured survey, data was gathered from participants to gain deeper understanding.

To enhance the credibility of research findings and overcome biases arising from using a single method, a triangulation approach was employed (Nayak & Narayan ,2019). The data collected through surveys was cross-validated with other sources, such as informal interviews or observations, to ensure robustness.

By employing this research methodology, this study aims to shed light on the impact of AI on project management and the readiness of organizations and professionals in embracing this transformation.

3.3 Research purpose and questions

Every year, a staggering $48 trillion is invested in projects, yet only 35% of them are considered successful (PMI,2019) . The primary reason behind this alarming statistic is the outdated technology used in project management, where tools like spreadsheets and slides remain prevalent.

However, there is hope on the horizon with the increasing adoption of artificial intelligence (AI) in project management. This shift from traditional, task-centric leadership to a more strategic and visionary approach holds great promise. AI can revolutionize project management by automating routine tasks, freeing up project managers to focus on decision-making, thought leadership and innovation.

The purpose of this research is to explore the impact of AI integration in project management on the role of project managers. It seeks to confirm the hypothesis that AI's growing presence in project management is transforming project managers into leaders who can concentrate on strategic aspects, leaving repetitive and error-prone tasks to AI. This shift promises to enhance project success rates and resource utilization in the long run.

3.4 Research design

The research design for this study involves utilizing the survey method, research aims to capture the perceptions and experiences of Project Management practitioners. The survey method has been chosen due to its effectiveness in gathering a wide range of inputs from diverse participants (Evans & Mathur, 2005).

The survey instrument will consist of a structured questionnaire encompassing both closed-ended questions, employing rating responses, and open-ended questions. According to Evans and Mathur (2005) these questions will address various aspects, including the awareness of AI, perceived impacts on roles and responsibilities, essential skills for successful Project Leaders in the AI era, as well as challenges and opportunities arising from AI adoption. The target participants will be selected through purposive sampling to ensure representation across industries and different job levels.

The survey will be administered online, allowing for broad accessibility, and the data collected will be analyzed quantitatively for distribution patterns and qualitatively for thematic understanding. Ethical considerations, such as participant confidentiality and informed consent, will be rigorously upheld throughout the research process (Nayak & Narayan ,2019).

Contrasting comparison with other studies of similar nature will help in understanding and exploring complex human behavior using variety of methods, to offer a more balanced explanation of the study to readers. Ultimately, this research design aims to provide a comprehensive understanding on the research subject.

3.5 Population and sample

This study focused on a specific group of individuals, who are Senior Project Management Professionals and professionals at senior/top leadership positions in major Indian cities like Pune, Bangalore, and Chennai. The researcher employed a type of non-probability sampling, to select participants who could provide reliable and valuable information to address the research questions and achieve the study's objectives (Van Selm & Jankoeski, 2006). As per Etikan et. al (2016) purposive sampling involves the use of judgment by the researcher to select members of the study population who can provide relevant wisdom.

A total of 32 (Thirty-two) research participants were chosen, ensuring they met all the criteria. The sample population was described based on three key factors: Total years of industry experience, relevant experience in Project Management field, and job positions.

The study used the abbreviation "PMP" to represent Project Management Professionals and employed alphanumerical codes (1, 2, 3, etc.) to indicate the unique and respective Project Management Professional's response and identification within the sample population.

Throughout the study, the designation "PMP" will be used in the results section to present a breakdown of age categories, experience levels, and responses to open-ended survey questions. Below figure is providing a pictorial representation of population and sample.

Pictorial representation of Population and sample
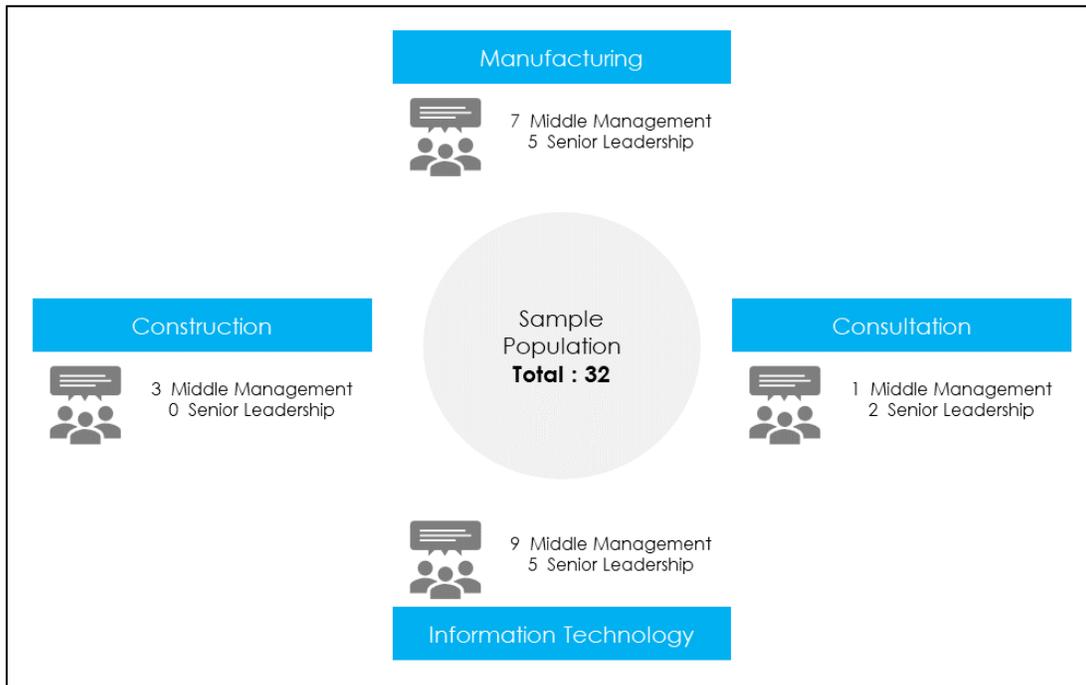
Under the next sub-heading of the study, the researcher detailed the process of participant selection. The criteria for participant selection based on personal involvement in Project Management and relevant experience help ensure that the study includes individuals with a deep understanding of the subject matter (Rai & Thapa, 2015).

It is important to note that obtaining permission from the research participants is a standard practice in ethical research (Rai & Thapa, 2015). By seeking their consent, the researcher ensured that participants are willing to share their experiences and opinions, and their involvement in the study is entirely voluntary.

3.6 Participant selection

While conducting this survey, one of the critical aspects was the thoughtful selection of participants who possess relevant experience in Project Management. The success and credibility of the study heavily relied on the wisdom and expertise contributed by the each of the participants. Hence, a selection process was employed to ensure the inclusion of individuals with at least ~10 Years of Project Management experience along with more than ~15 years of overall Industry experience.

Researcher that participants possessed hands-on and a practical understanding of the challenges and nuances associated with managing projects in real-world scenarios on day-to-day basis, thus enriching the survey's findings and conclusions.

To identify suitable participants, researcher used his judgment and expertise to handpick individuals who could provide valuable and reliable information relevant to the research objectives.

By incorporating participants with Project Management experience, this survey aimed to capture diverse perspectives, innovative course of action, and practical acumen from seasoned professionals in the field. Their valuable contributions have undoubtedly been instrumental in shaping the findings of this survey and advancing our understanding of Project Management's intricacies.

The collective knowledge and experiences shared by the selected participants is expected to increase research's credibility and also enrich the quality of the study. Again, i extend my sincerest gratitude to all the participants for their valuable contributions, as their involvement has

been pivotal in shedding light on the dynamic world of Project Management and its associated challenges and opportunities.

3.7 Instrumentation

Utilizing surveys as the instrumentation for data collection allowed this study to efficiently gather from a targeted population. The survey design, incorporating a mix of closed-ended and open-ended questions, contributed to analysis of the research topic, enabling the exploration of both quantitative and qualitative aspects of the study. Closed-ended questions offered respondents predetermined response options, allowing for structured data collection that could be easily quantified and analyzed. On the other hand, open-ended questions provided an opportunity for participants to share their unique perspectives, experiences, and opinions, thus adding depth and richness to the data.

Surveys are a widely recognized and versatile method of gathering information from a diverse pool of participants efficiently (Couper, 2017) . The choice of using surveys as the instrumentation for data collection in this research was driven by several factors, including the need to reach a relatively large number of respondents, ensure consistency in data collection, and facilitate the analysis of quantitative and qualitative data.

3.8 Data collection procedures

The data collection procedures for this study involved a structured approach to gather information from the participants. The following outlines the key steps and methods employed during the data collection process:

1. Before commencing data collection, a survey was developed and reviewed with mentor for feedbacks. The questions were designed to align with the research objectives and

address the specific research questions. It included a mix of questions devided into 4 parts (1) Demographic Information, (2) Perception of AI in Project Management, (3) Role Transformation and Leadership Approach and (4) Open-Ended Questions, to capture both quantitative and qualitative data.

2. A pilot test was conducted with a small group of individuals who were not part of the main study population. This test helped identify any potential ambiguities or issues in the survey questions and allowed for necessary refinements before its mass distribution.

3. All selected participants were provided with detailed information about the study's purpose, procedures, and potential risks or benefits. Informed consent was obtained from each participant, ensuring that their involvement in the study was entirely voluntary and that they were aware of their rights as research participants.

4. The survey data was collected using various methods to accommodate the preferences and accessibility of the participants. Online surveys, mailed questionnaires, and in-person administration were employed as data collection methods to reach a diverse and geographically dispersed population of participants efficiently.

5. As the survey responses were collected, they were organized and securely stored to maintain data confidentiality and integrity.

Once the data collection phase was completed, the collected survey responses were subjected to analysis. The closed-ended responses were quantified, allowing for statistical analysis and the identification of trends and patterns. The open-ended responses were analyzed through qualitative methods to gain deeper awareness and understand the participant's perspectives and experiences.

3.9 Data analysis

Data analysis is a critical phase in the research process that involves the systematic examination, interpretation, and synthesis of the collected data to draw meaningful conclusions and address the research objectives. In this study, data analysis played a pivotal role in gaining knowledge. The following outlines the key steps and methods used during the process:

1. Before proceeding with the analysis, the collected survey responses were organized and prepared for examination. This involved cleaning the data, checking for missing values, and ensuring data accuracy and consistency.

2. The closed-ended responses from the surveys were subjected to quantitative analysis. Majorly Microsoft excel was used to summarize and present the numerical data, providing an overview of the participants' characteristics, experiences, and perceptions. Measures such as average, frequencies, and percentages were utilized to quantify and summarize the data.

3. The open-ended responses from the surveys, as well as data from other sources such as interviews, direct observation, and document analysis, were subjected to qualitative analysis. This involved a systematic examination of the textual data to identify themes, patterns, and key insights related to the research hypothesis. Techniques such as thematic analysis or content analysis were used to categorize and interpret the qualitative data.

4. To enhance the validity and reliability of the study findings, data triangulation was employed in which researcher compared and analyzed contrasting data from different sources to corroborate and cross-validate the results. By using multiple data sources, such

as survey responses, interviews, and observation data, the researcher ensured a analysis of the research phenomenon.

5. During the data analysis process, the researcher interpreted the findings to gain a deeper understanding of the research topic. The identified patterns and data were linked back to the research objectives and theoretical framework, allowing for the formulation of meaningful conclusions.

The analysis also took into account the broader context of the research, considering relevant theories, literature, and real-world implications.

The results of the data analysis are being presented in organized manner using representation tools in this study. Visual aids, such as charts, graphs, and tables, were used to present quantitative data effectively. Additionally, direct quotations and narratives were used to illustrate and support key qualitative findings.

To ensure the accuracy and trustworthiness of the data analysis, the researcher engaged in peer debriefing and member checking. Peer debriefing involved seeking feedback from colleagues or experts in the field to validate the analysis process and findings. Member checking involved sharing the preliminary findings with the participants to validate the accuracy of their responses and interpretations.

3.10 Research design limitations

Despite the detailed approach and careful planning, every research design is subject to certain limitations that can impact the study's scope, validity, and generalizability of the findings.

The study's sample size may have been limited by practical constraints and the specific criteria for participant selection, the small sample size of thirty-two may limit the generalizability of the findings to a broader population.

The reliance on self-reported data from surveys and case studies may introduce bias due to social desirability or recall errors. Participants may have provided responses they perceived as favorable or may have difficulty accurately recalling certain experiences or events, affecting the reliability of the data.

The research design adopted a cross-sectional approach, capturing data at a specific point in time. This limitation restricts the ability to establish casual relationships or analyze changes over time. A longitudinal design could have provided deeper knowledge.

The Survey request was sent to Fifty-five participants but not all selected participants may have responded to the survey or agreed to participate in Survey. Non-response or self-selection bias may have affected the representativeness of the study population and the completeness of the data.

The qualitative analysis of open-ended responses from surveys and other qualitative data sources involved a degree of subjectivity during theme identification. Despite efforts to maintain objectivity, researcher's interpretations and biases could influence the analysis.

The study focused on the impact of artificial intelligence on project management. However, the rapidly evolving nature of technology may render certain findings less relevant in the future.

Despite these limitations, this study provides perception into the evolution of project managers to project leaders in the context of artificial inteligence. Researchers should consider these

limitations when interpreting the results and recognize the potential for future studies to address these shortcomings and expand our understanding of this important subject.

3.11 Conclusion

Data was collected through surveys from 32 Senior Project Management Professionals and professionals at top leadership positions, combining closed-ended and open-ended questions to capture quantitative and qualitative aspects of the study. The researcher ensured ethical research practices by obtaining informed consent from participants before their involvement.

The data analysis process involved quantitative analysis of closed-ended responses and qualitative analysis of open-ended responses, interviews, direct observation, and document analysis. Researcher corroborated findings from multiple data sources, ensuring the study's validity and reliability.

The study sheds light on critical aspects of leadership and the impact of technology on project management practices in multinational corporations. Future research should consider addressing these limitations to further enhance our understanding of this evolving field.

CHAPTER IV:

RESULTS

4.1 Introduction

Chapter 3 discussed the preferred methodology, the design, and data collection for the research

and emphasizes the study's importance using triangulation methodology to validate the research

findings. This chapter presents the findings of results from the research participants of the study.

Below table is providing information about all thirty two participants and their relevent

experience.

Participant's demographic and industry information

Unique ID	Location	Industry	Age	Total Experience	Experience in Project Management	Management
PMP 1	Pune, India	Information Technology	39	16	7-15 Years	Middle Management
PMP 2	Pune, India	Manufacturing	40	18	15+ Years	Senior Leadership
PMP 3	Pune, India	Information Technology	50	24	7-15 Years	Middle Management
PMP 4	Pune, India	Information Technology	43	19	7-15 Years	Middle Management

PMP 5	Pune, India	Manufacturing	51	28	7-15 Years	Middle Management
PMP 6	Pune, India	Information Technology	32	12	7-15 Years	Middle Management
PMP 7	Pune, India	Information Technology	58	31	15+ Years	Senior Leadership
PMP 8	Pune, India	Manufacturing	45	23	7-15 Years	Senior Leadership
PMP 9	Pune, India	Consultation	57	30	15+ Years	Senior Leadership
PMP 10	Pune, India	Information Technology	45	20	7-15 Years	Middle Management
PMP 11	Chennai, India	Information Technology	45	25	15+ Years	Senior Leadership
PMP 12	Pune, India	Manufacturing	36	16	7-15 Years	Middle Management
PMP 13	Pune, India	Information Technology	42	20	7-15 Years	Senior Leadership

PMP 14	Pune, India	Manufacturing	36	13	7-15 Years	Middle Management
PMP 15	Banda, India	Construction	39	14	7-15 Years	Middle Management
PMP 16	Bangalore, India	Construction	35	10	7-15 Years	Middle Management
PMP 17	Pune, India	Consultation	60	36	15+ Years	Middle Management
PMP 18	Mumbai, India	Construction	47	26	15+ Years	Middle Management
PMP 19	Pune, India	Manufacturing	38	13	7-15 Years	Middle Management
PMP 20	Pune, India	Information Technology	50	20	7-15 Years	Middle Management
PMP 21	Pune, India	Consultation	40	20	7-15 Years	Senior Leadership
PMP 22	Chennai, India	Manufacturing	39	18	7-15 Years	Senior Leadership

PMP 23	Pune, India	Information Technology	43	22	15+ Years	Senior Leadership
PMP 24	Pune, India	Information Technology	48	24	15+ Years	Senior Leadership
PMP 25	Pune, India	Manufacturing	57	36	15+ Years	Senior Leadership
PMP 26	Bangalore, India	Information Technology	35	15	7-15 Years	Middle Management
PMP 27	Pune, India	Manufacturing	46	23	7-15 Years	Middle Management
PMP 28	Pune, India	Manufacturing	28	16	7-15 Years	Middle Management
PMP 29	Pune, India	Manufacturing	42	20	7-15 Years	Senior Leadership
PMP 30	Pune, India	Manufacturing	37	15	7-15 Years	Middle Management
PMP 31	Pune, India	Information Technology	44	22	7-15 Years	Middle Management

PMP 32	Pune, India	Information Technology	44	21	7-15 Years	Middle Management

The participants come from diverse industries, including Information Technology, Manufacturing, Construction, and Consultation. Their ages range from 28 to 60 years, with an average age of approximately 44 years. Their total work experience spans from 10 to 36 years, with an average of around 22 years. The majority of participants have 7-15 years of project management experience, although some have extensive experience exceeding 15 years.

20 (62.5%) respondents are on Middle Management positions, while others 12 (37.5%) are at Senior Leadership roles. The data exhibits a balanced representation across industries, age groups, and experience levels, providing a diverse perspective for the study.

The collected data presents a detailed overview of the demographic characteristics of the selected PMPs participating in the research. The findings from this research are expected to offer knowledge into the dynamics of leadership development in the context of emerging technologies, benefiting both the academic community and the practical realm of project management.

4.2 The Demographic information

The demographic information presented in this research provides information into the characteristics of the PMPs contributed in this study.

4.2.1 Age distribution of participants

The age range of the 32 Project Management Professionals (PMPs) participating in the research is from 28 to 60 years.

Graph representing age group of participants
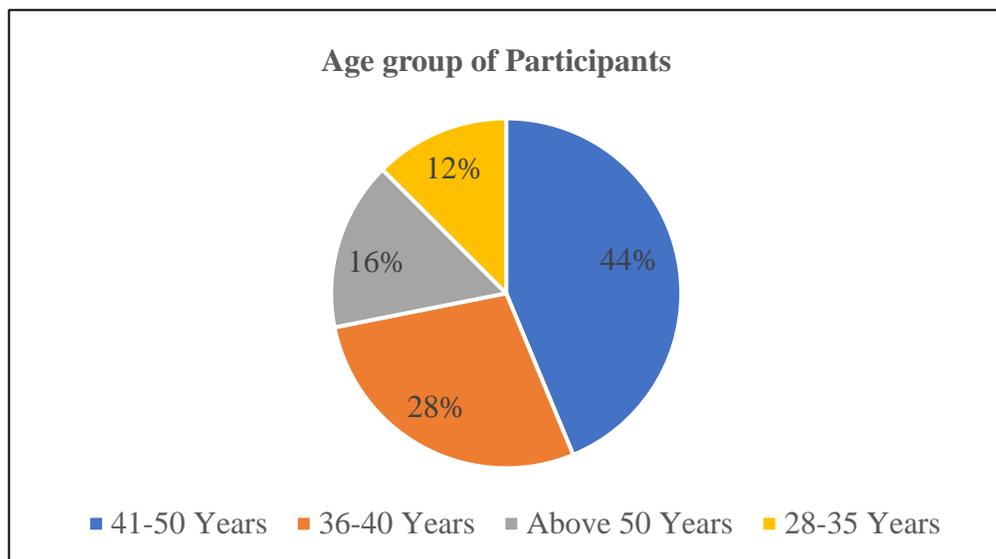
The majority of the participants, comprising 14 individuals, fall within the age range of 41-50 years, making up 43.75% of the total sample. This suggests that middle-aged professionals are well-represented in the research sample, likely indicating that they have acquired substantial experience and expertise in their respective roles.

The second most prominent age group consists of PMPs aged 36-40 years, with 9 participants, accounting for 28.13% of the sample group. This age cohort reflects a relatively younger but experienced group of professionals who are potentially at a crucial stage in their career development.

Furthermore, 5 participants are above 50 years of age, representing 15.63% of the sample. This indicates a significant presence of seasoned professionals who have accumulated extensive experience in project management over their careers. These individuals may offer valuable perspectives on leadership in the context of AI integration.

A smaller group of 4 participants falls within the age range of 28-35 years, making up 12.50% of the sample. This subset likely represents the younger segment of the research sample, potentially having entered their project management roles more recently and exploring pathways towards leadership positions.

The provided data on the age distribution of the participants demonstrates a diverse representation of project managers from different age groups. The research will delve into how individuals in these varying age cohorts navigate the challenges and opportunities presented by the integration of AI. By understanding how different age groups respond to the evolving demands of leadership in the context of AI implementation.

4.2.2 Job category

Researcher collected this data point from Project Management Professionals (PMPs) to gain understanding into their career progression and leadership roles.

Among the participants, 20 individuals currently hold positions in Middle Management. This represents 62.5% of the total sample. These professionals have likely accumulated significant experience in project management and are now operating at middle-level leadership positions within their organizations.

Additionally, 12 PMPs, constituting 37.5% of the participants, are in Senior or top Leadership positions. These individuals have successfully advanced in their careers to take on higher leadership responsibilities and may have a more significant impact on thoughtful decision-making in their respective organizations.

Graph representing job categories of participants
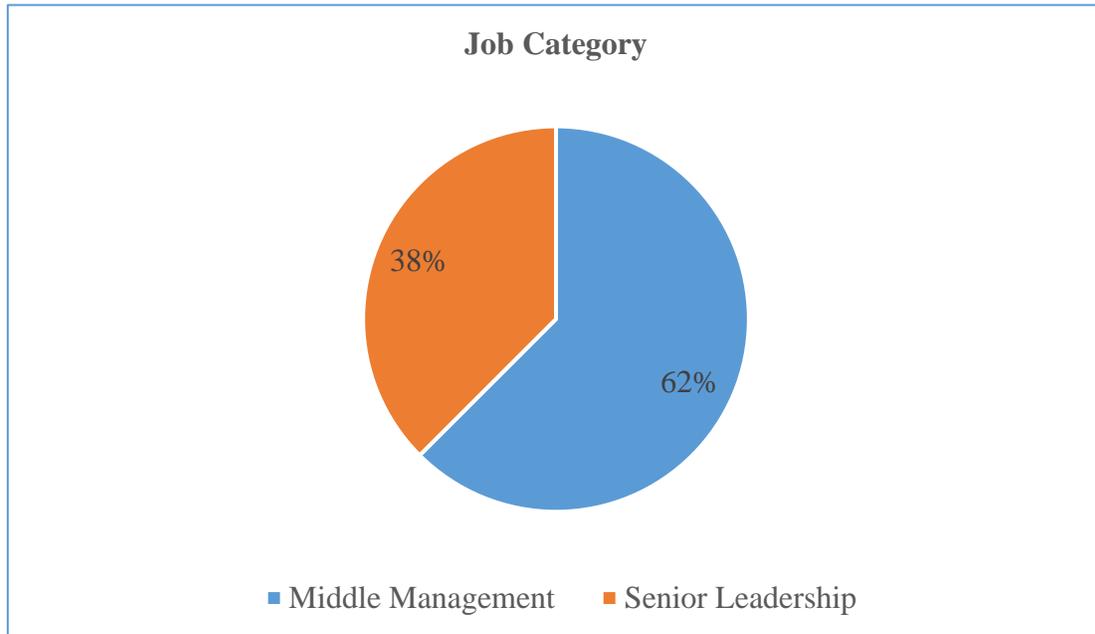
The data's clear distribution between Middle Management and Senior Leadership positions showcases the variety of career paths and experiences.

Understanding the dynamics and challenges faced by professionals in these leadership positions will provide valuable guidance to aspiring project managers and contribute to the broader understanding of leadership development.

4.2.3 Industry

The data gathered from Project Management Professionals (PMPs) offers understanding into their industry affiliations, shedding light on the diverse landscape of project management.

Among the participants, 14 individuals, accounting for 43.75% of the total sample, are affiliated with the Information Technology sector. This substantial representation reflects the growing significance of AI in this industry and its impact on project management practices.

Graph representing industry wise participants
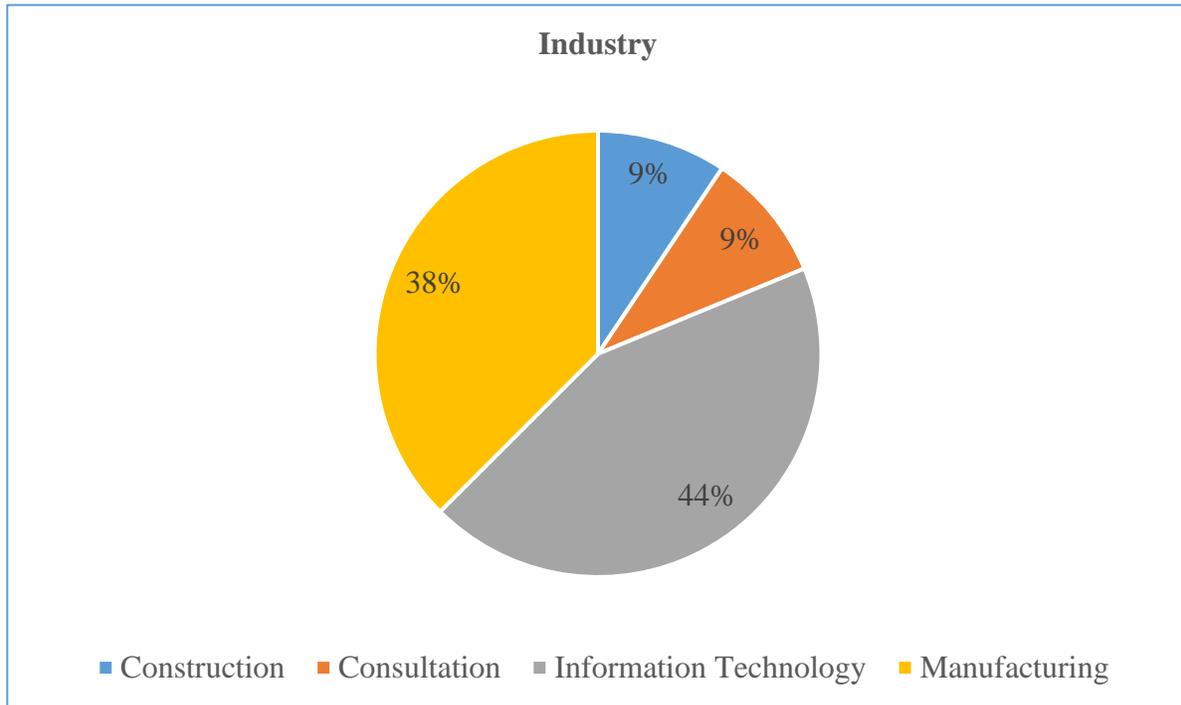
The Manufacturing sector closely follows with 12 PMPs, constituting 37.5% of the participants. The Manufacturing industry remains a critical player in the context of AI integration, necessitating effective leadership to navigate its challenges and opportunities.

Three (3) participants each, making up 9.38% of the sample, belong to the Construction and Consultation industries. These sectors demonstrate the applicability of project management principles across diverse domains and underscore the need for capable leaders to drive successful project outcomes.

The data's clear distribution across Construction, Consultation, Information Technology, and Manufacturing provides an overview of the research participant's industry backgrounds. Through this study, we seek to understand the varying experiences and demands faced by project

managers in different industries as they transition into leadership roles. By uncovering the industry-specific challenges and opportunities.

4.2.4 Experience range

This data point collected from Project Management Professionals provides information into their total years of experience, highlighting the diverse range of expertise within the sample.

Graph representing experience range of participants
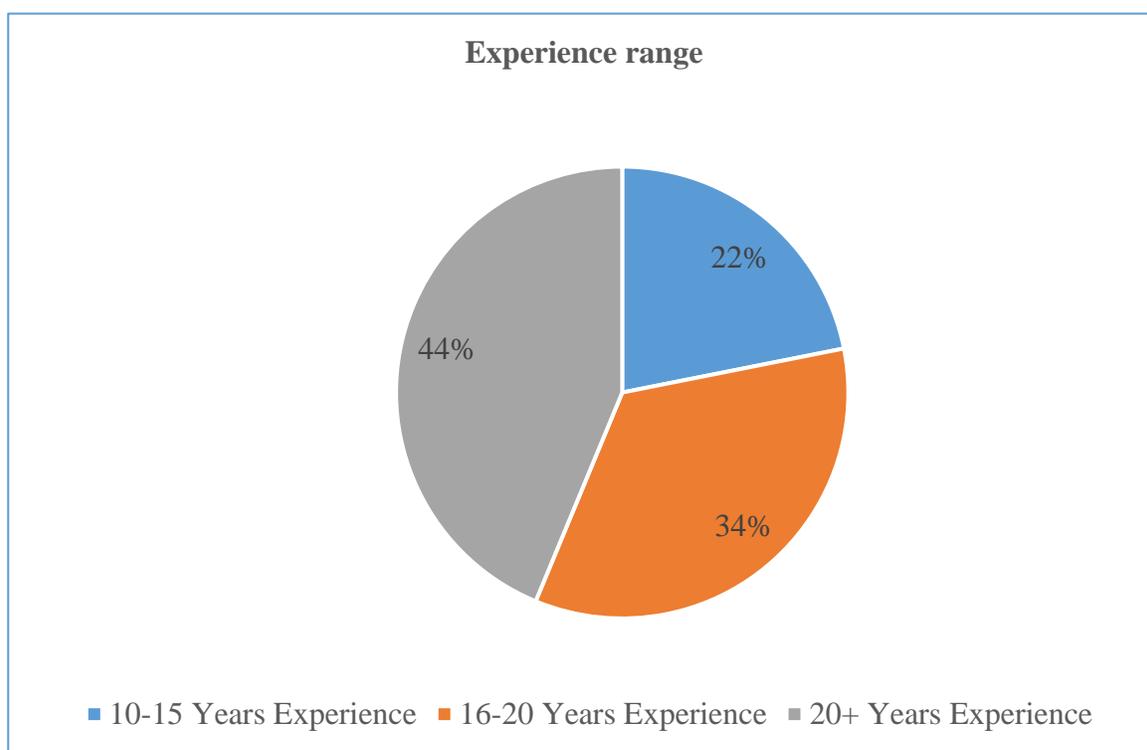
Among the participants, 7 individuals, constituting 21.88% of the total sample, have 10-15 years of experience. These professionals bring a valuable combination of industry knowledge and project management skills, making them crucial contributors to their organizations.

The majority of PMPs, 11 individuals comprising 34.38% of the participants, possess 16-20 years of experience. This age cohort represents professionals at a pivotal stage in their careers, with significant expertise in project management and leadership roles.

Furthermore, 14 participants, making up 43.75% of the sample, have accumulated 20 or more years of experience. These seasoned professionals possess a wealth of knowledge and wisdom, having navigated various challenges throughout their extensive careers.

The data's clear distribution across different experience categories showcases the diversity and depth of expertise among the participants. The findings will contribute to a deeper understanding of leadership development and best practices in AI-driven multinational corporations.

4.3 Research hypothesis and analyzing correlation of survey responses

As discussed in chapter 1 already, that the objectives of this research study are to investigate the impact of artificial intelligence (AI) integration in project management on the role of project managers.

With the dataset of responses from all 17 survey questions at our disposal, researcher's next phase is analysis. This analysis aims to uncover meaningful connections and relationships that could potentially validate or challenge the hypotheses researcher have put forth. We will discuss the responses to each of 17 (Seventeen) questions now:

4.3.1 AI technologies have the potential to significantly impact project management practices.

Graph representing the responses for question 1 of the Survey
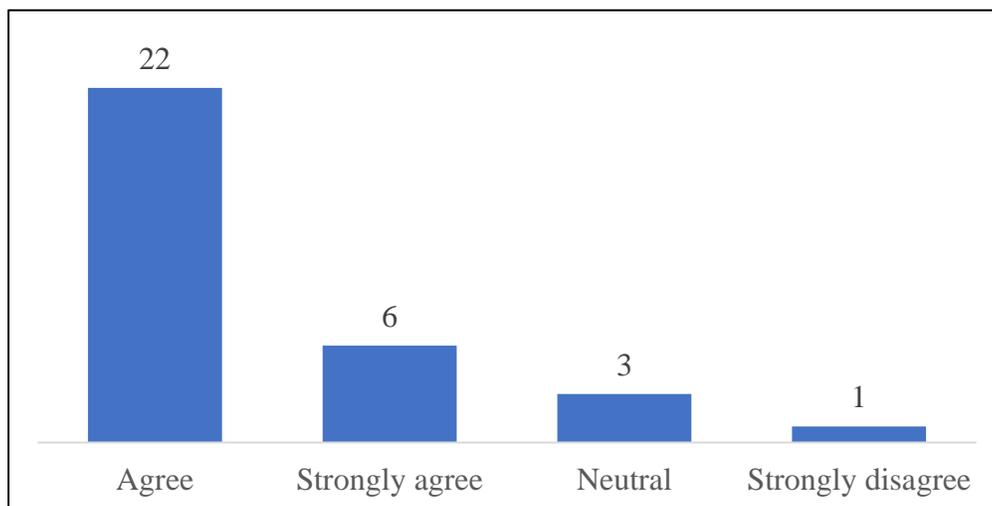
The majority of participants (22 out of 32) agree that AI technologies have the potential to significantly impact project management practices. These individuals acknowledge the transformative role of AI in reshaping project management processes and practices.

Furthermore, a considerable number of participants (6 out of 32) strongly agree with the statement, expressing a firm belief in the profound impact of AI technologies on project management practices.

On the other hand, only one participant (1 out of 32) strongly disagrees, expressing a contrasting view regarding the potential impact of AI on project management practices.

Lastly, a smaller subset of participants (3 out of 32) remains neutral, neither strongly agreeing nor disagreeing with the statement, suggesting a degree of uncertainty or lack of conviction in their perception of AI's potential impact.

The common responses, with a strong agreement from 6 participants and agreement from 22 participants, indicate a prevailing belief among a significant majority that AI technologies hold substantial promise in revolutionizing project management practices. This collective sentiment supports the need for further investigation into the specific areas of project management that AI can most effectively enhance and the challenges that might arise during its implementation.

4.3.2 The use of AI in project management will improve overall project performance

Graph representing the responses for question 2 of the Survey
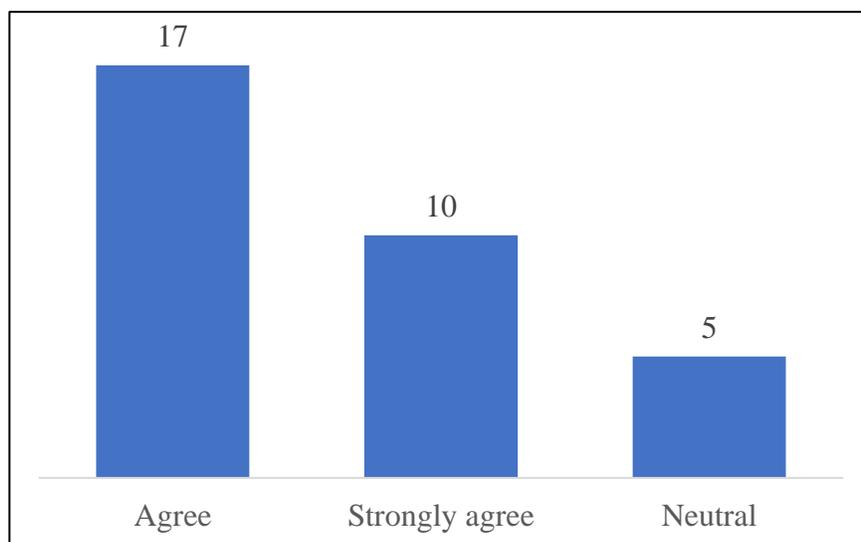
The majority of participants (17 out of 32) agree that the use of AI in project management will improve overall project performance. These individuals acknowledge AI's potential to enhance project management processes and lead to better project outcomes.

Additionally, a significant number of participants (10 out of 32) strongly agree with the statement, expressing a firm belief that AI technologies will bring substantial improvements to project performance.

On the other hand, a smaller subset of participants (5 out of 32) remains neutral, neither agreeing nor disagreeing with the statement. These individuals may have reservations or uncertainties about the extent of AI's impact on overall project performance.

The responses reflect a prevailing optimism among the majority of PMPs regarding the positive influence of AI. The agreement and strong agreement from a notable subset highlight the importance of leveraging AI technologies to enhance project efficiency and success.

4.3.3 AI will automate routine project management tasks, allowing project managers to focus on more strategic aspects.

Graph representing the responses for question 3 of the Survey
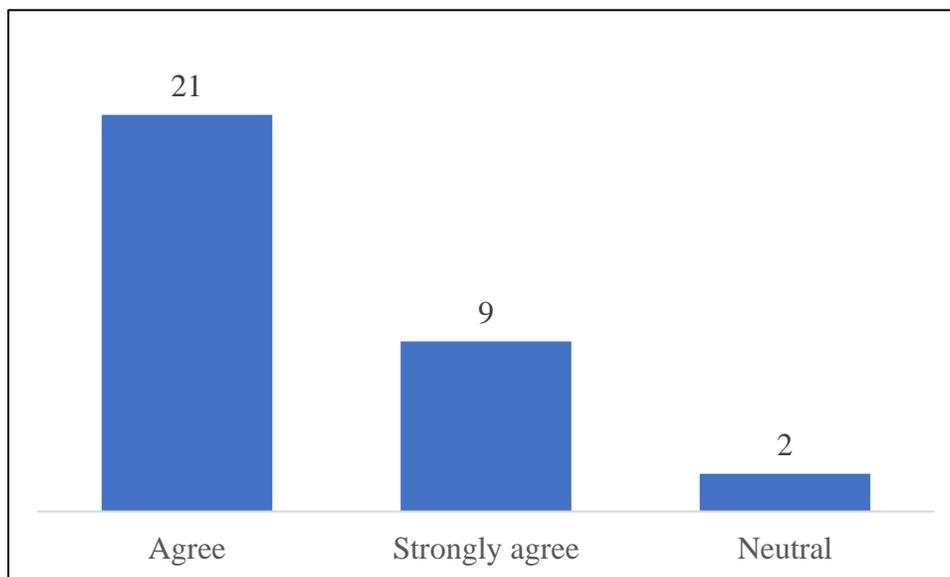
The majority of participants (21 out of 32) agree that AI will automate routine project management tasks, freeing up project managers to focus on more strategic aspects. These individuals recognize the potential of AI to streamline repetitive tasks, allowing them to devote more time and attention to critical tactical decision-making and planning.

Furthermore, a notable subset of participants (9 out of 32) strongly agrees with the statement, expressing a firm belief in the transformative impact of AI on automating routine tasks in project management. They anticipate that AI technologies will significantly enhance project managers' productivity and enable them to focus on higher-value activities.

On the other hand, a small group of participants (2 out of 32) remains neutral, neither agreeing nor disagreeing with the statement. These individuals may have reservations or uncertainties about the extent to which AI can fully automate routine project management tasks.

The responses indicate a prevailing optimism among the majority of PMPs regarding AI's potential to streamline project management processes and elevate their roles to focus on strategic aspects.

4.3.4 Project managers will need to develop new skills to effectively work with AI technologies

Graph representing the responses for question 4 of the Survey
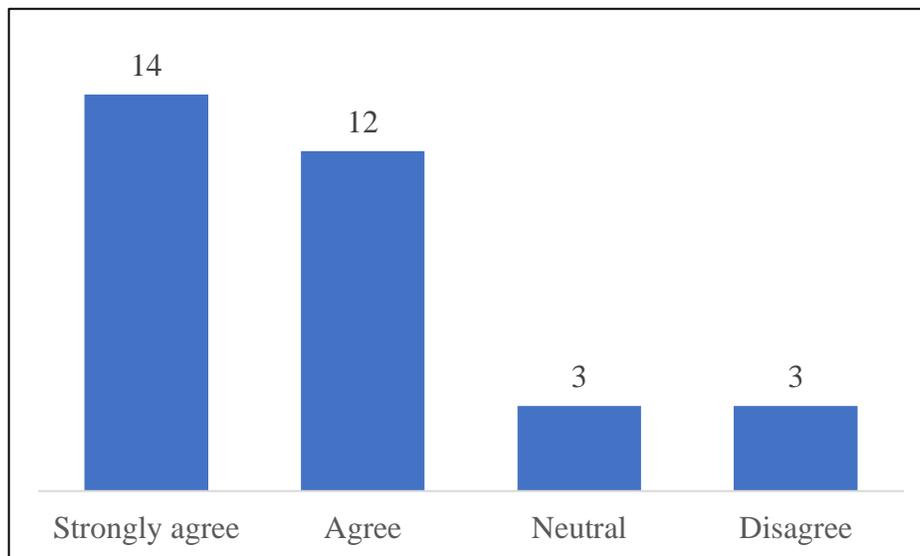
The responses indicate a diverse range of perspectives among the participants regarding the need for project managers to develop new skills to effectively work with AI technologies.

A significant number of participants (14 out of 32) strongly agree with the statement, expressing a firm belief that project managers will indeed need to acquire new skills to adapt to the integration of AI technologies. They recognize the evolving landscape of project management and the necessity to stay ahead by upskilling and embracing AI-related competencies.

Furthermore, a notable group of participants (12 out of 32) agrees with the statement, indicating their acknowledgement that AI technologies will bring about changes in project management practices and, therefore, require project managers to acquire additional skills to effectively work with these technologies.

On the other hand, a smaller subset of participants (3 out of 32) disagrees with the statement, suggesting that they do not believe project managers will need to develop new skills in the context of AI integration. They may hold the view that existing skills and expertise will suffice to navigate the AI-driven environment.

Additionally, another subset of participants (3 out of 32) remains neutral, neither agreeing nor disagreeing with the statement. These individuals may have uncertainties or reservations about the extent to which AI will impact project management skill requirements.

The diverse responses indicate that while a considerable number of participants recognize the need for new skills, there is also a range of opinions, including those who hold contrary views or are undecided. Understanding project manager's perspectives and beliefs is crucial in preparing for the successful integration of AI technologies in project management and facilitating the development of necessary competencies to thrive.

4.3.5 How familiar are you with the current applications of AI in Project Management?

Graph representing the responses for question 5 of the Survey
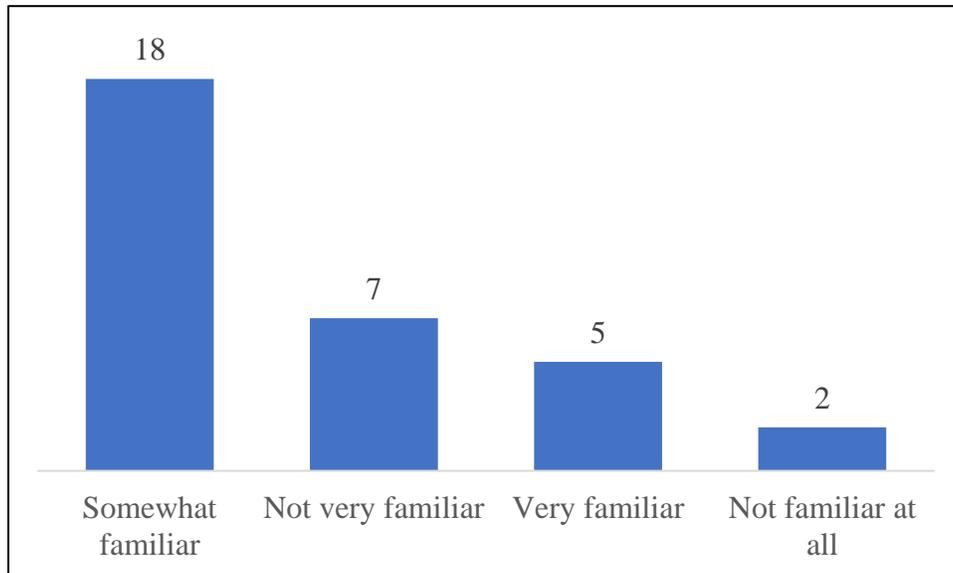
The responses reflect varying levels of familiarity among the participants regarding the current applications of AI in project management. A small group of participants (5 out of 32) report being very familiar with the current applications of AI in project management. These individuals likely have extensive knowledge and experience in utilizing AI technologies in their project management practices.

The majority of participants (18 out of 32) describe themselves as somewhat familiar with AI applications in project management. They possess a basic understanding of AI's role and potential applications in the context of project management.

A smaller subset of participants (7 out of 32) indicate that they are not very familiar with AI applications in project management. These individuals may have limited exposure to AI technologies or have not yet explored their potential applications in project management extensively.

Furthermore, a small number of participants (2 out of 32) report not being familiar at all with AI applications in project management. These individuals likely have little to no knowledge or experience with AI in their project management practices.

The diverse range of responses suggests that there is a varying degree of awareness and understanding among the participants regarding AI's current applications in project management. Understanding the level of familiarity with AI technologies can inform the development of training and educational initiatives to enhance project manager's understanding and utilization of AI in their roles.

4.3.6 Have you personally worked on projects that utilized AI technologies in project management?

Graph representing the responses for question 6 of the Survey
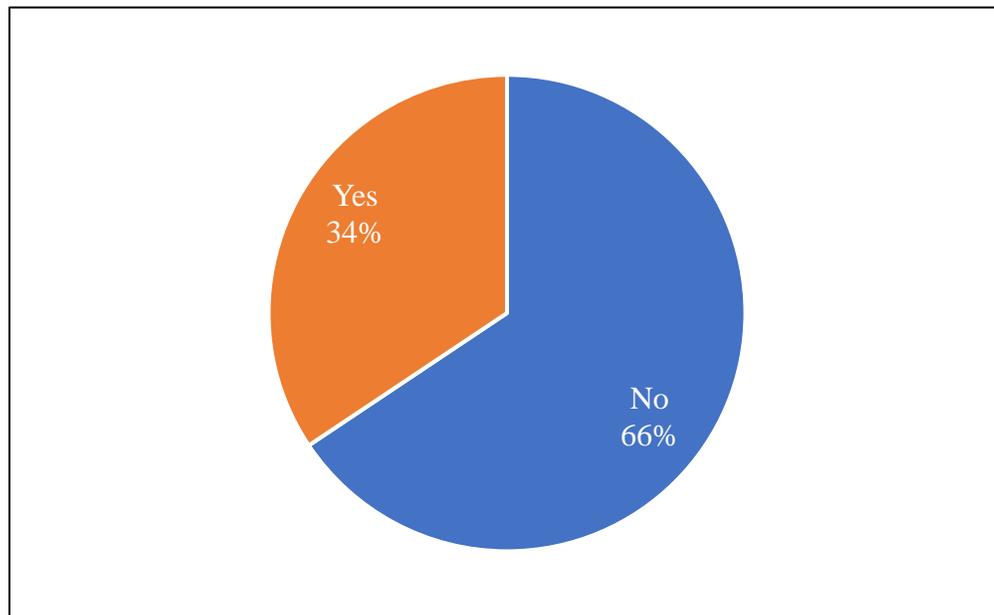
The responses indicate that a majority of participants (21 out of 32) have not personally worked on projects that utilized AI technologies in project management. These individuals have not had direct experience with AI implementation in their project-related work.

On the other hand, a significant number of participants (11 out of 32) have worked on projects that utilized AI technologies in project management. These individuals have had hands-on experience with AI applications and are likely to have knowledge into the practical implications and benefits of incorporating AI in project management practices.

The diverse responses highlight that while some project managers have already been exposed to AI technologies in their project work, many others have not yet had the opportunity to work on such projects. Understanding their firsthand experiences, challenges, and successes can provide wisdom into the practical implementation and impact of AI in project management.

For those project managers who have not worked on AI-driven projects, understanding their awareness and perspectives on AI's potential in project management can be helpful to facilitate the successful integration of AI technologies in future projects.

4.3.7 In your experience, which aspects of project management do you believe AI technologies can most effectively assist with? (Select all that apply)

The survey participants were asked to select from the following options regarding the aspects of project management where AI technologies can most effectively assist:

a) Resource allocation and scheduling

b) Data analysis and forecasting

c) Communication and collaboration

d) Risk assessment and management

e) Decision-making and problem-solving

f) Others

The participants had the opportunity to choose one or more options from the list based on their perceptions and experiences with AI technologies in project management. The responses provided understanding into the specific areas where participants believe AI can play a significant role in supporting and enhancing project management practices.

a) Resource allocation and scheduling: All participants (32 out of 32) recognize that AI technologies can effectively assist in resource allocation and scheduling. This indicates a unanimous agreement on the potential of AI to optimize resource allocation and streamline project scheduling processes.

b) Data analysis and forecasting: The majority of participants (30 out of 32) believe that AI technologies can effectively assist in data analysis and forecasting. This highlights the importance of AI in handling large datasets and deriving perception to enhance project planning and decision-making.

c) Communication and collaboration: A significant number of participants (23 out of 32) acknowledge that AI technologies can effectively assist in communication and collaboration. This suggests an awareness of AI's potential to facilitate seamless communication and collaboration among project teams.

d) Risk assessment and management: A considerable portion of participants (13 out of 32) identifies AI technologies as effective tools for risk assessment and management in project management. While not as unanimous as other aspects, this response indicates recognition of AI's potential to analyze risks and support risk management strategies.

e) Decision-making and problem-solving: Several participants (8 out of 32) see AI technologies as effective aids in decision-making and problem-solving processes in project management. This suggests that they understand AI's ability to provide data-driven insights to support project-related decisions.

f) MIS Management, Routine Task allocation & tracking, Process Documentation, drafting templates to be used: These aspects were mentioned by individual participants, indicating specific use cases where AI can be beneficial in project management.

The responses show a strong consensus among the participants regarding AI's potential in resource allocation and scheduling, data analysis, and forecasting. There is also significant recognition of AI's role in communication and collaboration. However, opinions vary when it comes to AI's effectiveness in risk assessment and management, decision-making, and problem-solving.

Understanding the perceived strengths and limitations of AI in these areas can inform the development of AI-driven solutions tailored to address project manager's needs and challenges effectively. Additionally, identifying potential barriers to adopting AI in specific aspects can guide strategies to facilitate the successful integration.

4.3.8 How confident are you in your ability to adapt to and learn new AI technologies in the context of project management?

The survey participants were asked to rate their confidence level in their ability to adapt to and learn new AI technologies in the context of project management on a scale from 1 to 5, with 1 indicating the lowest level of confidence and 5 indicating the highest level of confidence.

Graph representing the responses for question 8 of the Survey
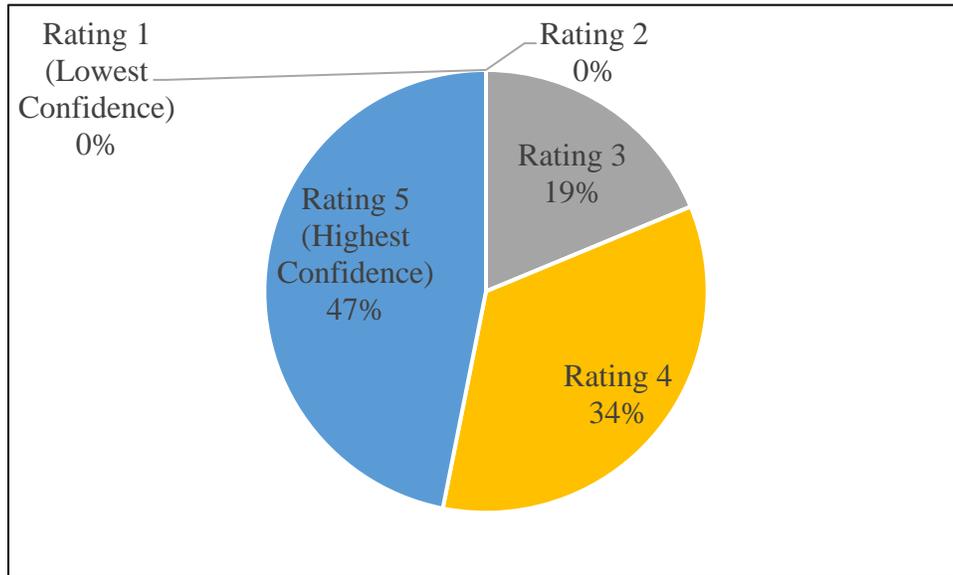
The responses provided by participants are as follows:

a) Rating 1: No participant selected this option, indicating that no one reported the lowest level of confidence in adapting to and learning new AI technologies.

b) Rating 2: No participant selected this option, suggesting that none of the participants had a relatively low level of confidence in their ability to adapt to and learn new AI technologies.

c) Rating 3: A small number of participants (6 out of 32) rated their confidence level as 3, indicating a moderate level of confidence in their ability to adapt to and learn new AI technologies.

d) Rating 4: The majority of participants (11 out of 32) selected this option, signifying a relatively high level of confidence in their ability to adapt to and learn new AI technologies.

e) Rating 5: The largest group of participants (15 out of 32) rated their confidence level as 5, reflecting a very high level of confidence in their ability to adapt to and learn new AI technologies.

The responses show that the majority of the participants are confident in their capability to adapt to and learn new AI technologies in the context of project management. A significant number of them have a very high level of confidence in their ability to do so.

Understanding the factors that influence confidence can guide the design of training programs and support initiatives to empower project managers to effectively adopt AI technologies and leverage their benefits in their project-related work.

4.3.9 Do you think the increasing use of AI in project management will lead to a reduction in the number of project managers needed for a given project?

Graph representing the responses for question 9 of the Survey
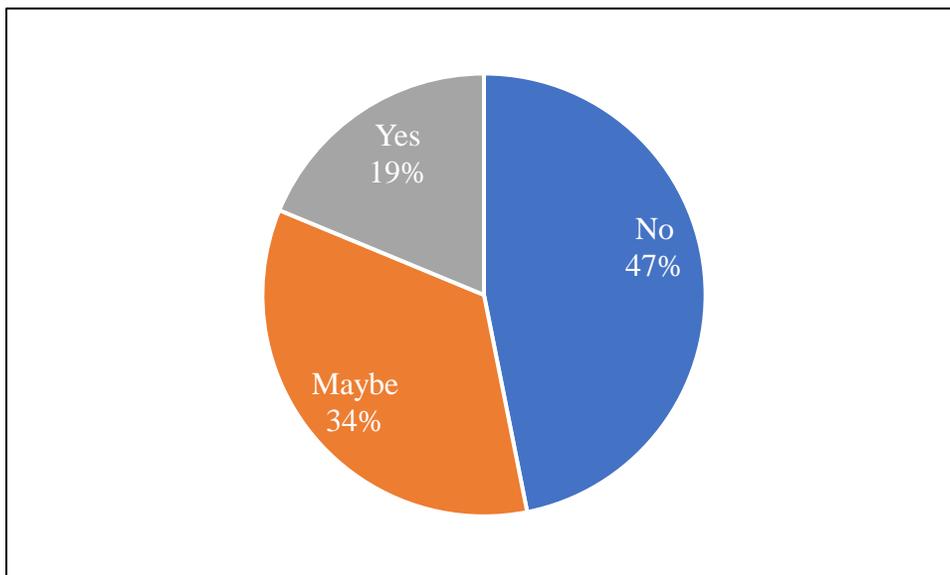
The survey participants had three options to choose from: Yes, No, and Maybe.

a) Yes: 6 participants (18.75% of the total) believe that the increasing use of AI in project management will lead to a reduction in the number of project managers needed.

b) No: 12 participants (37.5% of the total) do not think that AI's increasing use will result in a reduction in the number of project managers needed.

c) Maybe: 14 participants (43.75% of the total) are unsure and consider that the impact of AI on the number of project managers required may be uncertain or context-dependent.

The responses demonstrate a diverse range of opinions among the participants regarding the potential impact of AI on the number of project managers needed. While a significant number of participants are uncertain about the outcome (Maybe), a considerable portion also believes that AI's increasing use could lead to a reduction in the number of project managers required (Yes).

These percentages provide understanding into the participant's perspectives, highlighting the need for further exploration and understanding of the factors influencing their opinions. Factors such as their exposure to AI technologies, familiarity with AI's capabilities in project management, and perceptions of the evolving role of project managers in an AI-driven environment may contribute to these varying viewpoints.

This deeper exploration can help identify potential implications for workforce planning, skill development, and organizational deliberation the context of increasing AI integration in project management practices. Understanding these perspectives can also guide the development of effective change management approaches to support project managers in navigating the potential transformations brought about by AI technologies.

4.3.10 How would you rate the level of support and resources provided by your organization for project managers to acquire the necessary skills and knowledge related to AI technologies?

The survey participants were asked to rate the level of support and resources provided by their organizations for project managers to acquire the necessary skills and knowledge related to AI technologies.

Graph representing the responses for question 10 of the Survey
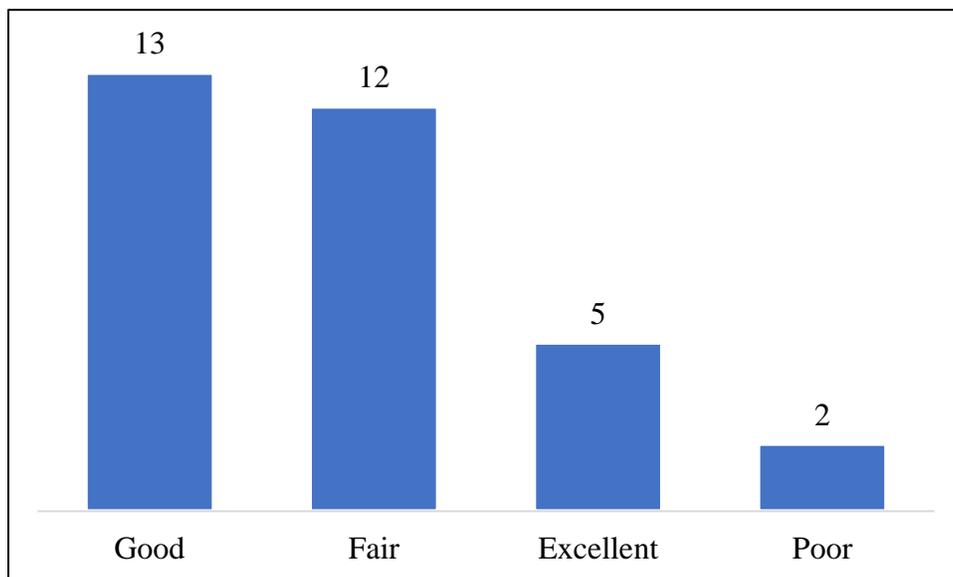
They had the following options to choose from: Poor, Fair, Good, and Excellent. The responses are as follows:

a) Poor: 2 participants rated the level of support and resources as poor, indicating that their organizations may not be adequately providing the necessary support for project managers to acquire AI-related skills and knowledge.

b) Fair: 12 participants rated the level of support and resources as fair, suggesting that their organizations provide some level of support, but there may be room for improvement.

c) Good: 13 participants rated the level of support and resources as good, indicating that their organizations provide satisfactory support for project managers in acquiring AI-related skills and knowledge.

d) Excellent: 5 participants rated the level of support and resources as excellent, signifying that their organizations offer exceptional support and resources to enable project managers to develop AI-related competencies.

The responses reveal a varied perception among the participants regarding the level of support and resources available to acquire AI-related skills. While a significant number of participants rated the support as good, there are also notable groups that indicated fair and excellent levels of support. However, it is concerning that a small number of participants rated the support as poor, indicating potential gaps in their organizations' efforts to equip project managers with the necessary AI-related skills.

Understanding the reasons behind the ratings can help organizations develop tailored plans to enhance the support and resources available to project managers, fostering a more effective and confident integration of AI technologies.

4.3.11 In your opinion, what are the potential benefits of project managers adopting a more strategic and visionary leadership approach in the context of AI integration? (Select all that apply)

It is evident that the majority of them recognize and appreciate the various potential benefits associated with project managers adopting a more strategic and visionary leadership approach. The responses provide acumen into the perceived advantages that such a leadership approach can offer.

a) Improved project outcomes: 29 participants (90.6% of the total) believe that a strategic and visionary leadership approach can lead to improved project outcomes, indicating that such an approach can enhance project success and deliver better results.

b) Better alignment with organizational goals: 24 participants (75% of the total) recognize that adopting a more strategic and visionary approach can ensure better alignment with the overall goals of the organization. This alignment can contribute to the organization's success and long-term sustainability.

c) Enhanced innovation and creativity: 22 participants (68.8% of the total) see the potential for increased innovation and creativity when project managers adopt a strategic and visionary leadership style. Such an approach can encourage innovative thinking and the exploration of new possibilities.

d) Increased stakeholder satisfaction: 23 participants (71.9% of the total) acknowledge that a more strategic and visionary leadership approach can lead to higher stakeholder satisfaction. By understanding and addressing stakeholders' needs, project managers can build stronger relationships and gain greater support for their projects.

e) Consistent implementation of projects: 1 participant (3.1% of the total) highlights the benefit of consistent project implementation when project managers adopt a strategic

and visionary approach. This suggests that a clear vision and strategic direction can contribute to consistent project execution and delivery.

The responses reflect a strong belief among the participants in the positive impact of a strategic and visionary leadership approach when integrating AI technologies into project management practices. The potential benefits, including improved project outcomes, better alignment with organizational goals, enhanced innovation, increased stakeholder satisfaction, and consistent project implementation, underscore the value of adopting a proactive and forward-thinking leadership style in the context of AI integration.

These perceived benefits can serve as knowledge for organizations seeking to leverage AI technologies effectively and maximize their project management capabilities. By encouraging project managers to embrace a leadership approach, organizations can position themselves for greater success in an increasingly AI-driven business landscape.

4.3.12 How would you rate the level of readiness of project management professionals in your organization to embrace the changes brought about by the integration of AI technologies?

Graph representing the responses for question 12 of the Survey
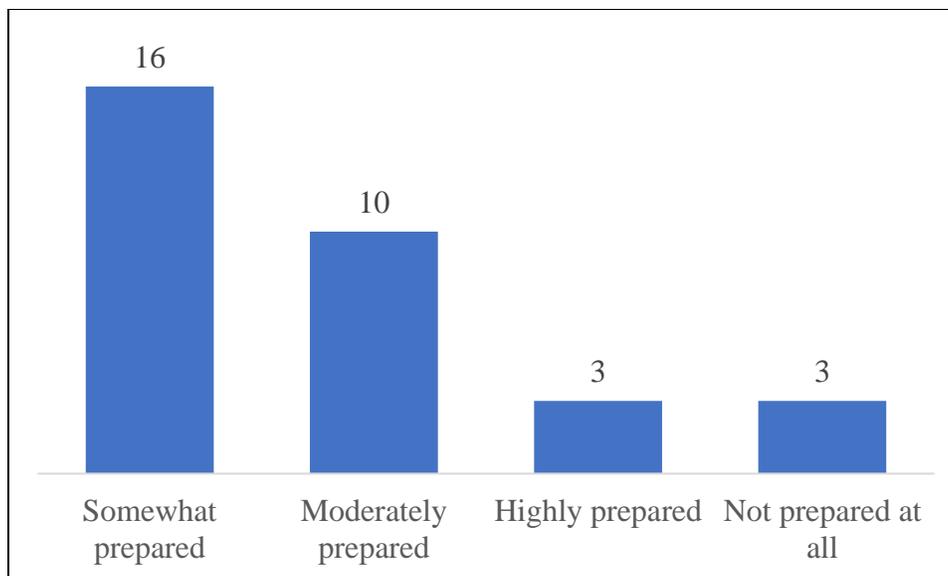
The responses highlight the need for organizations to assess the readiness of their project management professionals for AI integration and provide appropriate support and resources to enhance their preparedness. Training and development initiatives can play a crucial role in empowering professionals to effectively embrace the changes and leverage AI technologies to drive successful project outcomes.

a) Highly prepared: A small percentage of respondents (9.3%) indicated that they consider project management professionals in their organization to be highly prepared to embrace the changes brought by AI integration. This suggests that some individuals have already developed the necessary skills and knowledge to adapt to AI technologies effectively.

b) Moderately prepared: The majority of respondents (31.2%) rated project management professionals as moderately prepared to handle the changes brought about by AI integration. This indicates that a significant portion of the professionals are actively working on acquiring the required skills and knowledge, but there is room for improvement.

c) Somewhat prepared: Approximately 50% of respondents expressed that project management professionals in their organization are somewhat prepared for AI integration. This suggests that many professionals have some level of familiarity with AI technologies, but they may need further training and support to fully embrace the changes.

d) Not prepared at all: A small percentage of respondents (9%) believe that project management professionals in their organization are not prepared at all to deal with the changes brought about by AI integration. This indicates a potential gap in skills and knowledge, and organizations may need to invest in training and development programs to bridge this gap.

4.3.13 To what extent do you agree that the increasing use of AI in project management will lead to a shift in the role of project managers from traditional task-oriented leadership to a more strategic and visionary leadership approach, transforming them into project leaders?

Graph representing the responses for question 13 of the Survey
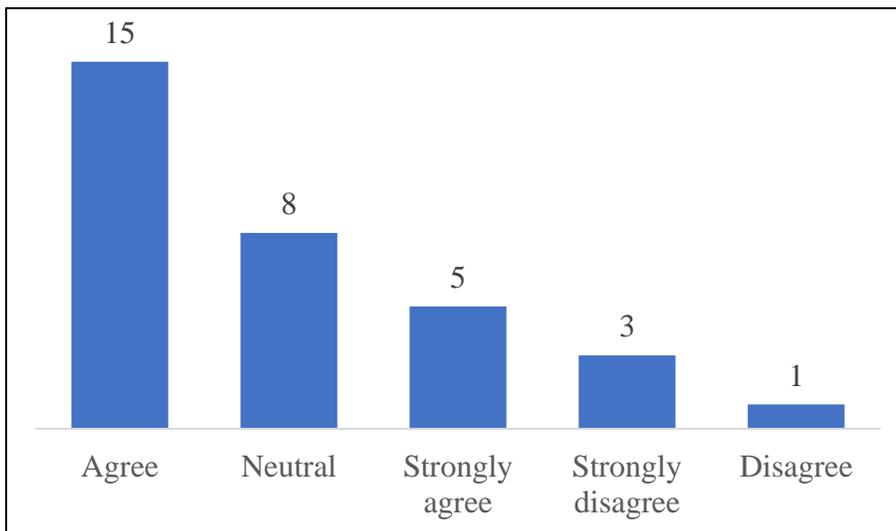
The participants in the survey were presented with five options to express their agreement level regarding the impact of AI on the role of project managers. The options ranged from "Strongly agree" to "Strongly disagree," allowing them to indicate their stance on whether AI integration would lead to a shift in project manager roles from task-oriented leadership to a more strategic and visionary approach, ultimately transforming them into project leaders.

A significant proportion of participants (5 of 32 individuals) strongly agreed that the increasing use of AI in project management would lead to a fundamental shift in the role of project managers. They expressed confidence in AI's ability to transform project managers into strategic and visionary leaders. These respondents see AI as a catalyst for change, enabling project managers to focus on higher-level tasks and innovative decision-making, while routine activities can be automated.

The majority of respondents (15 of 32 individuals) agreed that AI integration would bring about noticeable changes in the role of project managers. They believed that AI technologies can enhance project outcomes and drive project managers towards a more strategic leadership approach. This group recognized the potential benefits of AI in project management and its capacity to streamline workflows and improve decision-making processes.

A smaller group of participants (8 of 32 individuals) took a neutral stance, indicating that they may not have a definitive opinion on the extent of AI's impact on project manager roles. Their responses suggest that further education and awareness-building about AI's potential in project management could be beneficial.

On the other hand, a minority (3 of 32 individuals) disagreed and strongly disagreed with the statement. These respondents did not believe that AI integration would lead to a significant shift

in project manager roles. Their skepticism might be driven by concerns about job security or reservations about AI's ability to handle complex human-centric aspects.

The diverse range of responses highlights the need for ongoing discussions and knowledge-sharing. As AI continues to evolve, it will be essential for organizations and professionals to adapt, learn, and make informed decisions to harness its full benefits. Understanding and addressing different perspectives will play a vital role in successfully integrating AI into project management practices and leveraging its potential for improved project outcomes and strategic leadership.

4.3.14 In your opinion, how important is it for project managers to embrace a more strategic and visionary leadership approach in the context of increasing AI adoption in project management?

Graph representing the responses for question 14 of the Survey
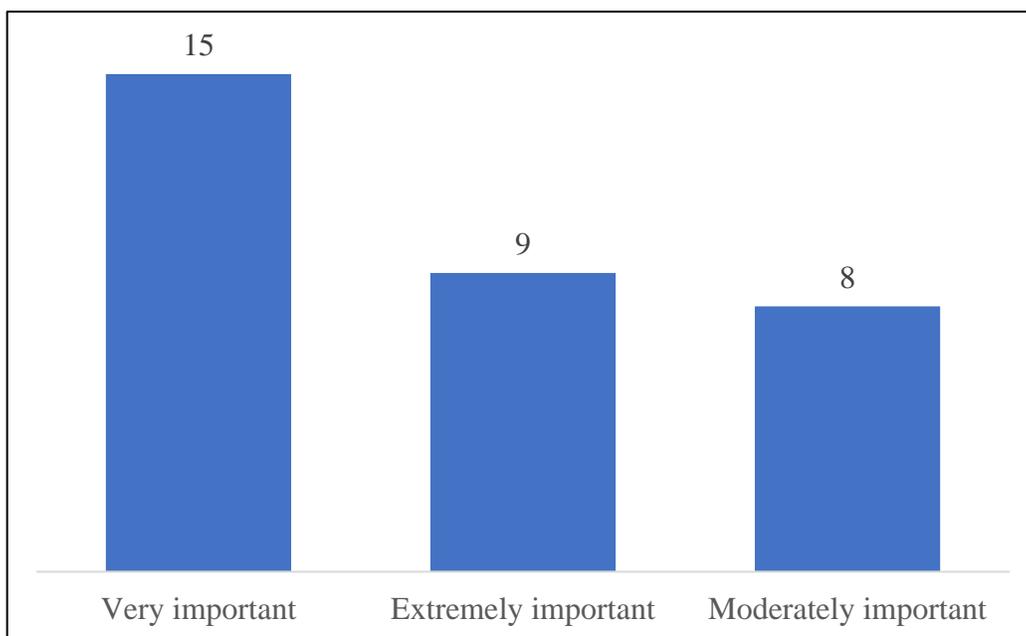
Participants were presented with four choices to convey their opinions about the necessity for project managers to embrace a more strategic and visionary leadership style in light of the increasing adoption of AI. The available options included "Extremely Important", "Very Important", "Moderately important", and "Not Important"

Upon reviewing the responses, it became evident that a substantial portion of the participants, constituting 46.8% (15 individuals) of the total, opted for " Very Important" as their preference. This reflects a strong belief among these project managers in the importance of adopting a strategic and visionary leadership approach. They acknowledged the potential advantages of aligning their leadership style with the growing use of AI technologies.

Additionally, a noteworthy segment of the respondents, comprising 28.1% (9 individuals), chose "Extremely Important" as their response. These individuals stressed the utmost importance of project managers embracing a strategic and visionary leadership approach amidst the increasing adoption of AI. They likely grasped the critical role of such leadership in effectively harnessing AI's potential to enhance project outcomes.

A moderate proportion of participants, representing 25%, indicated that adopting a more strategic and visionary leadership style was "Moderately Important" to them. This group recognized the value of embracing a forward-thinking leadership approach but may have varying degrees of confidence in its impact on project management practices.

The diverse array of responses confirms the range of perspectives held by project managers regarding the significance of strategic and visionary leadership. This analysis concludes the importance of organizations fostering an environment that encourages meaningful conversations and knowledge-sharing to arrive at a shared understanding of the most suitable leadership approach for leveraging AI's potential in achieving project management success. Through open

dialogue, organizations can facilitate the integration of AI technologies while ensuring effective leadership practices that drive innovation, decision-making, and project excellence.

4.3.15 How do you think AI will impact the role of project managers in terms of their day-to-day activities and responsibilities?

Based on the responses provided by different participants for this open-ended question in Survey, it is evident that AI will have a significant impact on the role of project managers in terms of their day-to-day activities and responsibilities.

Several participants highlighted that AI technology can streamline routine tasks and activities, leading to increased efficiency and time savings. This includes automating activities like tracking, reporting, and meeting summaries, which can free up project managers' time to focus on more tactical and creative aspects of project management. By reducing the burden of mundane tasks, project managers can better allocate their time and energy towards more strategic activities like driving innovation, making decisions, and engaging in risk and gap analysis.

AI is expected to provide better analytics and dashboarding, enabling project managers to have actionable insights and data-driven information readily available, allowing them to make informed decisions more efficiently. Additionally, AI can help project managers with exception-driven management, where they can focus on addressing critical issues while AI handles routine activities.

Moreover, AI's capabilities in automating tasks and providing data-driven clarity can lead to more systematic and better-planned project management. Participants highlighted that AI could assist in improving resource efficiency and enhancing communication, ultimately contributing to higher stakeholder satisfaction.

However, some participants expressed caution about the limitations of AI. While AI can streamline logical and routine tasks, it may not be able to address all complexities and variables involved in project execution. Real AI application in project management may still have a long way to go, and there might be challenges in automating exception handling and other non-routine tasks.

4.3.16 What specific skills or competencies do you believe project managers should develop to successfully navigate the changing landscape of project management with the increasing use of AI?

Based on the responses provided by different participants, there are several key skills and competencies that project managers should develop to successfully navigate the changing landscape of project management with the increasing use of AI.

a) Data Analytics and AI-Based Tools: Project managers should develop skills in data analytics and gain hands-on experience with AI-based project management tools. This includes understanding how to leverage data-driven insights from AI to make informed decisions and improve project outcomes.

b) Agility and Adaptability: Being agile and adaptable is crucial for project managers as AI adoption introduces new technologies and methodologies. Project managers should be open to change and ready to embrace new approaches.

c) Digitalization and Digitization: Developing a digitalization and digitization approach is essential for project managers to effectively integrate AI technologies into project management processes.

d) Understanding AI Models: Project managers should have a good understanding of AI models and how to use them effectively. This involves recognizing the need for AI and using regenerative AI tools.

e) Strategic Vision: Project managers need to develop a strategic and competitive vision for utilizing AI technologies. This involves understanding how AI can be used to drive project success and competitive advantage.

f) Data Handling and Data Quality: Understanding how to use AI and various AI models requires project managers to have strong data handling skills and a focus on data quality.

g) Training and Learning: Continuous learning and adopting a growth mindset are crucial for project managers to stay updated with AI advancements and to adapt to the changing scenarios in project management.

h) Human Skills and Creativity: While AI automation is valuable, project managers should also focus on developing human skills like creativity, innovations, thought leadership and collaborations. These skills complement AI-driven automation and enhance project management capabilities.

i) Change Management: As AI adoption brings significant changes to project management practices, project managers should be skilled in change management to effectively lead teams through these transformations.

j) Market Readiness and Versatility: Being market-ready and versatile allows project managers to be well-prepared for the evolving demands of project management with AI technologies.

The qualitative analysis indicates that project managers need a diverse set of skills and competencies to successfully navigate the changing landscape. A combination of technical skills related to AI and data analytics, along with soft skills such as adaptability, strategic thinking, and change management, will enable project managers to harness the potential of AI technologies and drive project success in the future.

4.3.17 In your opinion, what challenges might project managers face when transitioning from a task-oriented leadership style to a more strategic and visionary approach with the integration of AI?

Based on the responses provided by different participants, several challenges might be faced by project managers when transitioning from a task-oriented leadership style to a more strategic and visionary approach with the integration of AI.

a) Technology Implementation: One of the challenges mentioned is the implementation of AI technology in the current organizational setup. Project managers may encounter difficulties in adopting and integrating AI tools and systems into their existing processes.

b) Readiness for Change: Some project managers may face challenges in being ready for the transition to a more strategic and visionary leadership style. Embracing change and adapting to new methodologies can be difficult for some individuals and teams.

c) Data Accuracy and Analysis: The accuracy of data and information analyzed using AI is a concern for project managers. Relying on AI-driven information requires confidence in the accuracy and reliability of the data being used.

d) Data Literacy and Understanding AI: Project managers need a robust understanding of AI technologies and their potential impact on project management. Data literacy and knowledge about AI are crucial for making informed decisions.

e) Upskilling and Infrastructure: Upskilling in AI-related competencies and having the necessary infrastructure to support AI adoption can be a challenge for project managers.

f) Shift in Checkpoints and Monitoring Areas: Transitioning to a more leadership role may involve redefining checkpoints and minimizing monitoring and control areas, which can be challenging to navigate.

g) Resistance to Change: Resistance to change is a common challenge faced by project managers when adopting new methodologies and technologies like AI.

h) Data Privacy Concerns: The integration of AI may raise concerns about data privacy and security, which project managers need to address appropriately.

i) Managing Stakeholder Expectations: Project Managers may face challenges in managing stakeholder expectations and ensuring alignment with business goals.

j) Cultural Shift and People Management: The shift may require a cultural change within the organization, and project managers may need to manage people through this transition.

k) Acquiring Necessary Skills: Project managers may need to acquire new skills and competencies to effectively leverage AI technologies and make thoughtful decisions.

l) Emotional and Social Variables: It might involve emotional and social variables that may be challenging to incorporate into AI models.

The qualitative analysis indicates that project managers may encounter various challenges when transitioning. These challenges range from technological and data-related concerns to the need for upskilling, change management, and managing stakeholder expectations. To successfully navigate this transition, project managers need to be open to change, acquire new skills, and focus on developing strong leadership capabilities and strategic thinking.

4.4 Summary of findings

The findings indicate that the participants generally agree on the potential impact of AI technologies on project management practices. Below are key highlights to summarize the findings :

AI's significance

A significant majority (94%) of participants agree that AI technologies have the potential to significantly impact project management practices. This reflects a consensus among the project management professionals (PMPs) that AI will play a transformative role in reshaping various aspects of project management including role of Project Managers.

Optimism towards performance improvement

Most participants (56%) express their optimism that the use of AI in project management will lead to improved overall project performance. Additionally, a notable subset (19%) strongly agrees with this statement. This suggests that a substantial proportion of PMPs see AI as a valuable tool for enhancing project outcomes and can be key to project success.

Automation of routine tasks

The majority of participants (66%) believe that AI will automate routine project management tasks. A significant number (28%) strongly agrees with this notion, reinforcing the optimism about AI's potential to streamline project management processes.

New skills requirement

The participant's responses regarding the need for project managers to develop new skills to effectively work with AI technologies vary. While a considerable number (44%) strongly agree that new skills will be essential, another significant group (38%) agrees, suggesting that there's recognition of the changing landscape. However, a small subset (9%) disagrees, and an additional group (9%) remains neutral. This diversity in perspectives highlights the need for further exploration of skill development in the context of AI integration.

Familiarity with AI applications

Participant's familiarity with AI applications in project management varies. A small but notable portion (16%) considers themselves very familiar with AI applications, indicating extensive knowledge and experience in utilizing AI technologies. The majority (56%) describe themselves as somewhat familiar, signifying a basic understanding of AI's role in project management. Meanwhile, a smaller subset (22%) feels not very familiar, and a minority (6%) is not familiar at all with AI applications in project management. These varying levels of familiarity underline the importance of tailored training and educational initiatives to bridge knowledge gaps and facilitate the successful integration of AI.

Experience with AI tools

A majority of participants (66%) have not personally worked on projects that utilized AI technologies in project management. A significant number (34%) have experience with AI technologies in project management.

AI's effectiveness in Project Management aspects

All participants (100%) agree that AI can effectively assist in resource allocation and scheduling. A substantial majority (94%) believe that AI is effective in data analysis and forecasting. Many participants (72%) see AI as effective in communication and collaboration. A significant portion (41%) identifies AI's effectiveness in risk assessment and management. A smaller group (25%) recognizes AI's role in decision-making and problem-solving.

Confidence in learning AI

Participants generally exhibit a high level of confidence in their ability to adapt to and learn new AI technologies in the context of project management.

Impact on Number of Project Managers Needed

A diverse range of opinions exists regarding whether AI will lead to a reduction in the number of project managers needed, 19% believe it will, 38% do not think it will and 44% are uncertain about it.

Support and Resources for AI Skills

Participant**'s** opinions on the level of support and resources provided by their organizations for project managers to acquire AI-related skills vary, but approximately 56% of responses indicate that organizations are making efforts to support and train their staff for AI tool readiness.

Recognition of Benefits

A majority of participants acknowledge the benefits of strategic and visionary leadership. Notably: - 90.6% believe it improves project outcomes. - 75% recognize better alignment with organizational goals. - 68.8% see enhanced innovation and creativity. - 71.9% acknowledge increased stakeholder satisfaction. - A minor percentage (3.1%) values consistent project implementation.

Confidence in Impact

Respondents exhibit confidence in the positive impact of this leadership style on AI integration.

Knowledge for Organizations

Recognized benefits offer valuable insights for organizations seeking to leverage AI effectively in project management.

Importance of Strategic Leadership

Because of introduction of AI tools in Project Management, it will incline Project Leaders to focus on strategic and visionary leadership. About 75% respondents find adopting a strategic and visionary leadership style is important and need of the hour.

Impact of AI on Day-to-Day Activities

AI is seen as streamlining routine tasks, improving efficiency, and enabling data-driven decision-making. However, some caution about AI's limitations which will require human interventions.

Skills for Navigating AI Landscape

Project managers should develop skills in data analytics, adaptability, digitalization, understanding AI models, vision, data handling, continuous learning, human skills, change management, and market readiness to navigate the AI landscape.

Challenges in Transition

Transitioning to a strategic and visionary approach with AI integration presents various challenges: - technology implementation, readiness for change, data accuracy & analysis , data literacy & understanding ai , upskilling & infrastructure , shift in checkpoints, resistance to change, data privacy concerns, managing stakeholder expectations, cultural shift & people management, acquiring necessary skills, incorporating emotional and social variables.

4.5 Conclusion

The findings reveal a strong consensus among participants regarding the potential impact of AI technologies on project management. A significant majority (94%) recognizes AI's transformative potential, particularly in automating routine tasks (66%) and enhancing overall project performance (56%). While opinions on the need for new skills vary, there's widespread recognition (72%) of AI's effectiveness in communication and collaboration. Moreover, participants express confidence in their ability to adapt to AI (66%).

Regarding AI's impact on the number of project managers needed, opinions are divided, with 44% uncertain. Organizations are making efforts to support AI skill development (56%). Participants acknowledge the benefits of strategic leadership, with 75% recognizing its importance.

AI is seen as streamlining day-to-day tasks, but human intervention remains essential. To navigate the AI landscape, project managers must develop a range of skills. Transitioning to a leadership approach presents challenges, including technology implementation, data accuracy, and managing stakeholder expectations.

CHAPTER V:

DISCUSSION

5.1 Discussion of results

Gartner (2019) in their "CIO agenda survey" revealed that despite the increasing adoption of AI, there is some degree of skepticism within organizations regarding its business impact and benefits. This skepticism is rooted in three prominent barriers to AI adoption which is inline with our findings in this study.

The first major challenge identified is the "Skills Gap." Many organizations lack personnel with the necessary expertise and skills in the field of artificial intelligence, making it difficult to harness the technology's potential effectively (Goasduff, 2019).

The second significant obstacle is the "Fear of the Unknown." AI, being a rapidly evolving field, often generates apprehension and uncertainty among stakeholders who may not fully understand its capabilities or the potential implications of its integration into their operations (Goasduff, 2019).

Lastly, the survey underscores the importance of "Data Quality and Scope" in AI implementation. Organizations grapple with issues related to the comprehensiveness and quality of the data used to train and operate AI systems, which can significantly impact the technological performance and outcomes (Goasduff, 2019).

Ethical considerations were briefly touched upon by some respondents, with an emphasis on the responsible use of AI in project management. Addressing data privacy, potential algorithmic bias, and ethical implications were deemed important as AI plays a larger role in project management decision-making processes.

The study also shed light on certain challenges and limitations associated with AI integration in project management. Some participants expressed reservations about the complete or end to end automation of certain tasks and the potential difficulty in executing certain aspects of project management effectively. This suggests that while AI offers numerous benefits, there may be certain tasks or nuances that require human intervention and decision-making.

Participants foresee AI technologies evolving and enhancing project management capabilities, leading to improved efficiency, better decision-making, and successful project outcomes. As AI technologies continue to mature and become more widely adopted, project managers can anticipate an even more profound impact on their roles and practices.

The results also confirms the transformative potential of AI technologies and highlight the importance of project managers developing new skills and competencies to effectively work with AI. Organizational support, ethical considerations, and an understanding of AI's limitations also emerge as crucial factors for successful adoption. The survey highlights the need for professionals to embrace AI technologies, adapt to the changing landscape, and leverage AI's capabilities to achieve successful project outcomes in the era of artificial intelligence.

5.2 Discussion of existing literature

The literature review provides substantial evidence supporting the hypothesis and confirms that introduction of AI into project management practices offers numerous benefits, including improved planning, resource allocation, risk management, and decision support. However, it also brings challenges related to ethics, data security, and the need for upskilling the workforce. Project managers and organizations must stay informed about the latest developments in AI and adapt their practices to harness its full potential while addressing these challenges effectively.

As per litratures, one key area where AI excels is in planning and scheduling. By analyzing historical project data and identifying patterns, AI algorithms can predict potential delays or issues. This capability allows project managers to create more accurate timelines and allocate resources more effectively, ultimately leading to improved project outcomes. Additionally, AI-driven tools can optimize resource allocation by considering factors such as team member availability, skills, and preferences, resulting in more efficient scheduling.

Various litratures discusses another critical aspect of project management that benefits from AI is risk management. AI can assess project risks by analyzing vast amounts of data, both internal and external. It can identify potential risks early in the project lifecycle and suggest mitigation plans, which is invaluable for ensuring project success. Moreover, Natural Language Processing (NLP) can be employed to scan news articles and social media for information that may impact the project, keeping stakeholders informed and enabling proactive decision-making.

Few litratures talk about AI's crucial role in cost estimation and budgeting. By analyzing historical cost data and project specifications, AI algorithms can provide accurate cost estimates. This capability allows project managers to create more realistic budgets and mitigate the risk of cost overruns. Furthermore, AI can continuously monitor expenses, automatically alerting project managers to any deviations from the budget, enabling timely corrective actions.

Resource management is another area where AI-driven solutions excel. AI can assist in selecting the most suitable team members for a project based on their skills, experience, and availability. Predictive analytics can forecast future resource needs, facilitating long-term workforce planning and ensuring that the right talent is available when needed.

Task automation is a practical application of AI in project management. Repetitive and time-consuming tasks like data entry, report generation, and status updates can be automated using

AI-driven bots. This not only saves time but also reduces the risk of human error. Moreover, chatbots can provide real-time assistance to team members and stakeholders, answering common queries and reducing communication overhead.

Litratures proves AI contributes significantly to performance monitoring as well. It provides real-time dashboards and reports that track project progress, key performance indicators (KPIs), and milestones. Anomaly detection algorithms can alert project managers to unexpected deviations from the project plan, enabling timely intervention and adjustments to keep the project on track.

Communication and collaboration within project teams are streamlined through AI-driven tools. These tools facilitate communication, ensuring that all team members are on the same page and fostering collaboration among remote or dispersed teams. Virtual assistants can also be deployed to schedule meetings, send reminders, and manage emails, improving overall communication efficiency.

AI's role in decision support cannot be overstated. It provides data-driven knowledge and recommendations for project decision-making. For example, AI can help project managers decide whether to proceed with a change request, adjust project priorities, or make other critical decisions based on potential outcomes. This data-driven approach enhances the accuracy and effectiveness of decision-making processes.

Quality control in projects can benefit from AI as well. AI can automate quality checks by analyzing data and identifying deviations from predefined quality standards. In manufacturing projects, image recognition and computer vision can be used to inspect physical products for defects, ensuring that quality standards are consistently met.

However, as few litrature talks about that AI continues to advance and become more integrated into project management practices, it also raises ethical considerations. Discussions must include topics such as algorithm bias, data privacy, and the impact on human jobs. Ensuring transparency and fairness in AI-driven decision-making processes is crucial to building trust and ensuring that AI enhances, rather than hinders.

The transition from accidental project managers to qualified project managers set the stage for further advancements. The impact of AI on project management is evident across various knowledge areas.In contrast, knowledge areas that demand human leadership skills, such as stakeholder management and team development, remain less affected by AI, underlining the continued importance of human-centric leadership qualities.

Project leadership is becoming increasingly vital in achieving project success. Effective project leaders are capable of providing direction, vision, and planning, while also empowering and inspiring their teams. The ability to navigate complexity, drive innovation, and influence stakeholders is essential in the AI-driven project management era.

5.3 Discussion of Hypothesis

The findings of this study strongly support the hypothesis that the increasing use of artificial intelligence (AI) in project management will indeed lead to a significant shift in the role of project managers. The data collected from the survey responses, coupled with insights from an literature review, provide compelling evidence to substantiate this hypothesis.

The overwhelming majority of participants in the survey concur that AI technologies possess the potential to bring about substantial changes in project management practices. The general consensus is that AI can play a pivotal role in improving overall project performance. This

enhancement is expected to be achieved primarily through the automation of routine project management tasks. With these tasks being handled more efficiently by AI systems, project managers can redirect their efforts towards more pressing aspect of business growth.

Another key takeaway from the survey is the recognition that project managers will need to acquire new skills to effectively collaborate with AI technologies. This skill evolution is deemed essential to harness the full potential of AI in project management. This shift in leadership style is seen as essential for fostering innovation, ensuring alignment with organizational goals, and enhancing stakeholder satisfaction.

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

This research confirms the hypothesis that the increasing use of AI in project management will indeed lead to a transformation of the role of project managers. Project managers are transitioning from traditional task-oriented leadership to a more strategic and visionary leadership approach, effectively becoming project leaders. The literature and research findings emphasize the importance of AI technologies in reshaping project management practices and highlight the enduring significance of human-centric leadership skills in achieving project success in the AI-enabled world.

The literature review and research results strongly support the hypothesis.With the establishment of project management associations and certifications, the role of project managers evolved into a more qualified and standardized profession. The literature also highlights the impact of AI on various knowledge areas in project management. AI is expected to significantly influence project cost management, schedule management, and risk management, where its analytical capabilities can be leveraged effectively.

The integration of AI in project management is identified as a significant catalyst for the transformation of project managers into project leaders. AI-powered technologies can automate repetitive tasks, allowing project managers to focus on more important aspects such as stakeholder engagement, risk management, and team leadership. AI's ability to analyze vast amounts of data provides project managers with understanding for making informed decisions and optimizing project performance. However, areas that require human-centric leadership skills,

such as managing stakeholders and fostering team development, are less likely to be impacted by AI.

The ongoing industrial revolution further emphasizes the need for project managers to develop digital competencies. Project leaders in the AI-driven era must possess technical acumen and emotional intelligence, empathy, negotiation, decision-making, and the ability to inspire and engage with team members.

6.2 Implications

As AI technology continues to advance, it is reshaping the way projects are executed, monitored, and controlled. One of the most significant implications is the shift in the skill set required for project managers. With AI taking over routine tasks such as data analysis, scheduling, and risk assessment, project managers will need to focus on developing skills that complement AI capabilities. Project managers will be expected to provide the human touch that AI lacks, such as fostering collaboration, motivating teams, and making complex decisions that require empathy and understanding.

As AI-powered tools and technologies become more prevalent, project managers will need to adapt their processes to incorporate these tools effectively. This may include learning how to interpret and utilize AI-generated data and reports to make informed decisions, optimize project performance, and anticipate potential risks.

Moreover, the increasing integration of AI in project management may impact the project management workforce. Some traditional roles may become automated, leading to a potential reduction in the demand for certain tasks performed by project managers. On the other hand, new roles may emerge that require expertise in managing and leveraging AI technology in project

management settings. This implies that project managers will need to be flexible and agile in navigating these changes and potentially reskilling or upskilling to remain relevant and competitive in the job market.

Another important implication is the need for continuous learning and staying updated with AI trends and advancements. Project managers must invest in their professional development to understand the capabilities and limitations of AI and identify opportunities where AI can enhance project outcomes. This will enable project managers to integrate AI seamlessly into their practices and maximize the benefits it can bring to project management.

Furthermore, the increasing use of AI in project management presents opportunities for greater efficiency and productivity. AI can automate time-consuming tasks, optimize resource allocation, and provide real-time information, leading to faster and more accurate decision-making. This, in turn, can result in cost savings, improved project timelines, and higher project success rates.

However, alongside these opportunities, there are also challenges and risks to consider. Project managers must be mindful of potential biases and limitations in AI algorithms and data sets. They must ensure that AI-generated reports align with ethical and regulatory standards. Additionally, project managers must strike a balance between leveraging AI for efficiency gains and maintaining the human touch in project management to ensure effective communication and stakeholder engagement.

This transformation requires project managers to develop a unique blend of technical skills and human-centric leadership qualities. Embracing AI capabilities while maintaining a focus on the human element will be essential for project managers to thrive in this AI-driven era of project

management. Continuous learning, adaptability, and an open-minded approach to AI integration will be key to harnessing its full potential for successful project outcomes.

6.3 Recommendations for future research

This research delves into the impact of AI on different knowledge areas in project management, highlighting that AI's influence is more pronounced in data-driven processes like project cost management, schedule management, and risk management. However, it also suggests that AI has limited impact on areas requiring human leadership skills, such as managing stakeholders and developing teams. This finding indicates a gap in understanding the nuanced role of AI in project management and its limitations in replacing human-driven leadership aspects.

Moreover, while AI brings significant advancements in project management practices, the literature acknowledges the importance of human skills and attributes such as empathy, emotional intelligence, negotiation, and decision-making. This highlights the need for further research to explore the balance between AI-driven automation and the value of human leadership in project management.

In terms of AI's application in project management, the literature has identified various opportunities and challenges. AI's capabilities in automating repetitive tasks, analyzing data, and providing real-time information have been acknowledged. However, the research also points out obstacles, including the lack of knowledge and understanding of AI, high implementation costs, and the need for large historical datasets in standardized formats. Future research can focus on developing AI systems that are more user-friendly, cost-effective, and adaptable to various project management scenarios.

The existing literature also emphasizes the significance of project leadership in driving successful project outcomes and the need for project managers to possess a diverse and flexible skill set to cope with future challenges. However, there is a gap in understanding the specific attributes and behaviors that make project managers effective leaders in the context of AI integration. Future research can explore the unique qualities and competencies that project managers need to leverage AI effectively while maintaining their leadership role.

6.4 Conclusion

This research has explored the increasing use of artificial intelligence (AI) in project management and its implications for the role of project managers. Through review of existing literature, researcher have gained knowledge into the historical evolution of project management roles, the impact of AI on project management practices, and the changing competencies required of project managers in the digital era.

The findings from the literature have confirmed researcher's hypothesis that the integration of AI in project management is leading to a significant shift in the role of project managers in to project leaders. Traditionally, project managers have been tasked with overseeing tasks, schedules, and budgets, primarily focusing on the operational aspects of project execution.

The literature has shown that AI's ability to analyze large datasets and provide real-time analytics is empowering project managers to make data-driven decisions, anticipate risks, and optimize project performance. As a result, project managers are becoming more proactive, adaptable, and forward-thinking, transforming into project leaders who can drive projects towards successful outcomes.

Moreover, the research has highlighted the increasing importance of human skills and attributes in conjunction with AI adoption. While AI can augment project management practices, it cannot fully replace the value of human leadership. Emotional intelligence, empathy, effective communication, and stakeholder management continue to be critical components of successful project leadership. The coexistence of AI and human-led leadership is the key to unlocking the full potential of AI in project management.

Throughout the research, we have also identified areas for further investigation and future research. One area that requires deeper exploration is the specific attributes and behaviors that make project managers effective leaders in the context of AI integration. Understanding how project managers can leverage AI while maintaining their leadership role will be crucial for maximizing the benefits of AI-powered project management.

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APPENDIX A

SURVEY CONCENT FORM

EVOLUTION OF PROJECT MANAGERS TO PROJECT LEADERS DUE TO ARTIFICIAL INTELLIGENCE

I, ………………………………………., willingly consent to participating in the survey conducted by Manwendra Singh, a research project undertaken by the Swiss School of Business and Management, Geneva, Switzerland. I understand the purpose of this research and agree to share inputs as per my knowledge.

I acknowledge that the information I provide for this survey will be treated with the utmost confidentiality, and my participation will remain anonymous. Any concerns I had regarding research procedures and related matters have been addressed to my satisfaction. I am aware that I

can withdraw my consent or discontinue participation at any time without any negative

consequences.

By participating in this survey, I agree to engage in the process of sharing my views through

electronically recorded means. I understand that my identity and responses will remain

completely anonymous, and the findings of this study may be disseminated in various forms to

achieve its research objectives. I also consent to the use of the information gathered from this

survey in any manner deemed suitable for the advancement of this study.

Participant Signature: _____ **Date:** _____

APPENDIX B

SURVEY QUESTONS

Part 1: Demographic Information

1. Age: _____

2. Gender: _____

3. Years of experience in project management: _____

4. Current job title: _____

5. Current organization name: _____

Part 2: Perception of AI in Project Management

Please rate your level of agreement with the following statements using a scale of 1 to 5, where 1

indicates strong disagreement and 5 indicates strong agreement.

1. AI technologies have the potential to significantly impact project management

    practices. - 1 2 3 4 5

2.   The use of AI in project management will improve overall project performance. -

1 2 3 4 5

3.   AI will automate routine project management tasks, allowing project managers to

focus on more strategic aspects. -1 2 3 4 5

4.   Project managers will need to develop new skills to effectively work with AI

technologies. -1 2 3 4 5

5.   How familiar are you with the current applications of AI in project management?

a)   Very familiar

b)   Somewhat familiar

c)   Not very familiar

d)   Not familiar at all

6.   Have you personally worked on projects that utilized AI technologies in project

management?

a)   Yes

b)   No

7.   In your experience, which aspects of project management do you believe AI

technologies can most effectively assist with? (Select all that apply)

a)   Resource allocation and scheduling

b)   Risk assessment and management

c)   Data analysis and forecasting

d)   Communication and collaboration

e)   Decision-making and problem-solving

f)   Other (please specify): _____

8.   How confident are you in your ability to adapt to and learn new AI technologies in the context of project management?

a)   Very confident

b)   Moderately confident

c)   Slightly confident

d)   Not confident at all

9.   Do you think the increasing use of AI in project management will lead to a reduction in the number of project managers needed for a given project?

a)   Yes

b)   No

c)   Not sure

10.   How would you rate the level of support and resources provided by your organization for project managers to acquire the necessary skills and knowledge related to AI technologies?

a)   Excellent

b)   Good

c)   Fair

d)   Poor

11.   In your opinion, what are the potential benefits of project managers adopting a more strategic and visionary leadership approach in the context of AI integration? (Select all that apply)

a)   Improved project outcomes

b)   Enhanced innovation and creativity

c)   Better alignment with organizational goals

d)   Increased stakeholder satisfaction

e)   Other (please specify): _____

12.   How would you rate the level of readiness of project management professionals in your organization to embrace the changes brought about by the integration of AI technologies?

a)   Highly prepared

b)   Moderately prepared

c)   Somewhat prepared

d)   Not prepared at all

Part 3: Role Transformation and Leadership Approach

Please indicate your opinion on the following statements by selecting the appropriate response:

13.   To what extent do you agree that the increasing use of AI in project management will lead to a shift in the role of project managers from traditional task-oriented

leadership to a more strategic and visionary leadership approach, transforming

them into project leaders?

a)   Strongly disagree

b)   Disagree

c)   Neutral

d)   Agree

e)   Strongly agree

14.   In your opinion, how important is it for project managers to embrace a more

strategic and visionary leadership approach in the context of increasing AI

adoption in project management?

a)   Not important at all

b)   Slightly important

c)   Moderately important

d)   Very important

e)   Extremely important

Part 4: Open-Ended Questions

Please provide brief answers to the following questions:

15.   How do you think AI will impact the role of project managers in terms of their

day-to-day activities and responsibilities?   [Open-ended response]

16. What specific skills or competencies do you believe project managers should develop to successfully navigate the changing landscape of project management with the increasing use of AI? [Open-ended response]

17. In your opinion, what challenges might project managers face when transitioning from a task-oriented leadership style to a more strategic and visionary approach with the integration of AI? [Open-ended response]

APPENDIX C

BACKGROUND INFORMATION OF RESEARCH PARTICIPANTS

Unique ID	Location	Industry	Age Range	Experience Range	Current job title	Management
PMP 1	Pune, India	Information Technology	36-40 Years	16-20 Years Experience	Sr. Program Manager	Middle Management
PMP 2	Pune, India	Manufacturing	36-40 Years	16-20 Years Experience	Technical Project Manager	Senior Leadership
PMP 3	Pune, India	Information Technology	41-50 Years	20+ Years Experience	Sr. Manager	Middle Management
PMP 4	Pune, India	Information Technology	41-50 Years	16-20 Years Experience	Principal Manager	Middle Management
PMP 5	Pune, India	Manufacturing	Above 50 Years	20+ Years Experience	Digital Process Expert	Middle Management

PMP 6	Pune, India	Information Technology	28-35 Years	10-15 Years Experience	Manager Projects	Middle Management
PMP 7	Pune, India	Information Technology	Above 50 Years	20+ Years Experience	Head Programs L&D	Senior Leadership
PMP 8	Pune, India	Manufacturing	41-50 Years	20+ Years Experience	Director	Senior Leadership
PMP 9	Pune, India	Consultation	Above 50 Years	20+ Years Experience	Technical Delivery Program Manager	Senior Leadership
PMP 10	Pune, India	Information Technology	41-50 Years	16-20 Years Experience	Principal Engineering Manager	Middle Management
PMP 11	Chennai, India	Information Technology	41-50 Years	20+ Years Experience	Delivery Head	Senior Leadership
PMP 12	Pune, India	Manufacturing	36-40 Years	16-20 Years Experience	Sr. Manager	Middle Management
PMP 13	Pune, India	Information Technology	41-50 Years	16-20 Years Experience	AGM, Delivery Excellence	Senior Leadership
PMP 14	Pune, India	Manufacturing	36-40 Years	10-15 Years Experience	Sr. Executive	Middle Management
PMP 15	Banda, India	Construction	36-40 Years	10-15 Years Experience	Construction manager	Middle Management

PMP 16	Bangalore, India	Construction	28-35 Years	10-15 Years Experience	SIOP	Middle Management
PMP 17	Pune, India	Consultation	Above 50 Years	20+ Years Experience	Sr. Consultant	Middle Management
PMP 18	Mumbai, India	Construction	41-50 Years	20+ Years Experience	RSM	Middle Management
PMP 19	Pune, India	Manufacturing	36-40 Years	10-15 Years Experience	Team Lead	Middle Management
PMP 20	Pune, India	Information Technology	41-50 Years	16-20 Years Experience	Program Manager	Middle Management
PMP 21	Pune, India	Consultation	36-40 Years	16-20 Years Experience	CEO	Senior Leadership
PMP 22	Chennai, India	Manufacturing	36-40 Years	16-20 Years Experience	Director Program Management	Senior Leadership
PMP 23	Pune, India	Information Technology	41-50 Years	20+ Years Experience	Vice President	Senior Leadership
PMP 24	Pune, India	Information Technology	41-50 Years	20+ Years Experience	Vice President Head of Digital	Senior Leadership
PMP 25	Pune, India	Manufacturing	Above 50 Years	20+ Years Experience	Head, IMCR	Senior Leadership
PMP 26	Bangalore, India	Information Technology	28-35 Years	10-15 Years Experience	Sr. Implementation	Middle Management

					Project Manager	
PMP 27	Pune, India	Manufacturing	41-50 Years	20+ Years Experience	Platform Program Manager	Middle Management
PMP 28	Pune, India	Manufacturing	28-35 Years	16-20 Years Experience	Sr. Manager	Middle Management
PMP 29	Pune, India	Manufacturing	41-50 Years	16-20 Years Experience	Sr. Director	Senior Leadership
PMP 30	Pune, India	Manufacturing	36-40 Years	10-15 Years Experience	Manager	Middle Management
PMP 31	Pune, India	Information Technology	41-50 Years	20+ Years Experience	Program Manager	Middle Management
PMP 32	Pune, India	Information Technology	41-50 Years	20+ Years Experience	Sr. Engagement Manager	Middle Management