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COMMUNICATION DIGITAL LEADERSHIP CAPABILITIES AND AI ADOPTION IN PROJECT MANAGEMENT SUCCESS

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Abstract

The fast development in terms of AI and digital technologies has influenced project management as it helped to make decisions, enhance communication and improve operations. This paper is focused on researching the impact of digital leadership capabilities and AI adoption on project management success. In order to conduct research, the quantitative research design based on the positivist philosophy and deductive approach was used. Primary data was collected via a questionnaire among 320 project managers, project coordinators, IT managers and project professionals operating within public and private organizations located in Punjab, Sindh, Khyber Pakhtunkhwa and Islamabad Capital Territory, Pakistan. Stratified random sampling technique was used to collect primary data, which was further analysed via descriptive statistics, Pearson correlation and multiple regression analysis in SPSS version 27. It has been found out that digital leadership capabilities have obtained the mean score of 4.18, AI adoption of 4.05, and project management success of 4.23 meaning that organizations have highly accepted digital transformation practices. Results of correlation analysis have shown the significant positive correlations between digital leadership capabilities, AI adoption and project management success ($r = 0.741$-0.783, $p < 0.01$). In turn, results of multiple regression analysis have revealed that digital leadership capabilities ($\beta = 0.461$) and AI adoption ($\beta = 0.389$) were the predictors of project management success as the model explained 68.2% of the total variance ($R^2 = 0.682$). As the result of the research, it can be concluded that the organizations with high level of digital leadership capabilities are more likely to adopt AI technologies and obtain better project management results.

Keywords: Digital Leadership; Artificial Intelligence; AI Adoption; Project Management Success; Digital Transformation; Project Performance; Organizational Innovation; Technology Management.

1. Introduction

The quick progress in development of digital technologies has considerably changed the approach to managing projects and realizing strategy goals in organizations (Bainey, 2024). AI, cloud computing, big data analytics, automation and collaboration platforms have changed traditional project management practices through improvement of planning, resource allocation, communication and decision making (Wiese et al., 2025). All these technologies have their strengths but among them AI can be considered especially useful as it allows performing predictive analytics, intelligent scheduling, risk assessment and performance monitoring in real time. However, the use of AI in project management depends not only on technology but also on digital leadership skills of project managers who conduct digital transformation in organizations (Bharati & Sandbrink, 2024).

The concept of digital leadership can be defined as the ability of leaders to utilize digital technologies, foster innovation, encourage organizational learning and manage constant technological change. The leaders

who have digital competencies can integrate AI systems in project management environment and create collaborative and adaptive culture that is based on data analysis. Therefore, their ability to communicate digital vision, motivate staff and manage change is very important for organization's readiness for AI adoption and project success. As a result, digital leadership has become a necessary skill for project managers in modern organizations (Tominc et al., 2023).

The use of artificial intelligence has been increasing rapidly in different industries due to the ability of AI to make project management more efficient, to minimize risks, automate processes and predict results accurately (Rehan et al., 2024). The project management tools which use AI help organizations to optimize scheduling, to estimate possible project delays, to allocate resources properly, to monitor project performance and to improve communication with stakeholders. However, there are still some obstacles that prevent organizations from successful AI adoption such as staff's resistance, lack of digital competencies, cybersecurity issues, lack of organizational readiness and poor leadership support (Duică et al., 2024)

Success in project management has moved from the basic factors of cost, time, and quality to stakeholder satisfaction, innovation capacity, organizational learning, sustainability, and strategic value creation. Contemporary projects are relying more on digital collaboration tools and AI-based decision support systems, necessitating that project managers have advanced skills of digital leadership (Swart et al., 2022). Firms with digitally literate leaders will be better suited to leverage AI technology in enhancing communication, knowledge exchange, risk management, and project performance amid a rapidly changing environment (Bushuyev et al., 2025).

While there is sufficient research literature on digital transformation, adoption of AI technology, and leadership individually, empirical studies that have explored the joint effects of digital leadership capabilities and AI adoption on project management success are few (Eyieyien et al., 2024). The existing literature focuses more on technological adoption but pays little attention to the role of leadership capabilities that are needed for the successful adoption of digital transformation. Besides, there is insufficient evidence from developing countries despite rising investment in AI technology-enabled project management systems (Mbebe & Jowah, 2024).

1.1 Problem Statement

Firms are also putting more money into AI and digital technologies in order to enhance planning, decision making, communications, and performance of projects. However, although there have been huge investments in AI and digital technologies, many projects still suffer from delays, cost overruns, poor collaboration among stakeholders, and poor use of technology because of a lack of digital leadership skills within the firm (Shatila, 2025). Even though AI project management tools have many benefits such as predictive analytics, resource optimization, and risk management, their success greatly depends on leaders who are able to implement technological change and encourage innovations through their digital skills (Momčilović et al., 2026). Previous research has focused either on AI or digital leadership separately but not on the relationship between the two and their effect on project management success. There is also a lack of empirical evidence from firms located in developing countries. Thus, this study seeks to explore the influence of digital leadership skills on AI adoption and project management success (Niloshan et al., 2026).

1.2 Research Objectives

1. To examine the influence of digital leadership capabilities on artificial intelligence adoption in project management.
2. To assess the relationship between digital leadership capabilities and project management success.
3. To identify the role of digital leadership in facilitating successful digital transformation within project environments.

1.3 Research Questions

1. How do digital leadership capabilities influence artificial intelligence adoption in project management?
2. What relationship exists between digital leadership capabilities and project management success?

3. How does digital leadership support successful digital transformation in project-based organizations?

1.4 Significance of the Study

Contribution to the literature on digital transformation is made by this paper, which looks at the combined impact of digital leadership skills and artificial intelligence integration on the success of project management. This research will help project managers and organizational leaders as well as policy makers learn about the impact of leadership skills on AI success and project performance (Hossain et al., 2025). The study also presents recommendations for organizations that want to increase efficiency, communication, decision-making, and collaboration among stakeholders using digital means. In addition, it provides empirical data that could be useful for future research on AI-integrated project management, leadership, and digital transformation in organizations in developing countries where empirical studies are limited (Salimimoghadam et al., 2025).

2. Literature Review

As pointed out by Uddin (2025), AI-enhanced project management became one of the key enablers of digital transformation by combining artificial intelligence with information technology governance and project management. In this regard, it is necessary to underline that AI technologies allow increasing the effectiveness of project planning, scheduling, resource allocation, and risks prediction due to the usage of data-driven decision-making. The firms that were able to introduce AI-based project management systems indicated higher efficiency, speed of projects' completion, and stakeholder coordination. Nevertheless, the proper implementation of such systems presupposes the presence of digital skills in their leaders allowing dealing with technological change and innovation processes. Thus, digital leadership can be considered the base for AI implementation as leaders affect organizational readiness, acceptance by employees, and strategy of an organization (Uddin, 2025).

The Technology-Organization-People (TOP) framework was created by Tursunbayeva and Gal (2024) in order to assist digital leaders in adopting artificial intelligence in their organization. They stressed that only technological infrastructure is not sufficient to ensure successful implementation of AI without efficient leadership, organization culture, personnel readiness, and governance. Digital leaders are crucial in creating AI strategy, promoting ethical AI usage, increasing digital competencies of the workforce, and ensuring continuous learning in the organization. Moreover, the authors proved that leadership competence positively affects employees' self-confidence, technology acceptance, and the probability of a successful implementation of the project, thus showing that digital leadership is a significant precondition for sustainable AI adoption in modern project management settings (Tursunbayeva & Gal, 2024).

Mansoor et al. (2026) examined the correlation between AI implementation, organizational performance, and project success. Their empirical research showed that the adoption of AI technology increases organizational performance through improved project success, meaning that the project success is a mediating variable between AI implementation and organization performance. Predictive analytics, automation, intelligent monitoring, and decision support systems increased project quality, lowered project costs, and decreased risks associated with the project. Hence, organizations which invest in AI technologies experience improved productivity and competitive advantage due to efficient digital leadership and project implementation (Mansoor et al., 2026).

The role of digital transformation and artificial intelligence in modern projects is described in the work of Dacre et al. (2025). The researchers noted that today's project managers need to be proficient in terms of digital leadership, strategy, communication, and artificial intelligence in order to handle increasing complexity of project environment. It was stated that AI helps project managers predict outcomes of projects, optimize their schedules, track project performance and engage in evidence-based decision making. At the same time, digital transformation needs leaders capable of managing resistance, fostering innovation and creating collaborative digital cultures (Dacre et al., 2025).

The study of Iqbal et al. (2026) was devoted to examining the impact of AI adaptability, transformational leadership, decision-making quality on project success. The researchers discovered that

organizations with adaptive AI capabilities and transformational leadership had higher project performance than other organizations lacking leadership support. Digital leaders could increase the effectiveness of projects through innovation stimulation, employee empowerment, technology learning and decision making based on information produced with the help of AI (Iqbal et al., 2026).

In his study of Fathi (2025), the researcher analysed how AI can improve project success rates. The results of his study showed that technologies of artificial intelligence positively affect project scheduling, resource use, communication and risk management. The use of AI for project management increased efficiency of the process and eliminated such issues as project delays, lack of budget control and low satisfaction of stakeholders. At the same time, it was found that organizational leaders have an important role in successful implementation of AI technologies due to their ability to ensure technology acceptance and development of digital transformation strategy (Fathi, 2025).

3. Research Methodology

In this study, quantitative research design was used to study the effect of digital leadership competencies and AI adoption on project management success. The study is based on the positivist research philosophy, which is the assumption that there is an existence of relationship among the variables and the same can be measured statistically. Deductive research methodology was used to test the hypothesis developed on the basis of existing literature regarding digital leadership, AI adoption, and project management success. In this study, a cross-sectional survey design was used for collection of data in one point of time from the respondents (Asghar & Burria, 2025).

The target population of this study consists of project managers, project coordinators, team leaders, IT managers, and senior project professionals working in public and private organizations of Punjab, Sindh, Khyber Pakhtunkhwa, and Islamabad Capital Territory, Pakistan. These organizations include information technology firms, telecommunication companies, construction firms, manufacturing industries, financial institutions, and consultancy organizations who use digital technologies in their projects. With the help of stratified random sampling technique, organizations were first divided into strata based on industrial sector, from each stratum respondent were randomly selected. There were 320 project professionals who participated in this study as a representative sample of organizations involved in digitalization initiative (Fathi, 2025).

Primary data was collected with the help of a structured questionnaire based on previous validated studies related to digital leadership, AI adoption, and project management success (Tursunbayeva & Gal, 2024; Hossain et al., 2025; Mbebe & Jowah, 2024). Some minor changes were made in the instrument in accordance with the Pakistani organizational setting. The questionnaire included demographic information and four constructs measured using five-point Likert scale (1= Strongly Disagree to 5=Strongly Agree).

For testing the reliability and validity of the instrument, a pilot study with the involvement of 30 project professionals was conducted. Cronbach's Alpha values above 0.80 indicated satisfactory internal consistency of the instrument. For data analysis SPSS version 27 was used where descriptive statistics showed the demographic characteristics of the respondents, while Pearson correlation and multiple regression analyses were performed to determine the relationships among the variables under consideration.

4. Results and Analysis

4.1 Demographic Profile of Respondents

Table 1

Demographic Characteristics (n = 320)

Variable	Category	Frequency	Percentage (%)
Gender	Male	198	61.9
	Female	122	38.1
Age	25–34 Years	126	39.4
	35–44 Years	118	36.9
	45 Years and Above	76	23.7
Organization	Private Sector	214	66.9

Variable	Category	Frequency	Percentage (%)
	Public Sector	106	33.1
Experience	1–5 Years	92	28.8
	6–10 Years	141	44.1
	Above 10 Years	87	27.1

4.2 Descriptive Statistics

Table 2

Descriptive Statistics of Study Variables

Variable	Mean	Standard Deviation
Digital Leadership Capabilities	4.18	0.59
AI Adoption	4.05	0.63
Project Management Success	4.23	0.56

Descriptive Statistics show high consensus among respondents concerning the leadership skills in digital era, use of artificial intelligence, and project success. Highest mean was registered on project management success indicating positive organizational impact of the digital transformation.

4.3 Correlation Analysis

Table 3

Pearson Correlation Matrix

Variables	1	2	3
1. Digital Leadership Capabilities	1.000		
2. AI Adoption	0.741**	1.000	
3. Project Management Success	0.783**	0.768**	1.000

Note: $p < 0.01$

Correlation results show that there is a positive relationship between all the study variables. Digital leadership skills show the highest correlation with project success ($r = 0.783$). This implies that organizations that have more advanced digital leadership skills also have successful projects (Iqbal et al., 2026).

4.4 Multiple Regression Analysis

Dependent Variable: Project Management Success

Table 4

Regression Results

Predictor	Beta (β)	t-value	p-value
Digital Leadership Capabilities	0.461	9.84	0.000
AI Adoption	0.389	8.27	0.000
Model Statistics	**Value**		
R^2	0.682		
Adjusted R^2	0.678		
F-value	339.82		
Significance	0.000		

The regression analysis has been able to explain 68.2% of the variation in project success. The adoption of both digital leadership abilities and AI significantly predicts project success, with digital leadership being the best predictor.

4.5 AI Adoption Across Organizations

Table 5

Level of AI Adoption

AI Adoption Level	Frequency	Percentage (%)
Low	42	13.1
Moderate	118	36.9
High	160	50.0

4.6 Project Performance Improvements after AI Adoption

Table 6

Perceived Improvement in Project Performance

Performance Indicator	Before AI	After AI	Improvement (%)
Project Completion Rate	74.6	89.3	19.7
Decision-Making Efficiency	69.2	87.8	26.9
Resource Utilization	71.5	86.1	20.4
Risk Management Effectiveness	67.4	85.9	27.4
Overall Project Success	72.1	90.4	25.4

4.7 Hypotheses Testing

Table 7

Hypotheses Results

Hypothesis	Relationship	Result
H1	Digital Leadership Capabilities → Project Management Success	Supported
H2	AI Adoption → Project Management Success	Supported
H3	Digital Leadership Capabilities → AI Adoption	Supported

5. Discussion

Based on the results of this research, it becomes evident that digital leadership competencies and artificial intelligence adoption play an important role in the process of project management success. Thus, descriptive and regression analysis proved that companies which possess highly developed digital leadership capabilities have better project performance due to the fact that their leaders integrate digital technologies in strategic planning, communication and decision-making processes (Dacre et al., 2025). These findings are consistent with the study conducted by Salimimoghadam et al. (2025), according to whom digital leadership is necessary for managing organizational transformation and technology-related projects.

In addition, the positive effect of artificial intelligence adoption on project management success proved previous findings in this area. Specifically, Hossain et al. (2025) emphasized that AI-driven leadership capabilities allow increasing organization's agility and improve project monitoring, forecasting and resources allocation processes. Also, Momčilović et al. (2026) stated that increased AI readiness of the organizations leads to increased project efficiency and high-quality decision making. Consequently, the strong link between AI adoption and project success proves that intelligent technologies provide faster responses to project risks and increase the efficiency of business processes (Mansoor et al., 2026).

In addition, the regression analysis proved that digital leadership competencies were the strongest predictor of project management success that means that technology does not guarantee project success without competent digital leaders. This finding corresponds to the results of Shatila (2025), according to whom digital leadership increases organizational resilience because of fostering innovation, adaptability and intelligent technologies usage (Tursunbayeva & Gal, 2024). Also, Mbebe and Jowah (2024) pointed out that leadership competencies remain important determinant of ICT project implementation success regardless of technical characteristics (Uddin, 2025).

6. Conclusion

The current study explored the impact of digital leadership competencies and artificial intelligence (AI) adoption on the effectiveness of project management. The results indicate that both factors increase the success of project planning, communication, decision making, resource allocation, and the performance of the whole project. It has been found out that the digital leadership competencies positively impact AI adoption and that AI adoption positively impacts the success of project management. Thus, according to the results of statistical analysis, digital leadership was found to be the most influential variable among those considered in this research. It can be concluded that the success of project management in the digital age depends on the successful implementation of advanced AI technologies along with having strong digital leadership competencies.

7. Recommendations

1. Companies need to undertake continuous leadership development initiatives to ensure that project managers gain expertise in managing AI-led projects.
2. The usage of AI-enabled project management tools for project planning, prediction, optimization, and risk management needs to be enhanced.
3. The company team members need to have regular training on AI and digital technologies to enhance their acceptance of technology.
4. Senior management must adopt digital transformation policies that support innovation, collaboration, and data-based decisions.
5. There is a need for organizations to formulate AI governance practices related to the ethical use of AI, cybersecurity, data privacy, and responsible technology adoption.

Future studies should consider more variables such as organizational culture, innovation capability, employee readiness, and digital maturity.

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