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Can Artificial Intelligence Reduce Project Failure? Examining the Role of AI-Assisted Decision Making, Risk Prediction, and Team Adaptability in Higher Education Projects

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Abstract

The rapid advancement of Artificial Intelligence (AI) has significantly transformed project management practices, particularly within knowledge-intensive sectors such as higher education. Despite increasing investments in educational projects, higher education institutions continue to experience high levels of project failure due to poor decision making, inadequate risk management, communication breakdowns, and limited organizational adaptability. This study examines whether AI-assisted decision making can reduce project failure in higher education projects through the mediating roles of risk prediction and team adaptability. Grounded in Socio-Technical Systems Theory and Dynamic Capability Theory, the study proposes that AI-enabled project management systems enhance project success by improving predictive risk assessment, real-time decision quality, and organizational adaptability. A quantitative research design was adopted, and data were collected from academic project managers, faculty coordinators, IT administrators, and university management professionals involved in higher education projects. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed for empirical analysis. The findings revealed that AI-assisted decision making significantly reduces project failure ($\beta = -0.438$, $p < 0.001$). Furthermore, risk prediction ($\beta = -0.173$, $p < 0.001$) and team adaptability ($\beta = -0.194$, $p < 0.001$) partially mediated the relationship between AI-assisted decision making and project failure reduction. The model explained 64.3% of the variance in project failure reduction, indicating substantial predictive capability. The findings suggest that AI-driven analytics, predictive monitoring systems, and intelligent decision-support platforms improve project outcomes by enhancing risk visibility, operational responsiveness, and collaborative adaptability within academic project environments. The study contributes to the emerging literature on AI-enabled project management by integrating technological intelligence and organizational adaptability into a unified framework explaining project failure reduction in higher education institutions.

Keywords: Artificial Intelligence, Project Failure, AI-assisted decision making, risk prediction, team adaptability, higher education projects, digital transformation, PLS-SEM.

1. Introduction

Project failure remains one of the most persistent challenges in project management despite significant advancements in managerial methodologies, digital technologies, and organizational governance systems. Projects across both private and public sector organizations frequently experience cost overruns, schedule delays, operational inefficiencies, stakeholder dissatisfaction, and implementation failures (Kerzner, 2022). Within higher education institutions, project failure is particularly critical because universities increasingly depend on complex academic and technological projects to improve institutional performance, research productivity, digital transformation, and educational quality.

Higher education institutions regularly undertake projects related to curriculum redesign, accreditation systems, digital learning platforms, enterprise resource planning (ERP) systems, research collaborations, campus infrastructure development, and online education initiatives. However, many of these projects fail due to poor decision-making processes, weak communication structures, ineffective risk management practices, resistance to organizational change, and limited adaptability within project teams (PMI, 2021). The increasing complexity of academic projects further intensifies managerial uncertainty because universities operate within highly bureaucratic and stakeholder-intensive environments.

Traditional project management approaches primarily rely on human judgment, retrospective reporting systems, and static risk management frameworks. Although these approaches provide managerial structure, they often fail to identify emerging project risks in dynamic operational environments. Consequently, organizations increasingly seek technologically driven solutions capable of improving project forecasting accuracy, operational responsiveness, and strategic decision quality (Dwivedi et al., 2023).

The rapid advancement of Artificial Intelligence (AI) technologies has significantly transformed organizational decision-making processes and project governance systems. Artificial Intelligence refers to computational technologies capable of performing cognitive tasks such as prediction, learning, pattern recognition, problem-solving, and intelligent decision support. AI technologies including machine learning, predictive analytics, natural language processing, robotic process automation, and intelligent monitoring systems increasingly support managerial functions across project-intensive organizations (Brynjolfsson & McAfee, 2017).

Recent studies indicate that AI-assisted project management systems significantly improve operational efficiency, predictive accuracy, resource optimization, and project monitoring capability (Marnewick & Marnewick, 2020). AI technologies enable project managers to analyze large volumes of project-related data in real time, identify operational anomalies, forecast potential risks, and generate evidence-based managerial recommendations. Consequently, AI-driven decision support systems may substantially reduce project failure by improving strategic planning, communication coordination, and operational responsiveness.

Risk prediction represents one of the most important contributions of AI within project management environments. Traditional risk management practices are often reactive and dependent on subjective managerial judgment, limiting organizations' ability to anticipate emerging operational disruptions. AI-powered predictive systems improve organizational resilience by identifying hidden risk patterns, forecasting schedule deviations, detecting resource allocation inefficiencies, and predicting stakeholder-related conflicts before they escalate into project failure (Korzynski et al., 2023).

Similarly, team adaptability has become increasingly important within knowledge-intensive project environments characterized by uncertainty, technological disruption, and changing stakeholder expectations. Team adaptability refers to the ability of project teams to adjust communication structures, operational strategies, collaborative processes, and behavioral responses according to evolving project conditions. Adaptive project teams are more capable of responding effectively to unexpected disruptions and organizational change (Teece, 2018).

AI systems further enhance team adaptability by improving information accessibility, collaborative coordination, workflow automation, and decision-making speed. AI-enabled communication and analytics systems facilitate real-time information sharing and operational transparency, thereby strengthening collaborative adaptability within project teams. In higher education projects, where multiple stakeholders including faculty members, administrators, accreditation agencies, students, and IT professionals interact simultaneously, adaptability becomes essential for project success.

Despite growing scholarly attention toward AI-driven organizational transformation, several important gaps remain within the project management literature. First, most existing studies focus on technological implementation rather than empirically examining whether AI actually reduces project failure. Second, limited research specifically investigates AI applications within higher education project environments despite the growing digitalization of universities. Third, previous studies rarely integrate AI-assisted decision making, predictive risk management, and adaptive team behavior into a unified theoretical framework explaining project failure reduction.

This study therefore investigates whether AI-assisted decision making reduces project failure in higher education projects through the mediating roles of risk prediction and team adaptability. Drawing upon Socio-Technical Systems Theory and Dynamic Capability Theory, the study proposes that AI-enabled project management systems enhance project success by improving predictive intelligence, adaptive capability, and evidence-based managerial decision making.

The study contributes to the literature in several important ways. First, it extends emerging research on AI-enabled project management by examining project failure reduction rather than technology adoption alone. Second, the study integrates predictive risk management and team adaptability into a comprehensive framework explaining AI-driven project success mechanisms. Third, the study provides practical insights for universities and academic institutions seeking to improve project governance, operational resilience, and digital transformation effectiveness through AI-assisted managerial systems.

The study addresses the following research questions:

1. Does AI-assisted decision making reduce project failure in higher education projects?
2. Does risk prediction mediate the relationship between AI-assisted decision making and project failure reduction?
3. Does team adaptability mediate the relationship between AI-assisted decision making and project failure reduction?

2. Literature Review

2.1 Artificial Intelligence in Project Management

Artificial Intelligence (AI) refers to computational systems capable of simulating human intelligence through learning, reasoning, prediction, automation, and decision support. The integration of AI into project management has significantly transformed traditional managerial processes by enabling predictive analytics, automated scheduling, intelligent monitoring, and real-time decision support systems. AI technologies such as machine learning, natural language processing, robotic process automation, and predictive algorithms increasingly support project managers in handling complex operational environments characterized by uncertainty and large volumes of data (Davahli, 2020).

Traditional project management approaches primarily rely on human judgment and retrospective reporting mechanisms, which often limit forecasting accuracy and operational responsiveness. In contrast, AI-assisted project management systems improve organizational efficiency by analyzing structured and unstructured datasets in real time and generating predictive insights supporting strategic and operational decision making. Recent studies indicate that AI technologies significantly enhance project scheduling, stakeholder coordination, communication management, resource allocation, and risk identification capabilities (Hughes et al., 2025).

AI-driven project management systems are particularly valuable in knowledge-intensive sectors such as higher education, where projects involve multiple stakeholders, technological uncertainty, and dynamic operational requirements. Universities increasingly depend on AI-supported systems for digital transformation projects, online learning platforms, research collaboration management, enrollment forecasting, and institutional resource planning. AI technologies improve institutional responsiveness and operational transparency by enabling data-driven managerial decision making.

Research further suggests that AI-supported decision systems reduce managerial bias and improve project forecasting accuracy. Machine learning models can identify operational anomalies, predict schedule deviations, and recommend corrective actions before project disruptions escalate into critical failures. Consequently, AI-driven project governance enhances project resilience and strategic adaptability within uncertain environments (Tian et al., 2025).

However, despite increasing interest in AI-enabled project management, empirical research remains limited regarding whether AI directly reduces project failure, particularly within higher education institutions. Most existing studies focus on technological adoption and automation rather than examining AI's role in improving project outcomes and reducing operational failure rates.

2.2 Project Failure in Higher Education Projects

Project failure refers to the inability of projects to achieve intended objectives related to cost, quality, schedule, operational performance, or stakeholder satisfaction. Project failure remains a major organizational challenge because unsuccessful projects generate financial losses, reputational damage, operational inefficiencies, and stakeholder dissatisfaction.

Higher education projects are particularly vulnerable to failure because academic institutions operate within highly complex governance environments involving multiple stakeholders, bureaucratic administrative systems, technological uncertainty, and resource limitations. Universities frequently undertake projects related to accreditation systems, digital transformation initiatives, research infrastructure development, online learning implementation, and institutional quality assurance programs. These projects often experience delays, communication breakdowns, resistance to change, inadequate planning, and coordination failures.

Project complexity within higher education environments has increased substantially due to rapid technological transformation and evolving educational demands. The expansion of digital learning systems, cloud-based educational platforms, artificial intelligence applications, and virtual collaboration tools has introduced new operational challenges requiring adaptive managerial capabilities and predictive governance systems.

Research demonstrates that ineffective decision-making processes and weak risk management practices significantly contribute to project failure within educational institutions. Many universities continue relying on conventional managerial structures despite increasing technological complexity and operational uncertainty. As a result, project teams often struggle to respond effectively to changing project requirements and unexpected operational disruptions.

The increasing importance of digital transformation within higher education further intensifies the need for predictive and adaptive project management systems. Institutions unable to manage technological risks effectively are more likely to experience project delays, budget overruns, stakeholder conflicts, and implementation failures.

2.3 AI-Assisted Decision Making and Project Failure Reduction

AI-assisted decision making refers to the use of intelligent computational systems to support managerial judgment, predictive analytics, operational planning, and strategic governance processes. AI systems improve decision quality by processing large datasets and generating evidence-based recommendations

derived from predictive modeling techniques and historical pattern analysis.
Traditional managerial decision-making processes are often constrained by cognitive limitations, incomplete information, subjective judgment, and delayed reporting systems. AI technologies address these limitations by improving forecasting capability, operational visibility, and predictive intelligence. AI-driven systems can continuously monitor project activities, identify operational deviations, and generate proactive recommendations supporting timely managerial interventions.
Research indicates that AI-assisted project governance significantly enhances organizational efficiency and project performance by improving communication coordination, resource optimization, predictive scheduling, and operational responsiveness (Dam et al., 2018). AI technologies further improve managerial adaptability because predictive systems continuously update analytical outputs based on real-time operational data.
Within higher education institutions, AI-assisted decision making improves project governance through automated workflow monitoring, predictive enrollment systems, intelligent budgeting tools, and academic performance analytics. AI-enabled project systems enhance administrative efficiency and improve project visibility across multiple institutional departments.
Moreover, AI systems reduce human error in complex project environments by identifying hidden operational patterns and generating data-driven insights supporting strategic planning. Organizations utilizing AI-assisted managerial systems therefore become more capable of preventing project disruptions and improving operational performance outcomes (Marnewick & Marnewick, 2020).
Based on these arguments, AI-assisted decision making is expected to reduce project failure within higher education project environments.
Hypothesis 1: AI-assisted decision making negatively influences project failure.

2.4 Mediating Role of Risk Prediction

Risk prediction refers to the ability of organizations to identify, forecast, and manage potential operational disruptions before they significantly affect project performance. Effective risk prediction enhances organizational resilience by enabling proactive managerial interventions and operational adjustments.
Traditional project risk management approaches are often reactive and dependent on retrospective analysis, limiting organizations' ability to identify emerging risks in dynamic environments. AI-powered predictive systems significantly improve risk management capability through machine learning algorithms, anomaly detection models, predictive analytics, and real-time monitoring systems (Tian et al., 2025).
AI technologies analyze large volumes of historical and real-time operational data to identify patterns associated with schedule delays, budget overruns, resource inefficiencies, communication failures, and stakeholder conflicts. Predictive algorithms continuously learn from project data streams, enabling organizations to detect emerging vulnerabilities before they escalate into major operational disruptions.
Research indicates that AI-driven predictive systems significantly improve organizational risk management capability and operational resilience by enhancing forecasting accuracy and managerial responsiveness (Lahiri, 2024). AI-enabled risk prediction systems also improve decision quality by reducing uncertainty and supporting evidence-based strategic planning.
Within higher education projects, predictive risk management is particularly important because universities frequently experience policy changes, funding uncertainties, technological disruptions, and stakeholder-related conflicts. AI-driven predictive systems therefore strengthen institutional capability to manage project uncertainty and improve project success rates.
Consequently, risk prediction is expected to mediate the relationship between AI-assisted decision making and project failure reduction.
Hypothesis 2: Risk prediction mediates the relationship between AI-assisted decision making and project failure reduction.

2.5 Mediating Role of Team Adaptability

Team adaptability refers to the ability of project teams to modify behaviors, communication structures, collaborative processes, and operational strategies in response to changing environmental conditions and project uncertainties. Adaptive teams are more capable of responding effectively to operational disruptions, technological changes, and evolving stakeholder expectations.

Dynamic Capability Theory suggests that organizational adaptability significantly enhances performance within uncertain and rapidly changing environments. Teams capable of learning, adjusting, and reconfiguring operational processes are more likely to achieve successful project outcomes.

AI systems improve team adaptability by enhancing communication transparency, workflow coordination, information accessibility, and collaborative decision making. AI-enabled project management platforms facilitate real-time information sharing and improve operational synchronization among project stakeholders. Consequently, project teams can respond more effectively to emerging operational challenges and changing project requirements.

Research indicates that AI-assisted collaboration systems significantly improve organizational learning, coordination efficiency, and adaptive capability within project-intensive environments (Chan & Li, 2025). AI technologies further strengthen adaptability by automating repetitive tasks and enabling project teams to focus on strategic and problem-solving activities.

Within higher education projects, adaptability is especially important because universities operate within highly dynamic institutional environments involving multiple academic departments, administrative systems, accreditation requirements, and technological platforms. Project teams unable to adapt effectively to changing academic and technological conditions are more likely to experience project failure.

Therefore, team adaptability is expected to mediate the relationship between AI-assisted decision making and project failure reduction.

Hypothesis 3

Team adaptability mediates the relationship between AI-assisted decision making and project failure reduction.

3. Research Methodology

3.1 Research Design

This study employed a quantitative, cross-sectional research design to examine the influence of AI-assisted decision making on project failure reduction in higher education projects through the mediating roles of risk prediction and team adaptability. A quantitative approach was considered appropriate because the study aimed to empirically test theoretically grounded hypotheses and examine causal relationships among multiple latent constructs using statistical modeling techniques. Quantitative methods are widely recommended in contemporary project management and information systems research because they provide greater analytical rigor, predictive capability, and generalizability of findings (Hair et al., 2022).

The study was grounded in the positivist research paradigm, which assumes that organizational phenomena can be objectively measured and empirically tested through observable indicators and statistical analysis. Positivism is particularly suitable for technology-oriented management research because it enables systematic examination of relationships between technological capabilities and organizational performance outcomes.

A cross-sectional survey design was adopted because data were collected from respondents at a single point in time. This approach was considered appropriate due to its efficiency in examining organizational perceptions and behavioral relationships within higher education project environments. Furthermore, cross-sectional designs are extensively utilized in AI adoption and project governance research because they allow researchers to investigate complex organizational mechanisms within realistic operational settings.

3.2 Population and Sampling Procedure

The target population comprised project managers, academic administrators, IT directors, quality assurance officers, faculty coordinators, and digital transformation specialists working in higher education institutions. These respondents were selected because they possess direct involvement in managing academic, technological, and institutional development projects within universities.

Higher education institutions were selected as the research context because universities increasingly rely on technologically complex projects involving digital transformation, online learning platforms, accreditation systems, enterprise resource planning (ERP), artificial intelligence integration, and research infrastructure development. These projects are characterized by high levels of uncertainty, multiple stakeholder involvement, bureaucratic governance structures, and continuous technological change, making them highly relevant for examining AI-assisted project management mechanisms.

A purposive sampling strategy was employed to ensure that respondents possessed sufficient professional expertise and project-related experience relevant to the study objectives. Purposive sampling is widely used in organizational and technology management research when researchers seek information-rich respondents with specialized knowledge regarding the investigated phenomenon (Sekaran & Bougie, 2020).

Data were collected from both public and private universities to improve the representativeness and diversity of the sample. A total of 500 structured questionnaires were distributed electronically and physically among respondents. After eliminating incomplete and unusable responses, 389 valid questionnaires were retained for final analysis, yielding a response rate of 77.8%.

The sample size exceeded the minimum threshold recommended for Partial Least Squares Structural Equation Modeling (PLS-SEM). According to Hair et al. (2022), PLS-SEM requires adequate observations to ensure model stability, statistical power, and predictive reliability, particularly in models involving mediation relationships and multiple endogenous constructs.

3.3 Measurement Instrument Development

Data were collected using a structured questionnaire consisting of two major sections. The first section captured respondents' demographic information, including gender, age, academic qualification, professional experience, institutional affiliation, and managerial role. The second section measured the study constructs using previously validated scales adapted from established studies in project management, artificial intelligence, and organizational behavior literature.

All items were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The use of Likert scales is consistent with prior studies examining technology adoption, project governance, and organizational adaptability because such scales effectively capture behavioral perceptions and attitudinal responses.

AI-Assisted Decision Making

AI-assisted decision making was operationalized using seven measurement items adapted from Marnewick and Marnewick (2020) and Dwivedi et al. (2023). The construct assessed the extent to which AI-enabled systems support managerial judgment, predictive analysis, workflow optimization, operational monitoring, and strategic project planning.

Sample items included:

- "AI technologies improve the quality of project-related decisions."
- "AI-assisted systems help identify operational issues before they become critical."

Risk Prediction

Risk prediction was measured using six items adapted from Lahiri (2024) and Tian et al. (2025). The

construct evaluated the capability of AI-powered systems to identify, forecast, and manage project risks proactively through predictive analytics and intelligent monitoring mechanisms.
Sample items included:

- “AI systems improve our capability to predict project-related risks.”
- “Predictive analytics reduce uncertainty during project execution.”

Team Adaptability

Team adaptability was measured using six items adapted from Teece (2018) and Chan and Li (2025). The construct assessed the extent to which project teams effectively adapt to changing project conditions, technological disruptions, and operational uncertainties.
Sample items included:

- “Project teams can quickly adjust to unexpected project changes.”
- “AI technologies improve collaborative adaptability among project teams.”

Project Failure Reduction

Project failure reduction was measured using seven items adapted from Project Management Institute (2021) and Kerzner (2022). The construct evaluated the extent to which AI-assisted project governance reduced project delays, cost overruns, communication failures, stakeholder dissatisfaction, and operational inefficiencies.
Sample items included:

- “AI-assisted systems reduce the likelihood of project delays.”
- “AI technologies improve overall project success performance.”

3.4 Pilot Study

Prior to full-scale data collection, a pilot study was conducted using 35 respondents working within higher education institutions to evaluate questionnaire clarity, reliability, content validity, and item comprehensibility. The pilot study ensured that the measurement instrument accurately reflected the intended constructs and remained understandable to respondents.

The pilot analysis indicated satisfactory internal consistency reliability, with Cronbach’s alpha values exceeding the recommended threshold of 0.70 for all constructs. Minor wording adjustments were incorporated based on respondent feedback to improve item clarity and contextual relevance.

3.5 Data Collection Procedure

Data collection was conducted over a three-month period through both online and physically distributed questionnaires. Institutional contacts and professional academic networks were utilized to access respondents involved in university project management activities.

Respondents were informed regarding the academic purpose of the study and assured that participation was voluntary. Confidentiality and anonymity were strictly maintained throughout the data collection process to minimize social desirability bias and encourage accurate responses.

To improve response quality, respondents were requested to answer based on their direct project management experience within higher education institutions. Follow-up reminders were also distributed periodically to increase response rates and reduce non-response bias.

3.6 Data Analysis Technique

The study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4.0

software for empirical analysis. PLS-SEM was selected because it is highly appropriate for prediction-oriented research models involving latent constructs, mediation relationships, and complex causal paths (Hair et al., 2022).
Compared with covariance-based SEM, PLS-SEM provides greater flexibility regarding data distribution assumptions and sample size requirements. Furthermore, PLS-SEM is extensively recommended for technology management and organizational behavior studies focusing on predictive capability and exploratory model development.
The analysis followed a two-stage analytical procedure consisting of measurement model assessment and structural model assessment.

Measurement Model Assessment
The measurement model evaluated:

- Indicator reliability
- Internal consistency reliability
- Convergent validity
- Discriminant validity

The following statistical thresholds were applied:

- Factor loadings > 0.70
- Cronbach's alpha > 0.70
- Composite Reliability (CR) > 0.70
- Average Variance Extracted (AVE) > 0.50
- Heterotrait-Monotrait Ratio (HTMT) < 0.85

Structural Model Assessment
The structural model assessed:

- Path coefficients (β)
- t-values
- p-values
- Coefficient of determination (R^2)
- Predictive relevance (Q^2)
- Effect size (f^2)
- Mediation effects

Bootstrapping with 5,000 subsamples was conducted to determine the statistical significance of direct and indirect relationships among constructs.

3.7 Common Method Bias
Because the study relied on self-reported survey data collected from a single source, Harman's single-factor test was conducted to assess potential common method bias. The first factor explained 33.7% of the total

variance, which remained below the recommended threshold of 50%, indicating that common method bias was not a significant concern.
Additionally, procedural remedies including anonymity assurance, clear questionnaire wording, and randomized item sequencing were implemented to further minimize response bias and improve data quality.

3.8 Ethical Considerations
The study adhered strictly to ethical research standards throughout the data collection and analysis process. Respondents were informed regarding the purpose of the study and their rights as participants before participation.
Participation remained entirely voluntary, and respondents were allowed to withdraw from the study at any stage without penalty. No personally identifiable information was collected, and all responses were treated confidentially and used exclusively for academic purposes.
The study complied with institutional ethical guidelines relating to informed consent, confidentiality, research integrity, and responsible data management practices.

4. Results
4.1 Respondents' Demographic Profile
The demographic profile of respondents was analyzed to assess the representativeness and appropriateness of the sample for examining AI-assisted project management within higher education institutions. The findings indicated that the respondents possessed substantial academic and managerial experience relevant to university project governance and digital transformation initiatives.
Among the 389 valid responses, 58.6% of respondents were male and 41.4% were female. The majority of respondents belonged to the 31–40 years age category (44.2%), followed by the 41–50 years category (29.8%). Regarding educational qualification, 61.7% possessed master's degrees, while 22.6% held doctoral qualifications. Furthermore, 49.4% of respondents had more than five years of professional experience in academic project management.

Table 1
Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	228	58.6
	Female	161	41.4
Age	21–30 Years	71	18.3
	31–40 Years	172	44.2
	41–50 Years	116	29.8
	Above 50 Years	30	7.7
Education	Bachelor's Degree	61	15.7
	Master's Degree	240	61.7
	PhD Degree	88	22.6
Experience	Less than 5 Years	97	24.9
	5–10 Years	192	49.4
	Above 10 Years	100	25.7
Institutional Type	Public Universities	223	57.3
	Private Universities	166	42.7

The demographic findings indicate that the respondents possessed adequate professional expertise and institutional exposure to evaluate AI-assisted project management practices and project failure reduction mechanisms within higher education environments.

4.2 Measurement Model Assessment

The measurement model was evaluated to examine indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. The assessment followed the statistical guidelines recommended by Hair et al. (2022).

4.2.1 Reliability and Convergent Validity

Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) were used to assess internal consistency reliability and convergent validity.

The results demonstrated that all Cronbach's alpha values exceeded the recommended threshold of 0.70, ranging from 0.847 to 0.926. Composite Reliability values ranged between 0.881 and 0.939, confirming strong construct reliability. Similarly, AVE values exceeded the minimum threshold of 0.50, indicating satisfactory convergent validity.

Table 2
Reliability and Convergent Validity Analysis

Construct	Items	Cronbach's Alpha	Composite Reliability	AVE
AI-Assisted Decision Making (AIDM)	7	0.926	0.939	0.721
Risk Prediction (RP)	6	0.891	0.917	0.650
Team Adaptability (TA)	6	0.873	0.904	0.612
Project Failure Reduction (PFR)	7	0.847	0.881	0.598

The findings confirm that all constructs demonstrated strong psychometric reliability and validity suitable for structural model analysis.

4.2.2 Factor Loadings

Indicator reliability was assessed through factor loadings. All factor loadings exceeded the recommended threshold value of 0.70, confirming satisfactory item reliability.

Table 3
Factor Loadings

Construct	Item Code	Factor Loading
AI-Assisted Decision Making	AIDM1	0.842
	AIDM2	0.861
	AIDM3	0.874
	AIDM4	0.833
	AIDM5	0.857
	AIDM6	0.846
	AIDM7	0.864
Risk Prediction	RP1	0.811
	RP2	0.836
	RP3	0.824
	RP4	0.852
	RP5	0.793
	RP6	0.817
Team Adaptability	TA1	0.788

	TA2	0.804
	TA3	0.826
	TA4	0.791
	TA5	0.782
	TA6	0.809
Project Failure Reduction	PFR1	0.761
	PFR2	0.794
	PFR3	0.782
	PFR4	0.768
	PFR5	0.775
	PFR6	0.801
	PFR7	0.784

The results indicate that all measurement indicators adequately represented their respective latent constructs.

4.3 Discriminant Validity

Discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT). All HTMT values remained below the recommended threshold of 0.85, confirming satisfactory discriminant validity.

Table 4
HTMT Analysis

Constructs	**AIDM**	**RP**	**TA**	**PFR**
AI-Assisted Decision Making (AIDM)	—	—	—	—
Risk Prediction (RP)	0.734	—	—	—
Team Adaptability (TA)	0.691	0.652	—	—
Project Failure Reduction (PFR)	0.781	0.744	0.716	—

The HTMT findings confirm that all constructs were empirically distinct and conceptually independent.

4.4 Structural Model Assessment

The structural model was assessed using path coefficients (β), t-values, p-values, coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2). Bootstrapping with 5,000 resamples was conducted to evaluate the significance of hypothesized relationships.

The findings revealed that AI-assisted decision making significantly and negatively influenced project failure ($\beta = -0.438$, $t = 9.761$, $p < 0.001$), supporting Hypothesis 1. The negative relationship indicates that higher levels of AI-assisted decision making substantially reduce project failure within higher education projects.

AI-assisted decision making also demonstrated significant positive effects on risk prediction ($\beta = 0.527$, $t = 11.206$, $p < 0.001$) and team adaptability ($\beta = 0.483$, $t = 10.117$, $p < 0.001$).

Furthermore, risk prediction negatively influenced project failure ($\beta = -0.318$, $t = 6.842$, $p < 0.001$), while team adaptability also demonstrated a significant negative effect on project failure ($\beta = -0.352$, $t = 7.104$, $p < 0.001$).

Table 5
Direct Hypotheses Testing

Hypothesis	**Relationship**	**Beta (β)**	**t-value**	**p-value**	**Decision**
H1	AIDM → PFR	-0.438	9.761	0.000	Supported
H2a	AIDM → RP	0.527	11.206	0.000	Supported

H2b	RP → PFR	-0.318	6.842	0.000	Supported
H3a	AIDM → TA	0.483	10.117	0.000	Supported
H3b	TA → PFR	-0.352	7.104	0.000	Supported

The findings demonstrate that AI-assisted decision systems significantly improve project management performance by enhancing predictive risk management and adaptive team behavior.

4.5 Coefficient of Determination (R^2)

The coefficient of determination (R^2) was used to evaluate the explanatory power of the structural model.

Table 6
Coefficient of Determination (R^2)

Endogenous Variable	R^2 Value	Interpretation
Risk Prediction	0.278	Moderate
Team Adaptability	0.233	Moderate
Project Failure Reduction	0.643	Substantial

The model explained 64.3% of the variance in project failure reduction, indicating strong predictive capability and substantial explanatory power.

4.6 Predictive Relevance (Q^2)

The blindfolding procedure was conducted to evaluate predictive relevance (Q^2). All Q^2 values exceeded zero, confirming satisfactory predictive relevance of the model.

Table 7
Predictive Relevance (Q^2)

Construct	Q^2 Value
Risk Prediction	0.196
Team Adaptability	0.173
Project Failure Reduction	0.417

The results indicate that the structural model possessed strong predictive accuracy for the endogenous constructs.

4.7 Mediation Analysis

The mediation effects of risk prediction and team adaptability were evaluated using bootstrapping procedures.
The findings revealed that risk prediction partially mediated the relationship between AI-assisted decision making and project failure reduction ($\beta = -0.173$, $t = 5.381$, $p < 0.001$), supporting Hypothesis 2.
Similarly, team adaptability partially mediated the relationship between AI-assisted decision making and project failure reduction ($\beta = -0.194$, $t = 5.764$, $p < 0.001$), supporting Hypothesis 3.

Table 8
Mediation Analysis

Hypothesis	Indirect Relationship	Beta (β)	t-value	p-value	Decision
H2	AIDM → RP → PFR	-0.173	5.381	0.000	Supported
H3	AIDM → TA → PFR	-0.194	5.764	0.000	Supported

The mediation findings indicate that AI-assisted decision making reduces project failure both directly and indirectly through improved predictive risk management and adaptive team capability.

4.8 Effect Size (f^2)

Effect size analysis was conducted to examine the relative contribution of exogenous constructs to endogenous variables.

Table 9

Effect Size (f^2)

Relationship	f^2 Value	Effect Size
AIDM → PFR	0.331	Large
AIDM → RP	0.372	Large
AIDM → TA	0.294	Medium
RP → PFR	0.201	Medium
TA → PFR	0.226	Medium

The results indicate that AI-assisted decision making exerted a substantial influence on predictive risk management and project failure reduction.

4.9 Summary of Findings

Overall, the empirical findings strongly supported the proposed conceptual framework. AI-assisted decision making significantly reduced project failure within higher education projects both directly and indirectly through risk prediction and team adaptability mechanisms.

The findings suggest that universities utilizing AI-enabled project management systems are more capable of identifying operational risks proactively, improving decision-making quality, enhancing adaptive collaboration, and reducing project-related disruptions.

The study further demonstrates that AI technologies improve project governance not merely through automation but through strengthening predictive intelligence and organizational adaptability within complex academic environments.

5. Discussion

The primary objective of this study was to examine whether AI-assisted decision making reduces project failure in higher education projects through the mediating roles of risk prediction and team adaptability. The empirical findings strongly support the proposed conceptual framework and provide important theoretical and managerial insights regarding the role of Artificial Intelligence in contemporary project governance.

The findings revealed that AI-assisted decision making significantly and negatively influences project failure within higher education institutions. This result indicates that universities implementing AI-enabled project management systems are more capable of reducing project delays, operational inefficiencies, communication breakdowns, and implementation failures. The finding aligns with previous studies arguing that AI technologies improve forecasting accuracy, operational visibility, and managerial responsiveness within complex project environments (Dwivedi et al., 2023; Marnewick & Marnewick, 2020).

One critical implication of this finding is that project failure in universities is increasingly becoming a technological intelligence problem rather than merely a managerial competency problem. Many higher education institutions continue relying on traditional bureaucratic decision-making structures despite operating in highly dynamic technological environments. This creates delayed responses, fragmented communication, and reactive management behavior. The findings clearly suggest that AI-assisted systems strengthen project governance by enabling evidence-based managerial decisions supported by predictive analytics and real-time operational monitoring.

The study further demonstrated that AI-assisted decision making significantly enhances risk prediction capability. This finding supports the argument that AI technologies improve organizational resilience by identifying hidden operational patterns and forecasting project disruptions before they escalate into major failures. Traditional project risk management approaches are often retrospective and heavily dependent on subjective managerial judgment, which limits the ability of organizations to respond proactively to uncertainty.

In contrast, AI-driven predictive systems continuously analyze operational data streams and generate intelligent forecasts regarding schedule deviations, resource allocation inefficiencies, stakeholder conflicts, and technological vulnerabilities. Consequently, universities equipped with AI-powered risk prediction systems become more capable of reducing operational uncertainty and improving project performance outcomes.

The mediation findings further revealed that risk prediction partially mediates the relationship between AI-assisted decision making and project failure reduction. This indicates that AI technologies reduce project failure not only through direct managerial support but also by strengthening predictive risk management capability. This result is particularly important because many universities still treat risk management as a compliance-oriented administrative process rather than a predictive intelligence function.

The findings also revealed that AI-assisted decision making significantly improves team adaptability within higher education projects. This result supports Dynamic Capability Theory, which argues that organizational adaptability is essential for achieving superior performance in uncertain environments. Universities increasingly operate within rapidly changing educational ecosystems characterized by technological transformation, policy reforms, stakeholder complexity, and evolving student expectations. Under such conditions, rigid project structures and inflexible communication systems significantly increase the probability of project failure.

AI technologies strengthen team adaptability by improving communication transparency, workflow coordination, information accessibility, and collaborative responsiveness. AI-enabled systems facilitate real-time information sharing and operational synchronization, enabling project teams to respond more effectively to unexpected disruptions and changing project requirements.

The mediation analysis further confirmed that team adaptability partially mediates the relationship between AI-assisted decision making and project failure reduction. This finding demonstrates that AI technologies improve project outcomes not only through automation and analytics but also through strengthening collaborative adaptability and organizational learning processes.

One major managerial mistake exposed by the findings is the tendency of many institutions to view AI merely as a technological automation tool. The results clearly indicate that AI functions as a strategic organizational capability influencing decision intelligence, risk management, communication coordination, and adaptive collaboration simultaneously. Universities focusing only on AI software acquisition without redesigning governance structures, communication processes, and team collaboration mechanisms are unlikely to achieve meaningful project improvement outcomes.

The findings further contribute to the growing literature on AI-enabled project management by integrating technological intelligence and adaptive organizational behavior into a unified explanatory framework. Previous studies largely focused on AI adoption intentions or technological implementation challenges while ignoring the organizational mechanisms through which AI improves project outcomes.

Another important contribution of this study is its focus on higher education institutions, a context that remains significantly underexplored within AI and project management literature. Most existing studies examine AI applications within manufacturing, healthcare, or corporate environments. However, universities possess unique operational characteristics including decentralized governance structures, academic autonomy, stakeholder complexity, and bureaucratic decision-making systems, making project management substantially more challenging.

The results therefore suggest that AI-assisted project governance may become increasingly necessary rather than optional for higher education institutions seeking operational resilience and digital transformation success. Universities unable to integrate predictive analytics, intelligent monitoring systems, and adaptive collaboration technologies may experience increasing project inefficiencies and competitive disadvantages in rapidly evolving educational environments.

6. Theoretical Implications

This study contributes to the project management, artificial intelligence, and organizational behavior literature in several important ways.

First, the study extends Socio-Technical Systems Theory by demonstrating that project success within higher education institutions depends on the alignment between technological intelligence systems and adaptive human collaboration mechanisms. The findings confirm that AI technologies improve project outcomes when predictive analytics and automated decision-support systems complement organizational adaptability and collaborative responsiveness.

Second, the study contributes to Dynamic Capability Theory by empirically demonstrating that AI technologies strengthen adaptive organizational capabilities within project-intensive environments. The findings suggest that AI-assisted systems improve institutional capability to sense operational disruptions, respond proactively to uncertainty, and reconfigure project strategies dynamically.

Third, the study advances emerging literature on AI-enabled project management by focusing specifically on project failure reduction rather than technology adoption intentions. Most previous studies emphasize implementation barriers and technological acceptance while providing limited empirical evidence regarding AI's actual impact on project outcomes.

Fourth, the integration of predictive risk management and team adaptability into a unified conceptual framework significantly expands understanding regarding the organizational mechanisms through which AI technologies improve project performance.

Finally, the study contributes context-specific insights regarding higher education institutions, which remain underrepresented within AI and project governance literature despite increasing digital transformation pressures within academic environments.

7. Practical Implications

The findings provide several important implications for university administrators, project managers, policymakers, and technology strategists.

Higher education institutions should integrate AI-assisted decision-support systems into project governance frameworks rather than relying exclusively on traditional administrative structures. AI technologies improve operational visibility, forecasting capability, and managerial responsiveness, thereby reducing project inefficiencies and implementation failures.

University project managers should prioritize predictive risk management systems capable of identifying operational vulnerabilities proactively. AI-driven predictive analytics can significantly improve institutional resilience by enabling early detection of schedule deviations, resource shortages, stakeholder conflicts, and technological disruptions.

The findings also suggest that universities should strengthen team adaptability alongside technological implementation. Many organizations invest heavily in AI systems while neglecting organizational learning, communication flexibility, and collaborative adaptability. This creates technological capability without operational responsiveness.

Institutions should therefore redesign project workflows, communication systems, and collaborative structures to maximize the benefits of AI-enabled governance systems. Training programs should focus not only on technical AI skills but also on adaptive problem-solving, interdisciplinary collaboration, and data-driven decision-making capability.

Furthermore, policymakers and higher education regulators should encourage AI integration within

academic project management through digital transformation policies, institutional support mechanisms, and technological infrastructure investment programs.
The findings additionally suggest that universities should avoid treating AI implementation as a purely IT-driven initiative. Successful AI-assisted project governance requires integration between technology systems, managerial processes, organizational culture, and adaptive team behavior.

8. Conclusion

This study examined whether AI-assisted decision making reduces project failure in higher education projects through the mediating roles of risk prediction and team adaptability. Drawing upon Socio-Technical Systems Theory and Dynamic Capability Theory, the study proposed that AI-enabled project governance enhances project success by improving predictive intelligence and organizational adaptability.
The empirical findings confirmed that AI-assisted decision making significantly reduces project failure within higher education institutions. The results further demonstrated that risk prediction and team adaptability partially mediate the relationship between AI-assisted decision making and project failure reduction.
The findings indicate that AI technologies improve project governance by enhancing forecasting accuracy, predictive risk assessment, communication coordination, operational transparency, and adaptive collaboration capability. Universities implementing AI-assisted project management systems are therefore more capable of reducing project delays, operational inefficiencies, stakeholder conflicts, and implementation failures.
The study further highlights that project failure within higher education institutions increasingly reflects limitations in predictive intelligence and adaptive capability rather than purely managerial incompetence. Traditional bureaucratic governance structures and reactive management approaches are increasingly inadequate within technologically complex academic environments.
The findings emphasize that AI should not be viewed merely as an automation tool but rather as a strategic organizational capability influencing decision intelligence, risk management, and collaborative adaptability simultaneously. Institutions seeking sustainable project success must therefore integrate AI technologies with adaptive organizational structures and data-driven governance systems.
Overall, the study contributes to the growing literature on AI-enabled project management by demonstrating how technological intelligence and organizational adaptability jointly influence project failure reduction within higher education environments.

9. Limitations and Future Research Directions

Despite its contributions, the study contains several limitations that provide opportunities for future research.
First, the study utilized a cross-sectional research design, which limits the ability to establish long-term causal relationships among constructs. Future studies should employ longitudinal research designs to examine how AI-assisted governance influences project outcomes over time.
Second, the study focused specifically on higher education institutions. Future research should investigate AI-assisted project management mechanisms across other sectors including healthcare, construction, manufacturing, and public administration to improve generalizability.
Third, the study examined risk prediction and team adaptability as mediating mechanisms. Future studies may explore additional mediators such as organizational learning capability, digital leadership, knowledge sharing, innovation culture, and employee trust in AI systems.
Fourth, future researchers should examine potential moderating variables including technological readiness, institutional size, organizational culture, environmental uncertainty, and digital maturity levels.
Fifth, the study relied primarily on perceptual survey data. Future research may incorporate objective project

performance indicators, longitudinal operational datasets, and AI-generated analytics reports to strengthen methodological rigor.

Finally, comparative international studies would provide deeper understanding regarding how institutional environments, technological infrastructure, and cultural differences influence AI-assisted project governance and project failure reduction across different countries and educational systems.

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