Research Paper

Human-AI Resilience in Project Management: A Framework For Post-Ai Digital Transformation

Jiomarie B. Jesus[1]*, Joeriz B. Arnejo[2], Danilo Y. Patalinghug[3], Jovert J. Delegencia[4], Bridgette Baguio Mananghac[5]
[1] Mandaue City College, Philippines
[2,5] University of Southern Philippines Foundation, Philippines
[3] Cebu Technological University – Consolacion Campus, Philippines
[4] Bukidnon State University, Philippines

Received: June 25, 2025	Revised: September 10, 2025	Accepted: September 10, 2025	Online: January 31, 2026

Abstract

Integrating artificial intelligence (AI) into large-scale digital transformation has shifted project management from process-centric models to adaptive, human-centered frameworks. This study addressed a critical gap in the literature by introducing the Human-AI Resilience Framework (HARF), which emphasizes emotional safety, resilience, and ethical adaptation in AI-driven environments. Employing a convergent mixed-methods design, the study surveyed 400 project managers and conducted thematic interviews with 50 AI-experienced leaders across the Asia-Pacific region. Quantitative analyses, including ANOVA and structural equation modeling (SEM), validated HARF by revealing strong associations between human resilience and project success ($\beta = 0.48$, $p < 0.001$). Emotional burnout significantly varied across industries, with the IT and healthcare sectors reporting the highest levels. Thematic analysis revealed six core themes, such as AI-augmented leadership and psychological safety, highlighting the centrality of human agency in AI integration. HARF distinguished itself by aligning technological capabilities with emotional intelligence, offering a multidimensional perspective on digital governance. It provided actionable strategies for mitigating burnout, fostering ethical AI onboarding, and strengthening team cohesion. As AI reshaped the modern workplace, HARF delivered a practical, evidence-based roadmap for project leaders striving to balance algorithmic precision with human insight. The framework ultimately redefined project success through the lens of human-AI synergy, offering critical value for navigating complex digital ecosystems.

Keywords *Human-AI Synergy, Project Resilience, Psychological Safety, Digital Transformation, Ethical AI Adoption*

INTRODUCTION

The accelerating integration of artificial intelligence (AI) into large-scale digital transformation initiatives has fundamentally reshaped contemporary project management, particularly within high-growth Asia-Pacific economies such as the Philippines, Singapore, India, and South Korea (Cao et al., 2023; Mahabub et al., 2025). Across sectors including information technology, financial services, healthcare, and public administration, AI-enabled systems—ranging from predictive analytics to intelligent automation—have been widely adopted to enhance productivity, improve operational transparency, and strengthen real-time decision-making capabilities (Basnet, 2024). Recent studies further suggest that AI-driven transformation has altered the very nature of project execution by accelerating decision cycles, intensifying cognitive demands, and increasing system-level complexity, thereby requiring new forms of resilience and governance beyond traditional control mechanisms (Rane et al., 2024; Martinez-Gutierrez et al., 2023; Bainey, 2024). Nevertheless, much of the existing literature continues to frame AI's value primarily through the lenses of efficiency, cost optimization, and process acceleration, reinforcing a predominantly technology-centric narrative of project success (Batra et al., 2023; Singh, 2024).

A growing body of scholarship indicates that this efficiency-dominant framing obscures the more profound human consequences of AI integration, particularly its emotional, psychological, and ethical implications for project teams. As AI systems increasingly influence decision authority

Corresponding author's email: jiomariej15@gmail.com

and workflow prioritization, professionals face heightened risks of emotional burnout, cognitive overload, job insecurity, and diminished professional agency, especially when algorithmic outputs are perceived as unquestionable or superior to human judgment (Rughoobur-Seetah, 2024; Adamska-Chudzińska & Pawlak, 2025). These challenges are further amplified by the psychological strain associated with sustained digital intensity and moral ambiguity in AI-mediated work environments, raising critical concerns about well-being, trust, and the sustainability of long-term performance (Knafo, 2024; Özkan, 2022). Despite their growing prevalence, such human-centered risks remain insufficiently addressed within dominant project management and digital transformation frameworks.

This theoretical gap reflects enduring limitations within established governance perspectives. Project governance theory offers robust mechanisms for oversight, accountability, and structural control, yet it has historically prioritized procedural compliance over human adaptability. In contrast, organizational behavior theory provides deep insights into motivation, team dynamics, and psychological well-being but lacks explicit mechanisms for governing AI-driven decision systems. Emerging research has highlighted the importance of psychological safety, ethical awareness, collaborative intelligence, and emotional sustainability in complex digital ecosystems, suggesting the need for integrative models that bridge governance structures with human resilience (Edmondson, 2019; Sundaramurthy et al., 2022; Amissah et al., 2022). Complementary scholarship further emphasizes that AI readiness and ethical literacy are no longer peripheral competencies but central determinants of effective leadership and coordination in intelligent project environments (Dwivedi et al., 2023; Tursunbayeva & Gal, 2024).

Responding to these theoretical and practical gaps, this study develops the Human-AI Resilience Framework (HARF). This governance-oriented model reconceptualizes project success as the synergy between technological capability and human adaptability grounded in ethical sensitivity. Guided by this perspective, the study examines how AI integration reshapes project roles, redefines success metrics, and introduces interrelated emotional, cognitive, and ethical challenges within AI-augmented workflows. It empirically investigates the relationships among psychological safety, human resilience, AI readiness, and collaborative intelligence, rather than proposing an abstract conceptualization, to generate a practical governance tool responsive to contemporary project realities. HARF is intended to function both as a diagnostic instrument and a strategic guide, enabling organizations to assess AI preparedness, strengthen emotional infrastructure, and align digital transformation initiatives with sustained human-centered value creation.

Research Objectives

This study explored the multidimensional impacts of integrating artificial intelligence (AI) into project management in large-scale digital transformation initiatives. Grounded in both empirical evidence and thematic insights, the research objectives aimed to uncover critical challenges, redefine project success, and offer a strategic framework for achieving human-AI resilience.

1. Analyze how AI integration is reshaping project roles and success metrics in large-scale digital transformation projects;
2. Identify the emotional, cognitive, and technical challenges faced by project teams during AI-enabled transitions;
3. Develop a practical Human-AI Resilience Framework (HARF) that improves project outcomes and team well-being; and
4. Recommend data-driven strategies for project leaders to balance AI efficiency and human-centered design.

LITERATURE REVIEW

The rapid rise of artificial intelligence (AI) as a transformative force in digital project environments has fundamentally challenged the adequacy of traditional project governance models. Established methodologies such as Agile, PRINCE2, and the Project Management Institute's (PMI) Body of Knowledge were initially developed for linear, human-paced workflows and have become increasingly misaligned with the volatile, data-driven realities of AI-integrated contexts (Chongwatpol, 2024; Singh, 2024). While these models promote structured planning, iterative delivery, and stakeholder engagement, they rarely address the psychosocial, cognitive, and ethical complexities introduced by intelligent automation. This review synthesizes the literature across four interrelated themes: limitations of traditional project methodologies, psychological and ethical risks in hybrid workflows, the role of human adaptability and digital empathy, and contextual considerations in emerging economies, before presenting the theoretical underpinnings of the present study.

Limitations of Traditional Project Methodologies in the AI Era. Legacy governance frameworks such as PMI and PRINCE2 have historically prioritized process control, milestone tracking, and predictable outputs. However, the unprecedented speed and scale of AI deployment have rendered many of its foundational assumptions obsolete. Agile methodology, although responsive to change, implicitly assumes a workforce with stable cognitive and emotional capacities, a premise frequently violated in AI-driven environments where rapid, algorithm-triggered shifts redefine workflows without prior human initiation (Josyula et al., 2023). PRINCE2 similarly lacks embedded mechanisms to address interpretive opacity, defined as the difficulty that human actors experience in understanding or challenging AI-generated recommendations (Cao et al., 2023). These limitations underscore the necessity of governance models that move beyond process-centric designs toward frameworks capable of accommodating the emergent tensions inherent in human-AI collaboration.

Psychological and Ethical Risks in Hybrid Workflows. AI-enabled workflows have introduced heightened psychological stress and ethical complexity into project environments. Empirical studies have documented increased emotional burnout, technostress, and cognitive overload, particularly when adaptation demands exceed human capacity (Trimboli, 2024). Emotional labor is further compounded when project members interact with AI systems perceived as infallible, diminishing opportunities for constructive critique (Rughoobur-Seetah, 2024). Ethical challenges, including accountability, algorithmic fairness, and explainability, also proliferate as the boundaries between human and machine decision-making blur (Mujtaba, 2025). These factors underscore the need to reconceptualize project success to encompass not only deliverables but also the preservation of psychological safety and the promotion of ethical co-leadership.

Human Adaptability, Resilience, and Digital Empathy. Scholarship has increasingly emphasized the necessity of human-centered competencies, specifically resilience, psychological safety, and digital empathy in sustaining performance within AI-mediated projects. As performance indicators shift from output delivery to include adaptability and relational trust, teams are required to maintain emotional regulation and moral integrity in high-uncertainty contexts (Wu et al., 2024). Digital empathy, defined as the leader's ability to perceive and respond to emotional reactions to AI adoption, has been recognized as a critical skill for fostering inclusion and trust in hybrid teams (Nabeel, 2024). These insights affirm that psycho-organizational readiness has transitioned from a peripheral consideration to a central determinant of project success in AI-enhanced ecosystems.

Cultural and Sectoral Contexts in Emerging Economies. Much of the academic discourse on AI in project management has emerged from Western contexts, often overlooking the structural and cultural complexities of emerging economies. Within the Asia-Pacific region, where this study is situated, project managers in sectors such as information technology, healthcare, government, and finance encounter distinct challenges, including digital inequality, technological asymmetry, and culturally rooted workplace stressors (Bainey, 2024). For example, healthcare professionals must balance AI-driven administrative mandates with patient-centered responsibilities, while government project teams navigate bureaucratic inertia alongside ethical obligations (Amissah et al., 2022; Martinez-Gutierrez et al., 2023). These conditions necessitate governance frameworks that account for varying degrees of AI maturity, socio-technical resilience, and culturally embedded organizational norms.

Theoretical Framework

Project Governance Theory provides a structural lens for understanding how projects are directed and controlled to achieve strategic objectives. It emphasizes oversight, decision rights, accountability mechanisms, and stakeholder alignment to ensure that projects deliver value within established constraints. Previous applications of the theory have focused on financial control, compliance, and risk mitigation, yet it has been limited in addressing the psychosocial consequences of disruptive technologies such as AI. In the context of AI integration, this theory provides a foundation for formal governance structures but requires extension to incorporate human-centered variables, such as resilience and psychological safety.

Organizational Behavior Theory examines the interplay between individual behavior, team dynamics, and organizational structures. Traditionally applied to areas such as motivation, leadership, and communication, it provides insight into how employees adapt to change and maintain group cohesion. In AI-mediated project settings, it becomes particularly relevant in understanding the emotional, cognitive, and ethical adjustments required of teams. However, its conventional applications lack explicit governance mechanisms to manage AI-specific risks and ethical challenges.

By integrating these two theoretical perspectives, the present study addresses the limitations of each when considered in isolation. Project Governance Theory provides structural clarity and oversight mechanisms, whereas Organizational Behavior Theory enriches the framework with insights into human adaptability and emotional resilience. Together, they inform the development of the Human-AI Resilience Framework (HARF), which reconceptualizes project success as the interplay between governance structures, human resilience, and ethical AI integration.

Integrating the Literature into the Study Framework

In response to the identified gaps, this study developed HARF as an integrative model embedding psychological, ethical, and cognitive constructs into project performance analysis. Unlike earlier frameworks that treated human factors as secondary, HARF positioned them as central mediators of success in AI-enabled ecosystems. Empirical validation through structural equation modeling confirmed statistically significant relationships among psychological safety, human resilience, and project outcomes, while qualitative data revealed emergent behaviors and emotional recalibrations within AI-mediated teams (Rane et al., 2024; Edmondson, 2019). Although Agile, PRINCE2, and PMI frameworks remain relevant for procedural structure, they do not sufficiently address the emotional volatility and ethical opacity of AI-infused projects. HARF offers a scalable, culturally responsive, and evidence-based alternative, integrating quantitative rigor with qualitative depth to reconfigure project governance in the post-AI era (Quiñones-Gómez et al., 2025; Dwivedi et al., 2023).

Hypotheses

H1 : Higher AI readiness among project managers positively predicts project success.

H2 : Human resilience significantly enhances project success in AI-enabled transformation projects.

H3 : Collaborative intelligence positively influences human resilience within project teams.

H4 : Psychological safety significantly predicts human resilience in AI-integrated project environments.

H5 : Emotional burnout levels significantly differ across industries in AI-enabled project settings.

RESEARCH METHOD

This study used a convergent mixed-methods design, combining quantitative surveys and qualitative interviews to capture both statistical trends and contextual insights on AI-integrated project management.

Design

This study adopted a convergent mixed-methods design to examine the psychological, organizational, and technical dynamics of project management in AI-integrated environments. The design facilitated the concurrent collection, analysis, and interpretation of quantitative and qualitative data, enabling both statistical generalizability and contextual depth. Research activities proceeded in four sequential stages: (1) instrument design and ethical clearance, (2) quantitative data collection and preliminary statistical analysis, (3) qualitative data collection and thematic coding, and (4) integration of findings for framework development and validation.

The quantitative component, grounded in a positivist paradigm, utilized a structured survey administered via Google Forms to project managers from four major industries. Analytical procedures included descriptive statistics, one-way analysis of variance (ANOVA), and structural equation modeling (SEM), with SEM selected for its ability to assess complex relationships among latent variables and validate the predictive pathways of the Human-AI Resilience Framework (HARF), particularly the mediating role of psychological safety in enhancing human resilience (Rane et al., 2024). The qualitative component consisted of semi-structured interviews conducted via Zoom or Google Meet, guided by reflexive thematic analysis to capture interpretive insights into leadership adaptation, cognitive strain, and emotional experiences in AI-mediated contexts (Braun & Clarke, 2006; Nabeel, 2024).

Environment

The empirical inquiry was situated in large-scale digital transformation projects across the Asia-Pacific region, a setting distinguished by rapid AI adoption, varying levels of digital maturity, and substantial cross-sectoral investment in intelligent technologies (Mahabub et al., 2025). Four strategic industries—information technology, finance, healthcare, and government—were targeted for their high innovation potential and varying psychological demands associated with AI-driven change. All data were collected remotely via secure digital platforms, consistent with hybrid and distributed work arrangements, thereby enhancing ecological validity (Bainey, 2024).

Respondents and Sampling

For the quantitative phase, stratified random sampling was employed to select 400 project managers, ensuring proportional representation by age, gender, years of experience, sector affiliation, and AI proficiency. Eligibility criteria included a minimum of two years of experience in AI-integrated projects and active engagement with AI tools such as generative platforms, predictive analytics, or AI-driven scheduling systems (Wu et al., 2024).

The qualitative phase involved 50 purposively selected participants, all drawn from the original pool of 400 survey respondents to ensure continuity and contextual relevance. Selection was based on diversity in job roles (e.g., project director, transformation strategist, technical lead), organizational hierarchy, AI maturity level, and project complexity. This purposive approach was necessary to capture a breadth of experiential perspectives and to facilitate theoretical saturation, which prior studies have observed at approximately 45–50 interviews (Trimboli, 2024).

Instrumentation

The quantitative survey comprised validated multi-item Likert-type scales assessing five core constructs: AI readiness, psychological safety, human resilience, collaborative intelligence, and project success. Each construct included four to six items adapted from established scales with documented psychometric reliability. Examples included: "I feel safe expressing my ideas in my team" (Psychological Safety, Edmondson, 2019), "I am confident in adapting to unexpected changes during AI-enabled projects" (Human Resilience, Amissah et al., 2022), and "I understand the ethical implications of implementing AI tools in my projects" (AI Readiness). All adapted items underwent expert review by three senior academics in project management and a pilot test with 20 project managers to refine clarity and ensure contextual alignment. Cronbach's alpha values ranged from 0.79 to 0.87, exceeding the 0.70 threshold for internal consistency (Dwivedi et al., 2023). Composite reliability (CR) values exceeded 0.80, and average variance extracted (AVE) scores were above 0.60, confirming strong convergent and discriminant validity (Quiñones-Gómez et al., 2025).

The survey employed a 5-point Likert scale for all constructs, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. For burnout measures within ANOVA, the scale was interpreted as 1 = Very Low to 5 = Very High.

The qualitative interview guide was developed to explore themes including AI-induced leadership transformation, algorithmic trust, ethical ambiguity, and emotional labor. A pilot test with five senior project leads was conducted to ensure clarity and alignment with research objectives. Open-ended questions allowed participants to elaborate freely, enabling the emergence of unanticipated but relevant insights (Mujtaba, 2025).

Data Analysis

Quantitative analysis was performed using SPSS 28 and AMOS 24. Descriptive statistics outlined demographic profiles and AI engagement levels, while one-way ANOVA assessed inter-industry differences in emotional burnout (Martinez-Gutierrez et al., 2023). SEM evaluated hypothesized relationships in HARF, with model fit indices (CFI = 0.94, RMSEA = 0.05) meeting recommended thresholds.

Qualitative analysis followed the six-phase reflexive thematic approach (Braun & Clarke, 2006). Coding was predominantly inductive, allowing themes to emerge from the data, while deductive elements were also incorporated to ensure alignment with the predefined constructs of HARF. The pre-structured codebook was refined during initial data immersion, and emergent themes were systematically mapped against quantitative results to facilitate methodological triangulation. Data integration occurred at both the analysis and interpretation stages, with joint displays employed to align statistical patterns with narrative accounts. This process allowed qualitative findings to explain or elaborate on quantitative results, thereby enhancing interpretive depth. Credibility was reinforced through peer debriefing, intercoder reliability checks, and memo writing (Chongwatpol, 2024).

Ethical Consideration

Ethical clearance was secured from an accredited institutional review board prior to data collection. Participants provided informed consent after being briefed on the study's aims, procedures, and confidentiality protocols. Participation was voluntary, and anonymity was safeguarded through coded identifiers and encrypted data storage. The study adhered to the principles of the Declaration of Helsinki and followed recognized best practices for research in remote, hybrid, and AI-mediated environments (Özkan, 2022).

FINDINGS AND DISCUSSION

The quantitative phase utilized survey data from 400 project managers across the Asia-Pacific region to examine the statistical relationships among core constructs of the Human-AI Resilience Framework (HARF). Descriptive statistics, ANOVA, and structural equation modeling (SEM) were employed to assess AI readiness, human resilience, psychological safety, and project success. This phase provided empirical validation of the framework and quantified the impact of AI integration on project management effectiveness.

Table 1. Demographic Characteristics

Variable	Categories	Frequency	Percentage (%)
Gender	Male	180	45.00
	Female	200	50.00
	Non-binary	20	5.00
Age	25–34	100	25.00
	35–44	140	35.00
	45–54	100	25.00
	55+	60	15.00
Years in Project Management	0–5 years	90	22.50
	6–10 years	130	32.50
	11–15 years	110	27.50
	16+ years	70	17.50
Industry	IT	130	32.50
	Finance	90	22.50
	Healthcare	100	25.00
	Government	80	20.00
AI Tool Familiarity	Low	70	17.50
	Moderate	200	50.00
	High	130	32.50

Table 1 summarizes the demographic characteristics of the 400 project managers who participated in the study. The sample reflected balanced gender representation and notable inclusivity, with a small but significant proportion (5%) identifying as non-binary. Most respondents were aged 35-44 and had 6-10 years of project management experience, suggesting a mature cohort actively engaged in navigating AI-driven transitions. The IT sector was the largest segment, consistent with global trends in AI adoption in technology-intensive domains. A significant observation was that although half of the respondents reported moderate familiarity with AI tools, only 32.5% demonstrated high proficiency. This finding indicated a skills gap in the use of AI tools and reinforced the urgency of implementing structured AI literacy and upskilling programs within project environments. Collectively, this demographic profile supported the study's focus on understanding human-AI readiness across career stages and sectoral contexts in rapidly evolving digital ecosystems.

Table 2. AI Readiness Index (Mean Scores per Indicator)

Item	Mean	Standard Deviation (SD)
Familiarity with AI project planning tools	4.21	0.81

Item	Mean	Standard Deviation (SD)
Confidence in using generative AI for reporting	4.05	0.74
Ability to assess AI risks and limitations	3.87	0.92
AI ethics awareness during implementation	3.59	1.03
Comfort in working with AI-decision tools	4.00	0.76

(n = 400 Project Managers)

Table 2 summarizes the AI readiness levels of project managers based on key competencies. The highest readiness was observed in familiarity with AI project-planning tools (M = 4.21), indicating that project managers were generally well equipped to operate within automation-enhanced workflows. Similarly, the relatively high mean scores for confidence in using generative AI for reporting (M = 4.05) and comfort with AI decision tools (M = 4.00) suggested increasing operational alignment between managerial roles and AI-integrated systems (Bainey, 2024). In contrast, lower scores in AI ethics awareness (M = 3.59) and risk assessment ability (M = 3.87) revealed a critical gap in evaluative and ethical competence. This disparity indicated that, while technical familiarity was advancing, ethical preparedness remained underdeveloped, posing risks to the responsible implementation of AI (Singh, 2024). The findings underscored the need for strategic interventions that integrate ethical foresight into AI training programs, ensuring that project teams not only operate AI tools effectively but also govern their application responsibly (Cherner et al., 2025). Accordingly, the table provided empirical grounding for designing dual-focused workforce development initiatives that emphasize both digital fluency and moral discernment in AI-supported project environments.

Table 3. Structural Equation Modeling (SEM) Results for HARF

Construct Relationship	Standardized β	Composite Reliability (CR)	Average Variance Extracted (AVE)	Significance (p-value)
AI Readiness → Project Success	0.41	0.82	0.64	p < 0.001
Human Resilience → Project Success	0.48	0.87	0.69	p < 0.001
Collaborative Intelligence → Human Resilience	0.39	0.79	0.59	p < 0.01
Psychological Safety → Human Resilience	0.52	0.84	0.66	p < 0.001

(n = 400 | Estimation method: Maximum Likelihood)

Table 3 presents the structural relationships tested through structural equation modeling (SEM) within the Human-AI Resilience Framework (HARF). Among the model's predictors, human resilience emerged as the strongest determinant of project success (β = 0.48, p < 0.001), reinforcing its centrality in mitigating disruption and uncertainty in AI-enhanced environments (Rane et al., 2024). AI readiness also exhibited a significant and positive relationship with project outcomes (β = 0.41, p < 0.001), suggesting that technical competence and cognitive familiarity with intelligent systems remain essential enablers of effective project execution (Tursunbayeva & Gal, 2024). Furthermore, psychological safety emerged as a key antecedent of resilience (β = 0.52, p < 0.001), supporting the argument that emotionally secure environments facilitate adaptive behaviors and sustained team performance in AI-mediated workflows (Sundaramurthy et al., 2022).

In terms of measurement reliability, all constructs achieved composite reliability (CR) values above 0.79 and average variance extracted (AVE) scores exceeding the 0.60 threshold, indicating strong internal consistency and convergent validity across the latent variables. The model's overall fit was deemed acceptable, with key indices—Comparative Fit Index (CFI = 0.94) and Root Mean Square Error of Approximation (RMSEA = 0.05)—within acceptable ranges for robust model estimation. These findings empirically validated HARF's conceptual structure and confirmed its diagnostic utility in evaluating the interplay between psychological, technical, and relational drivers of project success. More broadly, this model offered a theoretically grounded and statistically supported framework through which organizations could reconfigure governance models around human-centered performance in the post-AI era.

Table 4. ANOVA: Emotional Burnout by Industry

Industry	Mean Burnout Score	Standard Deviation (SD)	F-value	p-value
IT	3.91	0.72		
Finance	3.56	0.8		
Healthcare	3.78	0.74	4.28	0.003**
Government	3.12	0.9		

(n = 400 | Burnout Scale: 1 = Very Low, 5 = Very High)

Table 4 highlights statistically significant differences in emotional burnout levels across industry sectors, as indicated by the ANOVA result ($F = 4.28$, $p = 0.003$). The information technology sector reported the highest mean burnout score ($M = 3.91$), suggesting that rapid innovation cycles, algorithmic workloads, and real-time responsiveness in tech-intensive environments may exacerbate emotional strain (Rughoobur-Seetah, 2024; Jesus, 2024a). The healthcare sector followed closely ($M = 3.78$), consistent with prior findings that emotionally demanding frontline roles, compounded by administrative AI protocols, increase the risk of exhaustion (Özkan, 2022). In contrast, the government sector recorded the lowest burnout score ($M = 3.12$), which may be attributed to more structured processes, regulatory oversight, and comparatively slower AI integration, which provide greater routine stability and role predictability (Makudza, 2023).

These inter-industry variations underscore the need for sector-specific interventions to promote emotional resilience, particularly in domains characterized by sustained digital engagement and high cognitive load. The findings addressed a critical gap in the literature by contextualizing burnout within AI-driven project ecosystems and offering evidence for the differentiated emotional impact of intelligent systems across sectors. Such insights are valuable for the targeted design of mental health support programs, workload management strategies, and team resilience training that align with the distinct demands of each professional domain (Amissah et al., 2022).

Qualitative Findings

This section presents the thematic results of the qualitative phase of the study, which were derived from 50 semi-structured interviews with project managers who led AI-enabled transformation projects in the Asia-Pacific region. Six major themes were identified through reflexive thematic analysis (Braun & Clarke, 2006). These themes reflected the dynamic tensions, leadership recalibrations, and emotional adaptations that were required in project environments redefined by artificial intelligence. Each theme was supported by illustrative verbatim quotations to preserve contextual richness.

Theme 1: AI-Augmented Leadership Evolution

AI integration has altered traditional leadership paradigms, shifting project managers from authoritative decision-makers to facilitators of human-AI collaboration. Several participants described how AI-generated recommendations now precede team discussions, with one noting, "I now ask AI what it thinks before my team gives input—it is weird, but it works" (P4, Project

Director). This transition reflects a growing reliance on algorithmic inputs while underscoring the need to mediate between computational logic and human intuition. However, these shifts also introduced ethical tensions related to transparency, bias, and accountability in AI outputs, thereby demanding new leadership competencies grounded in judgment and digital ethics (Dwivedi et al., 2023).

Theme 2: Emotional Resilience in Hybrid Teams

High levels of emotional fatigue were reported across hybrid project teams, particularly those working under AI-accelerated workflows. The term "AI fatigue" emerged repeatedly, highlighting blurred boundaries between personal time and cognitive demands. As one participant observed, "Zoom fatigue is real, but now it is AI fatigue too. You cannot switch off" (P11, Senior IT Project Manager). The findings corroborated the literature linking continuous AI interaction to increased cognitive overload and disrupted psychological recovery (Adamska-Chudzińska & Pawlak, 2025). The virtual and asynchronous nature of hybrid work further compounded emotional disconnection, underscoring the need for formal resilience training and burnout-prevention protocols tailored to AI-mediated environments.

Theme 3: Digital Empathy as a New Skillset

Digital empathy has emerged as a critical leadership capability, particularly for addressing anxieties related to job displacement. Managers reported using co-learning approaches to ease fears and enhance trust. One respondent shared, "Some team members fear being replaced, so I let them co-pilot AI tasks first" (P17, Transformation Strategist). This practice demonstrated a human-centered onboarding strategy that balanced operational goals with emotional security. The findings supported the assertion that empathetic engagement enhances team cohesion, builds psychological safety, and accelerates technology acceptance (Edmondson, 2019; Jesus, 2024b). Managers who actively acknowledged tech-related fears were more successful in creating sustainable, AI-ready teams.

Theme 4: Project Success Reimagined

Traditional success metrics such as time, cost, and scope were deemed inadequate for AI-driven projects. Participants emphasized the need for continuous iteration, ethical alignment, and adaptive learning. As one manager noted, "No project finishes now—we roll into version updates with no end" (P29, Government Program Manager). This shift reflected the iterative, non-linear nature of intelligent systems and resonated with recent calls to redefine performance standards in digital transformation (Bresnen, 2024). The data suggested that project outcomes should encompass resilience, ethical accountability, and learning agility, rather than merely the delivery of predefined outputs.

Theme 5: Psychological Safety in AI Ecosystems

The perceived objectivity of AI outputs was found to suppress open dialogue and critical feedback. Several respondents shared that team members were reluctant to challenge AI-generated decisions. As one participant explained, "They will not speak up because they think the AI already decided" (P35, Technical Lead). This dynamic created false consensus bias, weakening collective problem-solving and innovation. The findings emphasized the need to reframe psychological safety within AI contexts by reinforcing the legitimacy of human oversight and dissent. Managers must facilitate open discourse and create safeguards that protect human judgment from algorithmic dominance.

Theme 6: Human-AI Synergy Challenges

A recurring tension emerged between leveraging AI for efficiency and maintaining human control over decision-making. Participants expressed discomfort with excessive automation, especially when outputs lacked transparency. One noted, "Sometimes I do not trust the AI's answer—but pushing back feels like insubordination" (P42, Senior Data Analyst). This illustrates a dilemma between delegation and discretion, where overreliance on AI can erode both trust and professional autonomy. Addressing these challenges requires not only AI literacy and explainability features but also clear override protocols and critical thinking norms embedded in project workflows (Ghabchi, 2022).

Framework Generated

Based on the integration of quantitative and qualitative findings, the Human-AI Resilience Framework (HARF) was developed to guide project success in AI-enabled environments. The framework synthesizes key predictors—psychological safety, human resilience, and AI readiness—with lived managerial experiences, emphasizing emotional sustainability and ethical leadership. HARF extends traditional models by addressing the human-algorithm dynamic as a central factor in post-AI project governance.

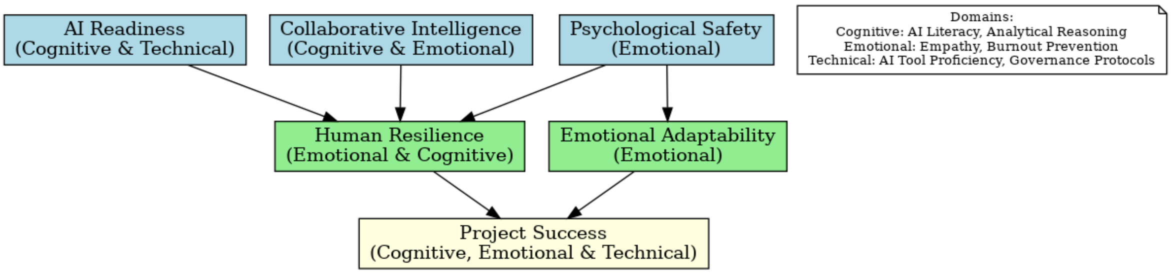

Figure 1. Human-AI Resilience Framework (HARF)

The Human-AI Resilience Framework (HARF) synthesizes validated constructs and emergent qualitative themes to explain project success in AI-mediated environments. It explicitly organizes its components into three dimensions:

1. Input Variables: AI readiness, defined as the capability to understand, adopt, and govern AI technologies; collaborative intelligence, referring to the capacity for effective human–machine teamwork; and psychological safety, reflecting the extent to which team members feel secure in expressing ideas and challenging AI-generated decisions.
2. Mediating Variables: Human resilience, representing the adaptive capacity to maintain performance under AI-induced change, and emotional adaptability, the ability to regulate stress and maintain constructive engagement in technology-mediated environments.
3. Outcome Variables: Project success, reconceptualized to include not only time, cost, and scope adherence but also ethical alignment, trust, and continuous learning agility.

HARF integrates three interdependent domains: cognitive elements (e.g., AI literacy, analytical reasoning, and interpretive capacity for algorithmic outputs), emotional elements (e.g., burnout prevention, empathy, and psychological safety), and technical elements (e.g., proficiency in AI tools, integration with workflow systems, and governance protocols). These domains collectively capture the interplay between technological capability and human adaptability.

The framework builds upon and diverges from existing project management and AI-readiness models—such as Agile, PRINCE2, and the PMI Body of Knowledge—by directly addressing interpretive opacity, ethical complexity, and emotional volatility, which have been largely peripheral in prior approaches. While earlier models have emphasized process efficiency and technical competency, HARF positions human resilience and ethical oversight as central mediators of success in AI-enabled projects.

Empirical validation through structural equation modeling confirmed that human resilience ($\beta = 0.48$, $p < 0.001$) and AI readiness ($\beta = 0.41$, $p < 0.001$) significantly predicted project success, with psychological safety ($\beta = 0.52$, $p < 0.001$) emerging as a strong antecedent to resilience. These quantitative findings were reinforced by qualitative insights showing leadership role evolution, emotional strain management, and the development of AI-augmented decision-making practices in hybrid teams.

As a diagnostic tool, HARF can be operationalized through the following organizational steps:

1. Assessment: Evaluate AI readiness, collaborative intelligence, and psychological safety using validated survey instruments.
2. Analysis: Identify strengths and gaps in both technological capabilities and emotional infrastructure.
3. Intervention: Implement targeted programs such as AI literacy training, resilience workshops, and ethics-oriented governance protocols.
4. Integration: Align project governance policies with HARF's multidimensional indicators, ensuring balanced attention to cognitive, emotional, and technical domains.
5. Monitoring: Continuously track progress through feedback loops, adjusting interventions to sustain adaptability, trust, and ethical alignment over time.

Through this structured approach, HARF serves not only as a conceptual model but also as a practical governance guide, enabling organizations to navigate the complexities of AI integration while safeguarding human agency and long-term performance sustainability.

CONCLUSIONS

This study aimed to examine four key research questions: (a) how AI integration has reshaped project roles and success metrics; (b) what emotional, cognitive, and technical challenges are present in AI-enabled project environments; (c) how the Human-AI Resilience Framework (HARF) can enhance project outcomes and team well-being; and (d) what strategic approaches can balance AI efficiency with human-centered design. Findings from the quantitative phase confirmed that project success in the post-AI era was influenced not only by technical proficiency but also by psychological safety and human resilience. HARF demonstrated strong statistical validity, particularly through emotional adaptability, collaborative intelligence, and AI readiness. Additionally, significant industry-specific differences in emotional burnout—especially in the IT and healthcare sectors—highlighted the contextual stressors of AI-driven environments. Thematic findings from the qualitative phase further revealed the importance of AI-augmented leadership, digital empathy, and human-AI trust asymmetries, underscoring the need to recalibrate leadership roles and team engagement in algorithmically mediated settings.

Theoretically, HARF extended traditional frameworks such as Agile, PRINCE2, and PMI by addressing their limitations in managing interpretive opacity, ethical complexity, and emotional volatility. Unlike these legacy models, which emphasized procedural control and output delivery, HARF centered psychological safety, resilience, and ethical awareness as mediators of success in AI-enhanced governance. In practice, the framework provided a context-sensitive roadmap for project leaders to implement sector-specific burnout-prevention strategies, establish AI ethics and literacy programs, and embed psychological safety protocols into organizational culture. HARF provided both a diagnostic and strategic tool for evaluating emotional infrastructure alongside AI readiness, enabling institutions to navigate digital transformation while preserving human agency, ethical accountability, and sustainable performance.

LIMITATION & FURTHER RESEARCH

This study was not without limitations. Methodologically, the use of self-reported survey data may have introduced response bias, as participants could have provided socially desirable answers, particularly on constructs such as psychological safety and AI ethics awareness. While the sample size for the quantitative phase exceeded structural equation modeling (SEM) requirements, the geographic focus on the Asia-Pacific region may limit the generalizability of findings to other economic contexts with different levels of AI maturity and organizational culture. Furthermore, the qualitative component, while rich in themes, relied on purposive sampling and may not fully capture the diversity of experiences in smaller firms or non-digital industries.

Future research should consider expanding the geographic scope to include comparative studies across Western and emerging economies to assess cross-cultural variations in human-AI project dynamics. Longitudinal studies are also recommended to examine how psychological resilience, digital empathy, and AI readiness evolve in sustained transformation initiatives. Additionally, future investigations could explore HARF's applicability in specific sectors, such as education, logistics, and creative industries, where AI adoption presents distinct emotional and ethical challenges. Experimental designs or case-based interventions may also provide empirical grounding for evaluating the causal impact of HARF-aligned strategies on project success metrics, emotional well-being, and organizational learning outcomes.

REFERENCES

Adamska-Chudzińska, M., & Pawlak, J. (2025). *Work engagement and employee well-being: Psychosocial support to build engaged human capital*. Taylor & Francis.

Amissah, E. F., Blankson-Stiles-Ocran, S., & Mensah, I. (2022). Emotional labour, emotional exhaustion and job satisfaction in the hospitality industry. *Journal of Hospitality and Tourism Insights*, 5(5), 805-821.

Bainey, K. (2024). *AI-driven project management: Harnessing the power of artificial intelligence and ChatGPT to achieve peak productivity and success*. John Wiley & Sons.

Basnet, S. (2024). Artificial Intelligence and machine learning in human resource management: Prospect and future trends. *International Journal of Research Publication and Reviews*, 5(1), 281-287.

Batra, K., Xi, Y., Bhagwat, S., Espino, A., & Peshock, R. M. (2023). Radiologist worklist reprioritization using artificial intelligence: impact on report turnaround times for CTPA examinations positive for acute pulmonary embolism. *American Journal of Roentgenology*, 221(3), 324-333.

Bresnen, M. (2024). Rethinking project performance: Adaptive capacity and digital transformation in practice. *International Journal of Project Management*, 42(2), 125–139. https://doi.org/10.1016/j.ijproman.2023.101098

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Cao, D., Teng, X., Chen, Y., Tan, D., & Wang, G. (2023). Digital transformation strategies of project-based firms: case study of a large-scale construction company in China. *Asia Pacific Journal of Innovation and Entrepreneurship*, 17(2), 82-98.

Cherner, T., Foulger, T. S., & Donnelly, M. (2025). Introducing a generative AI decision tree for higher education: A synthesis of ethical considerations from published frameworks & guidelines. *TechTrends*, 69(1), 84-99.

Chongwatpol, J. (2024). A technological, data-driven design journey for artificial intelligence (AI) initiatives. *Education and Information Technologies*, 29(12), 15933-15963.

Dwivedi, Y. K., Hughes, D. L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., & Williams, M. D. (2023). Artificial intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. International Journal of Information Management, 69, 102605. https://doi.org/10.1016/j.ijinfomgt.2022.102605

Edmondson, A. C. (2019). *The fearless organization: Creating psychological safety in the workplace for learning, innovation, and growth*. John Wiley & Sons.

Ghabchi, R. (2022). Effect of lignin type as an additive on rheology and adhesion properties of asphalt binder. Solids, 3(4), 603–619. https://doi.org/10.3390/solids3040040

Jesus, J. B. (2024a). Human resource management practices and organizational support as antecedents to commitment among employees in Visayan Surety and Insurance Corporation in Cebu City, Philippines. *PREO Journal of Business and Management*, 5(1), 43-54.
Jesus, J. B. (2024b). Perception on human capital management practices in the business process outsourcing in Cebu City, Philippines. *Psychology and Education: A Multidisciplinary Journal*, 21(5), 574–579.
Josyula, S. S., Suresh, M., & Raghu Raman, R. (2023). How to make intelligent automation projects agile? Identification of success factors and an assessment approach. *International Journal of Organizational Analysis*, 31(5), 1461-1491.
Knafo, D. (2024). Artificial Intelligence on The Couch. Staying Human Post-AI. *The American Journal of Psychoanalysis*, 84(2), 155-180.
Mahabub, S., Hossain, M. R., & Snigdha, E. Z. (2025). Data-Driven Decision-Making and Strategic Leadership: AI-Powered Business Operations for Competitive Advantage and Sustainable Growth. *Journal of Computer Science and Technology Studies*, 7(1), 326-336.
Makudza, F. (2023). Service with a smile: the differential effects of emotional labor on boundary spanners in the banking industry. *Services Marketing Quarterly*, 44(1), 1-15.
Martinez-Gutierrez, J. C., Kim, Y., Salazar-Marioni, S., Tariq, M. B., Abdelkhaleq, R., Niktabe, A., & Sheth, S. A. (2023). Automated large vessel occlusion detection software and thrombectomy treatment times: a cluster randomized clinical trial. *JAMA Neurology*, 80(11), 1182-1190.
Mujtaba, B. G. (2025). Human-AI intersection: understanding the ethical challenges, opportunities, and governance protocols for a changing data-driven digital world. *Business Ethics and Leadership*, 9(1), 109-126.
Nabeel, M. Z. (2024). AI-enhanced project management systems for optimizing resource allocation and risk mitigation: Leveraging big data analysis to predict project outcomes and improve decision-making processes in complex projects. *Asian Journal of Multidisciplinary Research & Review*, 5(5), 53-91.
Özkan, A. H. (2022). The effect of burnout and its dimensions on turnover intention among nurses: A meta-analytic review. *Journal of Nursing Management*, 30(3), 660-669.
Quiñones-Gómez, J. C., Mor, E., & Chacón, J. (2025). Data-driven design in the design process: A systematic literature review on challenges and opportunities. *International Journal of Human–Computer Interaction*, 41(4), 2227-2252.
Rane, N., Choudhary, S., & Rane, J. (2024). Artificial intelligence for enhancing resilience. *Journal of Applied Artificial Intelligence*, 5(2), 1-33.
Rughoobur-Seetah, S. (2024). An assessment of the impact of emotional labour and burnout on the employees' work performance. *International Journal of Organizational Analysis*, 32(7), 1264-1284.
Singh, T. (2024). *Artificial intelligence and ethics: A field guide for stakeholders*. CRC Press.
Singh, V. (2024). Fostering effective Human-AI collaboration: Bridging the gap between user-centric design and ethical implementation. *International Journal on Recent and Innovation Trends in Computing and Communication*, 12(2), 22-30.
Sundaramurthy, S. K., Ravichandran, N., Inaganti, A. C., & Muppalaneni, R. (2022). AI-powered operational resilience: Building secure, scalable, and intelligent enterprises. *Artificial Intelligence and Machine Learning Review*, 3(1), 1-10.
Trimboli, H. (2024). *The examination of workplace well-being in the context of conversations on artificial intelligence*. Pepperdine University.
Tursunbayeva, A., & Gal, H. C. B. (2024). Adoption of artificial intelligence: A TOP framework-based checklist for digital leaders. *Business Horizons*, 67(4), 357-368.
Wu, T. J., Liang, Y., & Wang, Y. (2024). The buffering role of workplace mindfulness: how job insecurity of human-artificial intelligence collaboration impacts employees' work–life-related outcomes. *Journal of Business and Psychology*, 39(6), 1395-1411.